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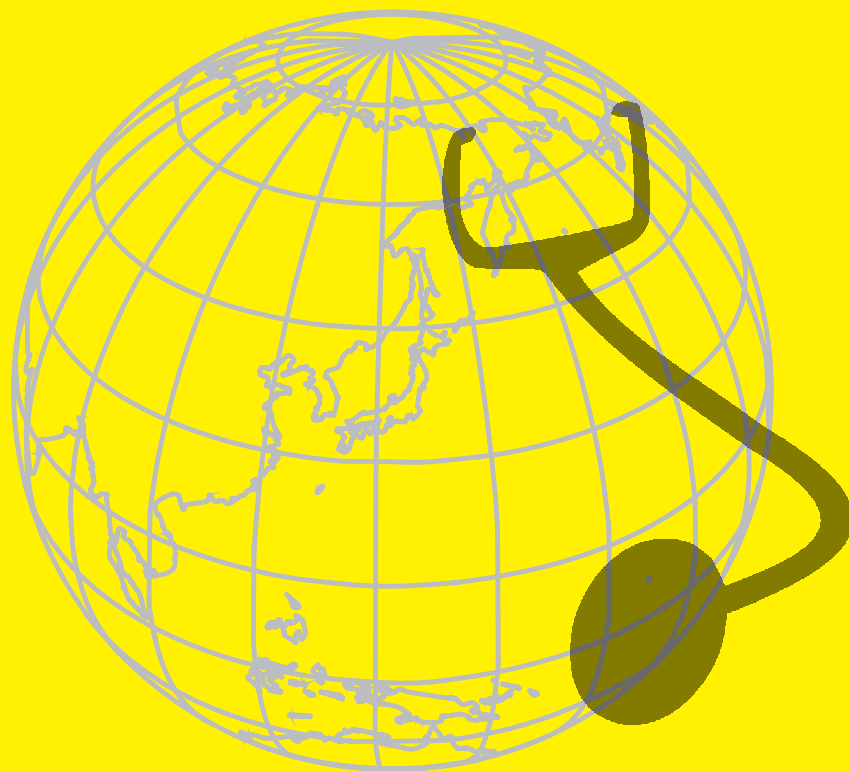
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A Study of Profile of Poisoning Cases in a Medical College Hospital in Raichur, Karnataka

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ABSTRACT

Pattern of poisoning varies from one country to another country and from one region to another region in the same country due to various reasons. The present study was conducted at Navodaya Medical college, Raichur, Karnataka, India. This study was done over a period of Two and Half years starting from 1st Jan 2011 to 30th June 2013. Total of 59 patients were studied at the level of OPD, IPD, and also during recovery or Death. The objective of the study was to know the age distribution of the patients, sex distribution of the patients, occupation of the patients, whether the poisoning occurred in a rural or urban setting, commonest type of poison and manner of poisoning, recovery of the patient or death of the patient. Among the 59 cases studied, males 33 (56%) outnumbered females 26 (44%). The commonest age group was 21-30 years (23 cases i.e 39%). The agricultural farming community 33(56%) was most commonly affected. Most of the patients 32(54%) were from rural region. Maximum patients 44(76%) were from lower economic strata of the society. The commonest poison used was Organophosphorus compounds 31(53%).The commonest manner of Death was Suicidal 39(66%) than accidental 19(32%) or homicidal poisoning.

Keywords: *Poisoning, Suicide, Homicide etc*

INTRODUCTION

Poisoning is a major problem all over the world. The type of the poison used varies from place to place. The morbidity and mortality due to poisoning varies from region to region. Pattern of poisoning in a particular region depends upon variety of factors like ease of availability of the poison, ease of access to the poison, socio-economic status of the person and religious and cultural trends followed in that particular region. The number of patients admission to the hospital due to poisoning is increasing because of the increase in stress of an individual in his attempt to live up to the standards of the changing modern life style which is mainly because of advancement of urbanisation and globalisation. The irrigation projects by the Government has contributed for the development for the region in the agricultural farming and has led to the widespread use of Insecticides, pesticides and weed killers among the farmers. Hence, they are available throughout the year in their houses, thereby increasing the accessibility to the poisonous compounds. Ease of availability of these compounds

in the market as there are no laws for selling or purchase of these compounds has led to the indiscriminate use of these compounds. Because of all these factors, we decided to conduct a study on poisoning cases admitted to Navodaya Medical college Hospital, Raichur, Karnataka, India. The aim of the study was to collect data and arrange it in a particular manner to make it useful for the concerned authorities who are involved in prevention of poisoning in the region.

MATERIAL AND METHOD

It is a Descriptive study, conducted over a period of Two and Half years starting from 1st Jan 2011 to 30th June 2013. A total number of 59 cases of poisoning admitted to Navodaya Medical college Hospital, Raichur were included in the study. Patients who were not willing to cooperate and share the complete information were excluded from the study. The data was collected from the hospital case records and history given by the concerned relatives after interviewing them during the course of the treatment.

RESULTS

Table 1 shows that out of 59 patients, Males 33(56%) were affected more than females 26(44%). Table 2 shows that 21-30 years age group was commonest 23(39%) and the age group 0-10 years was the least 05(08%). Table 3 shows that the commonest poison used was organophosphorus compound 31(53%) and the least was Alcoholic intoxication 3(5%). Table 4 shows that Suicide 39(66%) was the commonest manner of poisoning than others. Farmers 33(55%) were most commonly affected and the least commonly affected were employees 01(01%). Rural community 43(73%) was more affected than urban community 16(27%). Lower economic strata of the society 44 (76%) was affected more than the middle 14 (23%) and upper class 01(01%). About 56(95%) patients recovered and 3(05%) patients died.

Table No.1: Sex distribution of patients

Sex	No. of Patients	Percentage
Males	33	56%
Females	26	44%
Total	59	100%

Table No.2: Age distribution of patients

Age	No. of patients	Percentage
0-10 years	05	08%
11-20 years	10	17%
21-30 years	23	39%
31-40 years	14	24%
41-50 years	07	12%
51 years and above	Nil	0%
Total	59	100%

Table No.3: Type of poison

Poison	No. of cases	Percentage
Organophosphorus Compounds	31	53%
Rodenticide	04	07%
Kerosene	06	10%
Drugs (Tablets)	06	10%
Alcohol Intoxication	03	05%
Unknown	09	15%
Total	59	100%

Table No.4: Manner of poisoning

Manner	Males	Percentage	Females	Percentage
Suicidal	25	42%	14	24%
Accidental	07	12%	12	20%
Homicidal	0	0%	0	0%
Unknown	1	2%	0	0%
Total	33	100%	26	100%

DISCUSSION

The stress is increasing among the people in their attempt to achieve higher standards of quality of life. This has added to the existing burden of financial inadequacies to meet the day-to-day expenses because of the changing economic scenario of the developing countries like India. Unable to handle the stress situation, either because of domestic conflicts in the family or failure in reaching the expected goal is responsible for increase in the rise of poisoning cases.

Males 33 cases (56%) were more affected than females and the commonest age group 23 cases (39%) was 21-30 years. These findings are consistent with other studies^{1,2}. The commonest poison 31 cases (53%) was organophosphorus compound³. Suicide 39 cases(66%) was the commonest manner of poisoning than Homicide or Accidental poisoning⁴. The farmers 33 cases (56%) engaged in agriculture were most commonly affected than other occupation⁵. The rural population 32 cases (54%) were most affected than the urban population⁶. The people from lower economic strata of the society 44 cases (76%) were affected maximum when compared to middle and upper class⁷. Repeated occurrence of natural calamities in the form of drought or excess rain has got disastrous consequences on the agricultural farming community who reside in rural areas depend upon agriculture for their livelihood. Failure to yield crops in the expected quantity because of all the above reasons has made them helpless and resulting in economic crisis of the family. Most of them decide to commit suicide. Since the insecticides, weedkillers and pesticides are easily available to them, they choose these compounds for the purpose of poisoning².

CONCLUSION

In spite of various preventive programmes by the government authorities, the trend of poisoning continues. The following measures are helpful either in preventing the occurrence of poisoning cases or treating the poisoned patient.

1. Regulations for selling poisonous compounds.
2. Precautions for safe use and disposal
3. Transportation facility for the rural poor people from the place of poisoning to the nearest treatment centre.
4. Starting of poison detection centres.

5. Strengthening of existing centres of treatment in the area of availability of qualified specialist, availability of drugs and other life saving equipments.
 6. Relief plans and measures by the government authorities to the poor farming community of rural areas so as to ease their financial burden.
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Changing Perceptions of the Role of Esthetic Dentistry in Rural India

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ABSTRACT

Today's era of cosmetic and aesthetic dentistry has placed emphasis on a confident and captivating smile. A well designed smile is a product of consolidated efforts accomplished by accurate diagnosis methodical treatment planning, use of advanced materials. Modern dentistry not only provides us with better materials and technology, but also ensures that today's procedures are performed with minimal discomfort and maximum safety. Aesthetic dentistry strives to merge function and beauty with the values and individual needs of every patient. It involves a certain attitude, as well as artistic ability and technical competence. The ultimate objective of aesthetics in dentistry is to create a beautiful smile, with teeth of pleasing inherent proportions to one another, and a pleasing tooth arrangement in harmony with the gingiva, lips and face of the patient. The need and demand for esthetic dentistry in rural India is definitely persuasive. Patients are more aware of their teeth and their dental appearance than ever before.

Keywords: Esthetic Dentistry • Changing Perceptions • Rural India

INTRODUCTION

“The esthetic quality of a restoration may be as important to the mental health of the patient as the biological and technical qualities of a restoration are to its physical or dental health¹”.

The search for beauty can be traced to the earliest civilizations. Dental art has been part of this quest to enhance the esthetics of teeth and mouth. The last decade of the twentieth century herald a new era of esthetic adhesive dentistry in which a wide variety of vastly improved materials will be used for the overall purpose of conservative restorative dentistry ‘from the cradle to the grave’. That is, preventive and esthetic dentistry for the young patient and geriatric dentistry for the aging patient is currently the dominant theme in general practice dentistry abroad with a shift from restorative to preventive dental services².

Scope of Esthetic Dentistry

Patient perceptions are important indicators of treatment needs and may complement conventional clinical measurements. Treatment assessment requires the integration of multiple dimensions of health care, such as improvement in quality of life and self-image related to body satisfaction, effectiveness of intervention, and cost/benefit assessments^{3,4}.

In India however, the study of dental esthetics is a relatively new era of interest in dentistry. The profession has always been concerned with appearance-related treatment, but until recently, the necessary materials were simply not available. The extraordinarily rapid development of adhesive, tooth colored restorative materials over the past two decades has established esthetic dentistry; as the major driving force in the profession.

The practicing Indian dentist not only encounters multiple carious lesions in young and early adult patients but also fractured incisors which are now appearing with increased frequency in the sports related population of the country. The overall prevalence rate of traumatic dental injuries to permanent incisor teeth is estimated to be about 15.1%⁵.

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Malformed teeth, such as “peg lateral” incisors, are still encountered frequently⁶. Hypoplastic defects, white spot lesions, diastema spaces, and missing teeth are some of the other problems that frequently involve the young dentition. The overall individual count prevalence of hypoplasia is 26.2% for all village samples and sexes combined⁷.

Furthermore, discolored dentitions due to fluorosis, tetracycline staining, aging and non vitality occur with equally high frequency in young, adult, and aging patients⁸. According to the National Epidemiological Oral Health survey and Fluoride Mapping of the Dental Council of India (2002-2003), the overall fluorosis prevalence in the country was found to be very low. The ‘moderate’ and ‘severe’ form of fluorosis was present in less than 1% of the population in all age groups. Even ‘very mild’ or ‘mild’ forms of fluorides did not appear in more than 5.1% of the population in 12 and 15 year age groups and was even lower in adults⁹.

All of these may be treated esthetically and ‘effectively by using conservative techniques and procedures such as bleaching (home &/or office), direct composite veneers, enamel microabrasion and porcelain veneers without the need for extensive full coverage restorations.

Growing Popularity of Aesthetic Dentistry among Rural India

Gradually our society has broadly accepted the idea that health and beauty occur simultaneously. Religious and psychologic barriers have been lowered. The “natural look” is popular. Styles have been modified to expose more of the body. Feeling good about oneself is now an acceptable behaviour¹⁰.

Patients are more aware of their teeth and their dental appearance than ever before. These patients are now demanding dental treatment, much of it is cosmetic in nature. An important corollary benefit of patient-driven dentistry is that more attention is paid to overall dental health, as well as post treatment maintenance.

Possibly the greatest single factor responsible for the increased esthetic awareness among the public is the media. Television, radio and magazine reports and advertisements daily bombarded our society with news of the newest advances in bleaching, bonding, veneering, crowns, implants, orthodontic therapy and surgery¹¹.

An increasing number of individuals are obtaining more discretionary income. Available funds, coupled with the newer emphasis on self actualisation and the freedom to spend money on self has led to an increase in the demand for self improvement, including esthetic dentistry

Attitudes towards the cost of treatment are also slowly changing. Esthetic dentistry is viewed as an investment by some individuals who are convinced that their success in life depends on appearance. Quality of life is becoming a value for the elderly¹².

Motivations may include the following; The desire to be better able to eat and enjoy food, the desire to improve speech patterns, the fear of losing teeth through decay or fracture, the desire to be free of pain and discomfort, the desire to have fresh breath and the desire to enhance appearance or self image to compete more effectively for attention or advancement¹³.

Esthetically motivated patients are more likely to undergo routine preventive dental care than to wait until pain drives them into the dental office. The dentist’s role has greatly improved. The esthetic practitioner is viewed as a provider of smiles rather than as a purveyor of pain. Newer techniques and materials make conservative dentistry a reality, with the esthetic results readily visible to, and greatly appreciated by, the patient.

Hence it has become very important to integrate esthetics into the existing restorative and specialty areas of dentistry. Comprehensive patient treatment can be contemplated only if the relationships of various treatment modalities have been established. The practice of esthetic dentistry will be facilitated by the creation of a suitable and conducive treatment environment. The rationalization of the traditional dental office will offer many benefits to both the patient and the dentist.

The need and demand for esthetic dentistry in India is definitely persuasive. The development of new materials and techniques in dentistry has created a responsibility for the practitioner to develop new artistic skills. Manipulation of light, color, illusion shape and form to create a more esthetic situation than existed originally is now the responsibility of the restorative dentist. Expertise in these areas will differentiate the technically proficient dentist from one practicing a higher level of care, that of being an artist.

Advances in techniques and materials have been matched by an increased awareness that there is much more to good dental health and esthetics than merely an improved appearance. The real contribution is to overall well being. The psychological effect can be just as dramatic and is perhaps best demonstrated by self-confidence of a smile that shows clean, well-positioned teeth.

A study in 1921 highlighted the importance of facial appearance by proposing that physical characteristics of individuals exert a profound influence over their associates¹⁴.

Several studies have shown that in contrast to individuals with less favourable dental aesthetics, subject with highly aesthetic definition experience higher levels of oral health related quality of life with regards to the variables social appearance concern, facial disapproval and dental self confidence¹⁵.

Cost- Effectiveness

Today's cosmetic dentistry procedures are more affordable than ever. One of the good examples of cost benefit evaluation in dentistry is Dental Tourism. Patients may travel abroad for affordable dental care for treatment which is generally expensive in their own country. If there are extensive waiting lists, patients are more likely to travel to a country where they get top quality care at a low cost. India is emerging as one of the preferred destinations for dental tourism in the world¹⁶.

CONCLUSION

To conclude, facial attractiveness has an important impact upon an individual's life a fact increasingly recognised by dentists and patients alike¹⁷. There are many new treatment modalities, and many more are being developed. It is essential for the dental practitioner to keep up with these new techniques if the patient is to be fairly treated.

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Biofilm Production of Candida Isolated from Blood and Urine

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ABSTRACT

Biofilm production has been noted as a potential virulence factors in Candida species responsible for catheter related invasive Candida infection in most of the patients especially patients admitted in ICU early detection of Biofilm production is helpful in treating of patients and clinical decision keeping this in mind we conducted the study detection of Biofilm production in Candida species isolated from blood and urine patients with indwelling catheters total 80 Candida species were isolated 40 in blood and 40 in urine isolates include *C. krusei*, *C. albicans*, *C. tropicalis*, *C. parapsilosis*, *C. glabrata* and *C. guilliermondii*. The organisms grown in sabourauds liquid medium containing 8% of glucose. Biofilm production was determined the Biofilm production was less frequent in *Candida albicans* as compared to non-*albicans* species. The data conclude that Biofilm production in vitro may has relation to pathogenesis of Candida isolates species causing candidemia in ICU patients with indwelling catheters.

Keywords: Biofilm, Candidemia, Intensive care unit (ICU)

INTRODUCTION

Nosocomial fungaemia due to *Candida* spp. and related yeasts has become a persistent health problem. Candidemia is the fourth most common cause of nosocomial blood stream infection (BSI) accounting for around 8 % of nosocomial sepsis ^[1,2]. Of all BSI, those caused by *Candida* spp. are associated with high mortality ^[3]. *Candida* species have many virulence factors to cause invasive infections in immuno-compromised patients in that Biofilm production is one of the important virulence factors to contribute to cause invasive infection. Biofilm are the structural communities that are attached and encased in matrix of exopolymeric material ⁽⁴⁾ and are important in clinical infection. Formation of Biofilm involves two important steps 1.adhesion and 2. Bio-film growth and maturation ⁽⁵⁾.

In immuno-compromised patients fungal elements have capacity to penetrate tissue, blood and spreads. The considerable deep seated candidiosis cases observed in hospitals particularly patients admitted in ICU, major surgeries, broad spectrum antibiotics, organ transplantation and in oncology patients. The most external surfaces layers of candidal cells are

essential are essential for adherence of host surface thereby, playing important role pathophysiology of Candidiasis. ⁽⁶⁾.

Candida produces large quantity of viscid material in glucose containing solutions. The ability to form Biofilm on catheters and other prosthetic devices, also contribute to the prevalence of the organism as an etiologic agent of intravascular nosocomial infections ⁽⁷⁾. Central venous catheters considered are most common risk factors for development of candidemia in patients. ⁽⁸⁾. hence Biofilm production has considered is one of important virulent factor produced by *Candida* species which has capacity to cause invasive infections in immuno-compromised patients and their persistence and colonization of host tissue ^(9,10). The intravascular device becomes colonized by the organism and forms Biofilm of cells; the detachment which leads to septicemia ⁽¹¹⁾. The production of Biofilm is also associated with high level of antimicrobial resistance of associated organisms ⁽¹²⁾.

MATERIALS AND METHOD

Sample size: 80 patients during the study period 40 from blood and 40 from urine

Our tertiary care Centre, the KLE Dr Prabhakar kores hospital and medical research centre, Belgaum, India is a 2000-bed multi-specialty tertiary care centre in south India. All hospitalized patients who admitted in ICU, dialysis unit, with broad spectrum antibiotics and patients who had not exposed to antifungal drugs are included in this study. Detailed clinical history, laboratory investigations and management of each patient were recorded prospectively and analyzed. A total of 80 *Candida* species isolated 40 in blood and 40 in urine the isolates were tested for Biofilm production. The 80 isolates include *C. krusei*, *C. tropicalis*, *C. albicans*, *C. glabrata*, *C. parapsilosis*, *C. guilliermondii*, and *C. dubliensis*. The identification of species was conducted by using conventional phenotypic and physiological methods including germ tube test, CHROM agar morphology on corn meal agar, sugar fermentation, sugar assimilation, nitrate assimilation, and ascospore formation. The

comparison study was done by using standard strains provided by PGI Chandigarh.

Slime production was determined by using a method proposed by Brachini et al.⁽¹³⁾. A loop full of organism from the SDA plate was inoculated into a tube containing 10ml of SDA liquid medium supplemented with glucose (final concentration 8%). The tubes were incubated at 37 degree for 24 hour after which the broth was aspirated out and the walls of the tubes were stained with safranin. Biofilm production scored as negative, weak positive (1plus), moderate positive (2plus) and strong positive (3plus).

RESULTS

80 *Candida* species isolated from blood and urine include amongst 80 isolates 27 *C. krusei*, 23 *C. albicans*, 19 *C. tropicalis*, 7 *C. Parapsilosis* and 4 *C. glabrata*

Sample	<i>C. Krusei</i>	<i>C. albicans</i>	<i>C. tropicalis</i>	<i>C. parapsilosis</i>	<i>C. glabrata</i>
Blood	14	11	11	3	1
Urine	13	12	8	4	3
Total	27	23	19	7	4

Biofilm production of 80 isolates from blood and urine were determined in this study all the isolates and standard strains used for this among these 67 species shown Biofilm production. Strong Bio-film production seen in *C. krusei* from blood isolates and

weak Biofilm production is observed in *C. glabrata* isolates from blood in all cases urine isolates shown less Biofilm production as compared to blood isolates strong slime production was found in 19 species and weak Biofilm production in 17 species.

Bio-film production from urine and blood samples

	<i>Candida</i> species	Number of isolates urine	3+	2+	1+	0	Number of isolates blood	3+	2+	1+	0
1	<i>C. krusei</i>	14	5	6	3	0	13	9	2	1	1
2	<i>C. albicans</i>	11	2	4	3	2	12	2	1	3	6
3	<i>C. tropicalis</i>	11	1	2	2	6	08	1	3	1	3
4	<i>C. parapsilosis</i>	03	0	0	1	2	04	0	0	2	2
5	<i>C. glabrata</i>	01	0	0	0	1	03	0	0	1	2

0 -Negative, 1+ -Weak positive, 2+ -Moderate positive, 3+ -Strong positive

DISCUSSION

Over fast few years *Candida* species are most important cause of nosocomial infections especially non-albicans. Most catheter related invasive infection caused by *Candida* species that invade the intracutaneous during catheter insertion or there after such infection more common with non-albicans species. The isolation of non-*Candida albicans* has been frequently encountered in past few decades⁽¹⁴⁾. The

Biofilm is a community of microorganisms and their extracellular polymers that are attached to surface⁽¹⁵⁾. The ability to form Biofilm production is indication of ability to cause infection and such factor is considered as important virulence factor of such species to cause invasive type of nosocomial infection. Biofilm may try to maintain their niche as a commensals or pathogen of humans namely, by evading host immune mechanisms, resisting antifungal treatment

withstanding the competitive pressure from other organisms. Consequently, Biofilm related infections are difficult to treat⁽¹⁶⁾. Indwelling catheters are important factors to cause nosocomial Candida infection and leads to invasive candidiasis.

Candida especially non-albicans isolated from blood shown high percent of Biofilm production than the isolates from urine sample. Biofilm production occurred most commonly the isolates like *C. krusei* followed by *C. albicans*, *C. tropicalis*, *C. parapsilosis*, *C. glabrata*.

These results suggested that non-albicans species Biofilm production is important to cause nosocomial infections and others factors also contribute to cause invasive Candida infections in hospitalized patients.

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A Comparative Study on Cardiac Profile among Patients of Acute and Chronic Renal Failure in a Tertiary Hospital of Orissa

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ABSTRACT

Background: Cardiac changes are very commonly seen in both acute & chronic renal failure. The occurrence of cardiac failure or myocardial infarction prior to starting dialysis is an important prognostic factor. Therefore early detection of these factors are important so that the fatal outcomes of the cardiovascular diseases can be prevented.

Objectives: 1. To study the various cardiac changes among the patients with acute & chronic renal failure. 2. To compare the findings among them.

Materials and Method: Around 100 patients of acute renal failure & 100 patients of Chronic Renal Failure who were admitted in the hospital during September 2008 to September 2009 were examined, investigated & interviewed with the help of a pretested proforma. The cardiac changes in both groups were studied.

Results: Cardiac related complaints & symptoms like puffiness of face, oedema of feet, chest pain, tachycardia, pericarditis, left ventricular hypertrophy etc were seen more among the chronic renal failure than the acute cases, the difference being statistically significant ($p < 0.001$). Many non specific cardiac changes occur in Acute renal failure whereas hypertension & left ventricular failure are more seen in chronic renal failure which can have fatal outcomes.

Conclusions: Cardiac changes in renal failure are very common leading to increased fatality among the patients & can be diagnosed early by electrocardiac & echocardiographic examination. All patients with renal failure should undergo detailed cardiac evaluation as routine procedure to detect & prevent the dreaded cardiac complications.

Keywords: Acute & Chronic Renal Failure, Cardiac Changes, Pericarditis, Hypertension

INTRODUCTION

The kidney serves the function of excretion of surplus water & non metabolic solute as well as non volatile end products of metabolism, regulation of

volume & composition of body fluids. Failures of the functions of kidney have been implicated in the complex mosaic of clinical features of renal disease. Although cardiac arrhythmias, myocardial infarction, congestive heart failure are common in Acute renal failure (ARF).⁽¹⁾ There is no evidence of cardiac toxicity except in multisystem disease like vasculitis where heart is also involved whereas cardiovascular complications are important clinical problem & are present in nearly all patients with chronic renal failure (CRF), being the most frequent cause of death.⁽²⁾⁽³⁾ The patients who are on maintenance haemodialysis, cardiovascular diseases are the commonest cause of

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death resulting from heart failure, acute myocardial infarction(MI) etc.⁽⁴⁾ & such occurrences prior to starting dialysis are important adverse prognostic factor⁽⁵⁾ Therefore early detection of these factors are very important particularly in ARF, so that they can be prevented as patients with ARF are often asymptomatic. ⁽⁶⁾ The present study is an attempt to study the various cardiac changes occurring in patients of acute & chronic renal failure for early detection & prevention of fatal outcomes of the cardiovascular diseases.

MATERIALS AND METHOD

Study design: Hospital based study

Study area: Medical wards & nephrology unit of M.K.C.G Medical College & Hospital, Berhampur, Orissa.

Study subjects: All cases of ARF & CRF admitted during the study period.

Sample size: 100 cases of ARF & 100 cases of CRF

Study period: September 2008 to September 2009.

Sampling technique: simple random sampling technique

Study variables: Age, sex, socioeconomic status, blood pressure, pulse, puffiness of face, E.C.G findings, echocardiographic findings etc.

Study instrument: pre-tested questionnaire, equipments & materials required for clinical examination.

Statistical analysis: percentages and proportions, mean & standard deviation, chi-square.

Inclusion criteria for ARF: Acute onset, oliguria (less than 40 ml/24 hrs), blood urea above 40mg%, serum creatinine more than 2mg%, 24 hours creatinine clearance less than 80 ml / min.

Inclusion criteria for CRF: progressive renal disease of gradual onset, urinary specific gravity lowed & fixed around 1010, blood urea above 40mg%, serum creatinine more than 2mg%, impaired creatinine clearance less than 80 ml / min. **Exclusion criteria for both ARF & CRF:** those who did not fit the inclusion criteria & those who are not willing to participate in the study.

Methodology: The study was carried out in the inpatients department of the medical wards & nephrology unit of M.K.C.G Medical college & Hospital, Berhampur, Orissa during the period of September 2008 to September 2009. All the cases of Acute & chronic renal failure, who had been diagnosed as so, through thorough clinical examination, detailed history & preliminary laboratory tests & admitted during that period were considered for study. According to the diagnostic criteria, the patients were divided into 2 groups i.e. cases of ARF & cases of CRF. Around 100 patients of ARF & 100 patients of CRF who fitted the inclusion criteria were admitted during that period which was also taken as sample size. The patients from both groups were interviewed with the help of a pretested, semi structured proforma which included the required details, after obtaining their consent. They were examined thoroughly with emphasis on cardiovascular system. They were also subjected to laboratory investigations & other imaging modalities to know the cardiac status. The data collected was analyzed.

RESULTS

Out of the 100 ARF & 100 CRF cases, maximum were in the age group of 41 to 50 yrs i.e. 28% & 42% respectively followed by 31 to 40 yrs in both the groups (27% in both groups). The female patients constituted 38% among the ARF & 28% among the CRF cases. Around 42% among the ARF & 44% among CRF were either primary or illiterate. About 37% of ARF cases & 39 % of CRF cases were unskilled workers. Most of the cases of ARF & CRF belonged to upper lower class as per Kuppaswamy classification i.e. 43% & 40% respectively. Table 1 shows that the aetiological factor responsible for ARF in most of the cases i.e. 50% was gastroenteritis which was more seen as the age advanced followed by acute glomerulonephritis in 15% whereas in CRF Diabetes mellitus was the most common cause (54 out of 100 i.e. 54%) followed by glomerulonephritis constituting 17%. Table 2 shows that cardiovascular related signs & symptoms that were seen more in ARF was dyspnoea (40%), oedema of feet (40%) & puffiness of face (40%) whereas all the patients (100%) had puffiness of face & hypertension, oedema of feet was seen in 92% of them. Dyspnoea(40%), palpitations(50%) & chest pain (44%) were also commonly seen in CRF than ARF ($p < 0.001$). Around 47% of ARF patients & 72% of CRF had tachycardia, the difference was highly significant

($p < 0.001$), the mean being ± 112.33 (S.D 5.86) & ± 118.85 (S.D 12.85) respectively which is shown in Table 3. All patients of CRF were found to be hypertensive but only 7% among the ARF patients had hypertension the difference being statistically significant ($p < 0.001$) Around 48% were moderately hypertensive as per JNC⁽⁷⁾. Raised jugular venous pressure was seen in 46% of CRF patients but not seen in any of ARF cases. Table 4 shows the cardiac findings on clinical examination revealing apex beat indicating left ventricular enlargement in 68% of CRF patients whereas 100% showed normal apex beat among the ARF cases. Pericardial rub was heard in 7% of ARF & 24% of CRF patients. Basal crepitations were heard in 40% of ARF cases & 20% of CRF cases. X-ray chest revealed

cardiomegaly in 60%, pericardial effusion in 15%, pleural effusion in 8% of CRF cases but none of these changes in ARF cases. Perihilar pulmonary congestion was the only change seen in 20% of ARF patients which was also seen in 20% of CRF. ECG features of pericarditis & PR prolongation was seen in 7% of ARF patients. In the rest of patients it was within normal limits. Ischaemic changes were seen in 30% & pericarditis in 28% of patients of CRF. Left ventricular hypertrophy was seen in 70% of CRF & 16% of ARF patients, the difference was statistically highly significant ($p < 0.001$). Echocardiographic findings of all the ARF patients were normal whereas Aortic regurgitation was detected in 40% & mitral regurgitation in 20% of CRF patients.

Table 1: Aetiological factors responsible for ARF & CRF

Aetiological Factor	ARF No	%	CRF No.	%
Acute gastroenteritis	50	50%	-	-
Acute glomerulonephritis	15	15%	17	17%
Hepato renal syndrome	10	10%	-	-
Drug induced	15	15%	-	-
Nephrotic syndrome	-	-	11	11%
SLE	-	-	2	2%
Cerebral malaria	10	10%	-	-
Diabetes mellitus	-	-	54	54%
Hypertension	-	-	10	10%
Chronic pyelonephritis	-	-	4	4%
Polycystic kidney disease	-	-	2	2%
Total	100	100%	100	100%

Table 2: Cardiovascular signs & symptoms

CVS Signs & Symptoms	Arfno.	%	Crfno.	%
Dyspnoea	40	40%	40	40%
Chest pain	10	8%	44	44%
Palpitations	8	10%	52	52%
Paroxysmal nocturnal dyspnoea	2	2%	4	4%
Puffiness of face	40	40%	100	100%
Oedema of feet	40	40%	92	92%
Pulmonary oedema	20	20%	-	-
Hypertension	7	7%	100	100%
Hypotension	14	14%	-	-

Table 3: Pulse rate per minute

PULSE	CRF			ARF		
	100 /min or below	> 100/ min	Total	100 /min or below	> 100/ min	Total
NO.	28	72	100	53	47	100
MEAN	± 90.85	± 112.33	± 106.32	± 88	± 118.85	± 102.4
SD	6.21	5.86	11.25	8.61	12.15	18.3

Table 4: Cardiac findings on clinical examination

FINDINGS	CRF No	%	ARF No	%
Normal apex beat	32	32 %	100	100%
Apex beat indicating left ventricular enlargement	68	68 %	-	-
Loud S2	66	66%	7	7%
Murmur	16	16%	-	-
Gallop	24	24%	7	7 %
Pericardial rub	24	24%	7	7%
Basal crepitations	22	22%	40	40%

DISCUSSION

In the present study, maximum belonged to the middle age group of 41-50 yrs in both acute & renal failure cases. It is also seen that females constituted around 38% among ARF cases which is similar to the study by Mehta et al⁽⁸⁾ & 28% in CRF cases. The commonest etiological factor responsible for ARF was due to dehydration due to gastroenteritis. According to John P Cunha⁽⁹⁾ & other studies⁽¹⁰⁾, the commonest cause of pre renal failure is due to dehydration from vomiting & diarrhea, which are the symptoms of diarrhea, which was also more seen in advanced age which is similar to the present study. Acute Glomerulonephritis also contributed significantly for the causation of ARF which is consistent with the study by Muthusethupathy⁽¹¹⁾ & other studies.⁽¹²⁾⁽¹³⁾ The most common causes of CRF are Diabetes Mellitus, Hypertension & glomerulonephritis.^{(14),(15)(16)}. The complaint related to cardiovascular system was dyspnoea which was more seen in ARF than CRF the difference being statistically significant. ($p < 0.001$). Puffiness of face was only 40% among ARF but all CRF patients had it, the difference is statistically highly significant. Palpitations & chest pain were frequently seen among CRF which was again statistically significant ($p < 0.001$). Tachycardia was present in 70% of CRF compared to 40% of ARF cases. ($p < 0.001$). All the CRF patients, were found to be hypertensive where as only 7% were hypertensive in ARF which is highly significant ($p < 0.001$). the most common cardiovascular manifestation in pts with CRF was found to be hypertension & the incidence varied from 80 to 90%⁽¹⁷⁾.

Pleural effusion was found in 8% of the CRF cases. A concomitant pleural effusion may also be found in renal failure⁽¹⁸⁾ Evidence of pericardial effusion was found in 24% of CRF patients unlike to the study of Robert M Black⁽¹⁹⁾ but similar to Ivan A et al⁽²⁰⁾ which

could be due to the reason that there is no fluid overload or proper dialysis. However ECG features of pericarditis was seen in 28% of CRF patients but only 7% among ARF patients, the difference being statistically significant. Though having pericarditis, some patients of ARF were asymptomatic which can happen as per Banerjee et al.⁽²¹⁾ Echocardiography was done for all patients. Left ventricular hypertrophy (LVH) was seen in 80% of CRF cases which is similar to studies by Graham A Stewart et al.⁽²²⁾ where there was a progressive increase in LVH with loss of renal function so that more than 80% of patients on renal replacement therapy have LVH. About 16% of ARF patients had LVH, the difference being statistically significant. All patients of CRF exhibited ECG changes & 22 patients showed ischemic changes which is important to be evaluated earlier to prevent a fatal outcome.

Conclusion and Recommendations

Cardiac changes are very commonly seen in renal failure & can be diagnosed early by electrocardiac & echocardiographic examination.

In acute renal failure, there occurs non specific cardiac changes like tachycardia, raised JVP, gallop rhythm, perihilar congestion & conduction disturbances which are marked less frequently than chronic renal failure.

Hypertension & left ventricular failure are the most important cardiac manifestations seen in chronic renal failure which is important for major cardiac events like cardiac arrhythmias & congestive heart failure.

Therefore it is imperative that all patients with renal failure should undergo detailed cardiac evaluation as routine procedure to detect & manage dreaded cardiac complications.

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Comparison of Vaginal Hysterectomy for Non Descent Uterus with Abdominal Hysterectomy

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ABSTRACT

Objective: The purpose of this study was to compare the advantages of vaginal hysterectomy for nondescent uterus over abdominal hysterectomy.

Source: The cases were collected from Women and Children Hospital, Bapuji Hospital and Chigateri General Hospital attached to JJM Medical College, Davangere, and Karnataka, India.

Method: This is a comparative study between 75 vaginal hysterectomies for nondescent uterus with 99 abdominal hysterectomy cases. All patients who required hysterectomy for benign gynaecological conditions like dysfunctional uterine bleeding (DUB), fibroid uterus, adenomyosis, chronic cervicitis were included in the study, which were collected over a period of one year (July 2002 to June 2003). Intraoperative findings like descent of the uterus under anesthesia, type of anesthesia, duration of surgery, blood loss were noted. Outcomes in immediate postoperative period which included catheterization, early mobilization, and allowance on regular diet, patient's complaints & complications, duration of post operative stay were noted. The accessibility of the vaginal passage, disease confined to the uterus and the surgeons experience are the major determining factors for the choice of the route of hysterectomy.

Observations: Total number of cases who underwent hysterectomy during the study period were 174. Vaginal route was employed in 75 cases & abdominal in 99 cases. There were no major differences in patient's age, slightly higher parity in vaginal hysterectomy group. Two cases were done under local anesthesia in vaginal hysterectomy group. DUB was the commonest indication 32(42.7%), 12 cases had uterine size up to 12-16 weeks pregnant uterus size, morcellation techniques were employed in all cases. Operating time was significantly lower for vaginal route compared to abdominal route (38±14 minutes vs 61±12 minutes, P-value<.001). Blood loss was not significantly different between the two groups. Significant advantages of vaginal hysterectomy were noncatheterisation in 52(69.3%) cases, early mobilization (allowed out of bed within 6-8 hours), regular diet within 12 hours in 49(65.3%) cases, reduced length of hospital stay(4±1.1 vs 7.1±1.7, P <.001) and cost. Complications were minimal in vaginal hysterectomy group.

Conclusion: Vaginal hysterectomy is least invasive route with less morbidity & most rapid post operative recovery & less hospital stay compared to abdominal route.

Keywords: Nondescent Vaginal Hysterectomy (NDVH), Abdominal Hysterectomy

INTRODUCTION

Hysterectomy is the most common gynaecological surgical procedure. It can be done by abdominal or vaginal or laparoscopic route. Laparoscopic assisted vaginal hysterectomy (LAVH) & total laparoscopic hysterectomy (TLH) although gaining more popularity is associated with higher cost¹, longer duration of

operation and requires specially trained personnel. On the other hand, vaginal hysterectomy is associated with reduced morbidity and lower health care costs compared to laparoscopic techniques².

In today's world, vigorous attempts are being made to reduce the number of abdominal hysterectomies and replace them with vaginal hysterectomies³. Vaginal

hysterectomy is preferred in high risk cases like obesity and is cosmetic (scar less surgery). In larger sized uterus it is facilitated by bisection, myomectomy, and debulking, coring & clampless approach ^{4,5}.

In India Shirish Sheth has brought new dimensions in NDVH with his experience of 5655 vaginal hysterectomies ⁶. The aim of the present study is to report the advantages of vaginal hysterectomy over abdominal hysterectomy in terms of faster recovery, early ambulation, lesser hospital stay and to explore different surgical techniques that make vaginal hysterectomy simpler and easier to perform.

MATERIALS AND METHOD

The cases for the study were taken from Women and Children Hospital, Bapuji Hospital and Chigateri General Hospital attached to JJM Medical College Davangere, Karnataka. The study was done from July 2002 to June 2003 for a period of one year. Total number of cases under the study was 174, out of which 75 in vaginal hysterectomy group and 99 in total abdominal hysterectomy group.

Inclusion criteria: Patients with Fibroid uterus, DUB, Chronic cervicitis, Adenomyosis and Endometriosis were included.

Exclusion criteria: Prolapsed uterus, LAVH, Adnexal pathology, sling operation done before for prolapse, nulliparous women with uterine size more than 16 weeks and patients with previous two or more LSCS were excluded from the study. Those patients who were not fulfilling the prerequisites for nondescent vaginal hysterectomy underwent abdominal hysterectomy.

Detailed history and thorough clinical examination was done in each case. A written informed consent was taken from patient's husband/guardian in each case. All cases were reassessed in operation theatre after patient was anaesthetized, to see the size, mobility of the uterus, vaginal accessibility and descent on traction.

Intraoperative findings like descent of the uterus under anesthesia, type of anesthesia, duration of surgery and blood loss were noted. Outcomes in immediate postoperative period which includes catheterization, early mobilization, and allowance on regular diet, patient's complaints & complications, duration of post operative stay were noted. The data

was analysed using Chi-square test and 'P' value was determined.

OPERATIVE TECHNIQUE

Under anesthesia, patient was placed in lithotomy position. After cleaning and draping, cervix was held with volsellum, circumferential incision was made around the cervix, pubovesicicervical ligament was cut and bladder mobilised upwards. Both anterior and posterior pouches were opened. Uterosacral and cardinal ligaments were clamped together, cut and ligated. Clamping of uterine vessels was done bilaterally. In bigger sized uteri morcellation techniques like uterine bisection, debulking, myomectomy or combination of these were performed as and when required. In total hysterectomy, last clamp was on the uterine adnexae containing round ligament, ovarian ligament and medial part of fallopian tube. To remove ovaries, round ligament was clamped separately followed by clamping of infundibulopelvic ligament. After delivery of the uterus, stumps were inspected for complete haemostasis and vaginal vault closed along with vault suspension.

RESULTS

Total number of hysterectomies carried out during the study period was 174. Vaginal route was employed in 75 cases and abdominal in 99 cases. Route of surgery was determined by accessibility of vaginal passage, disease confined to uterus and the surgeon's experience.

Table 1. Shows age and parity distribution. In the present study both groups showed similar age distribution, mean parity differed in both groups. This difference was primarily the result of higher parity among women who had vaginal hysterectomy (VH) than those who had total abdominal hysterectomy (TAH).

Table 1. Age and parity distribution

Age group(years)	VH No. %	TAH No. %
<30	7 (9.3)	8 (8.1)
30-39	37 (49.3)	60 (60.6)
40-49	30 (40.0)	28 (28.3)
≥50	1 (1.3)	3 (3.0)
Parity		
Multi	57 (76)	88 (90.9)
Grand multi	18 (24)	11 (11.1)

No: Number of patients

Table 2. Shows various indications for hysterectomy, among them Dysfunctional uterine bleeding (DUB) is the commonest indication followed by fibroid uterus.

Table 2. Indications of hysterectomy

Indications	VH No. (%)	TAH No. (%)
DUB	32 (42.7)	44 (44.4)
Fibroid	26 (34.7)	28 (28.3)
Chronic cervicitis	16 (21.3)	24 (24.2)
Uterine myohyperplasia	1 (1.3)	-
Adenomyosis	-	3 (3.1)
Total	75	99

Table 3, Shows data of size of uterus

Table 3. Uterine size

Uterine size	VH No. (%)	TAH No. (%)
Normal	26 (34.7)	43 (43.4)
Bulky	28 (37.3)	27 (27.3)
6-10	9 (12.0)	17 (17.2)
12-16	12 (16.0)	12 (12.1)

$\chi^2=3.42$ $p=0.33$ NS

Table 4, Shows anesthesia used for surgery. Most of the operations were done under regional anesthesia either spinal or epidural. Two cases were done under local anesthesia which included paracervical block and perineal infiltration anesthesia.

Table 4. Anesthesia

Anesthesia	VH No. (%)	TAH No. (%)
Spinal anesthesia	62 (82.7)	86 (86.8)
Epidural anesthesia	10 (13.3)	6 (6.1)
Local anesthesia	2 (2.7)	-
General anesthesia	1 (1.3)	7 (7.1)

Table 5. Shows operative observations

Duration of operation	VH No. (%)	TAH No. (%)
≤ 30 minutes	39 (52)	-
>40 minutes	36 (48)	99(100)
Range	20-80 min	40-90 min
Blood transfusion	23 (30.7)	36 (36.4)
Mobilization in post operative ward		
≤24 hours	52 (69.3)	4 (4.04)
>24 hours	23 (30.6)	95 (95.9)
Allowance on regular diet		
<12 hours	49 (65.3)	-
24 hours	26 (34.7)	27 (27.3)
>24 hours	-	72 (73.0)
Post operative hospital stay		
≤3 days	35 (46.7)	
4-5 days	33 (44.0)	13 (13.1)
>5 days	7 (9.33)	86 (86.8)

Surgical time was 23 minutes longer on an average when TAH is performed compared with VH group. None of the patients were allowed orally within 12 hours in TAH group. Mean length of hospital stay for VH group was 4 days compared to TAH group which was 7 days, that is 3 days longer than vaginal hysterectomy group.

Table 6. Shows various complications and patients complaints

Complications	VHNo. (%)	TAHNo. (%)
Pain abdomen(vague)	17 (22.7)	24 (24.2)
Burning micturition	4 (5.3)	9 (7.1)
Febrile	3 (4.0)	21 (21.2)
Bleeding per vagina	2 (2.7)	2 (2.0)
Vomiting	3 (4.0)	4 (4.0)
Bladder distension	3 (4.0)	-
Numbness of limbs	1 (1.3)	-
Backache	2 (2.7)	-
Gastroenteritis	-	3 (3.0)
Bleeding from wound	-	1 (1.0)
White discharge per vagina	-	3 (3.0)

DISCUSSION

For several decades, the abdominal approach has been the most common route of hysterectomy despite the well documented benefits of the vaginal hysterectomy in terms of lower complication rates, shorter length of hospital stay and convalescence and more favorable quality of life outcomes including reduced mortality⁷⁻¹⁰. The usual contraindications for vaginal hysterectomy are absence of significant uterovaginal prolapse, presence of uterine enlargement, adhesions and the need for oophorectomy. With adequate vaginal access and good uterine mobility vaginal hysterectomy can be easily performed. The uterosacral and cardinal ligaments situated in close proximity to the vaginal vault once clamped and cut, produce first degree descent. Multiparity, lax tissues following multiple deliveries and decreased tissue tensile strength provide comfort to vaginal surgeon even in the presence of uterine enlargement¹¹. However bulky uteri can be dealt with techniques like bisection, myomectomy or debulking. In this study 75 patients without descent underwent those procedures for successful removal of the uterus. Davies et al¹² and Mazdisnian et al¹³ also reported to those techniques. This study was done to compare the advantages of vaginal hysterectomy over total abdominal hysterectomy. Age distribution was similar in both VH and TAH group. Mean parity is more in VH group than in TAH group. The duration of surgery

was 23 minutes lesser on an average when VH is performed (38 ± 14) compared with TAH (61 ± 12). In VH group 30.7% of cases were catheterized when compared to TAH group wherein all cases were catheterized. Early ambulation and allowance on regular diet was possible in VH group (6-36hrs) when compared with TAH group (24-48hrs). Postoperative stay was less in VH group (mean 4 ± 1.1 day) compared with TAH group (7.1 ± 1.7 days). Complication rate was higher in TAH group when compared with VH group. The most common complications were febrile morbidity and burning micturition.

CONCLUSION

Vaginal hysterectomy is least invasive route with less morbidity, less expensive technique, with most rapid postoperative recovery. When both routes are possible, vaginal surgery has clear advantages over abdominal surgery. The absence of an abdominal incision leads to lower morbidity, earlier discharge from the hospital and more rapid convalescence. The vast majority of hysterectomies can be performed by the vaginal approach in the best interest of the patient, particularly women's future health.

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A Time Motion Study of the Patients Attending the Outpatient Departments of a Tertiary Care Hospital in Kanchipuram, Tamilnadu

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ABSTRACT

Background: The main concern of Health care providers is to provide quality care to consumers. One of the factors which influence this is patient waiting time.

Aim: To study the waiting time for patients attending the outpatient departments right from their entry into the hospital premises till their departure and also to study the possible operational factors that lead to excessive waiting time.

Method: 200 outpatients were selected at random and the waiting time was studied by manually tracking them.

Results: The patient waiting time in our study was found to be favorable to the patient at all levels except for the time spent with the doctor.

Conclusion: Such studies should be carried out periodically as a monitoring procedure to improve hospital service quality.

Keywords: *Waiting Time, Outpatient Department, Quality Patient Care*

INTRODUCTION

In recent years, quality assurance has emerged as an internationally important aspect in the provision of health care services. Quality assurance in the hospital scenario is quality patient care. One parameter which influences this, besides professional expertise is patient satisfaction. Prolonged waiting time is associated with reduced patient satisfaction, and reduction in the patient waiting time is a very challenging job for any hospital management.

For many people, the experience of services received in an Outpatient department plays an important role in influencing their opinion about services provided by the hospital in total. Outpatient Department is often called the "Shop Window" and the reputation of the Hospital can be made or marred by its Outpatient Department ^[1]

It has become necessary today for every hospital to conduct studies on patient waiting time routinely as an evaluation measure. With this preview, it was

decided to study the waiting time for patients attending the outpatient departments right from their entry into the hospital premises till their departure and also to study the possible operational factors that lead to excessive waiting time.

METHODOLOGY

Study period: December 2009 to January 2010

Study area: The study was carried out in a 570 bedded tertiary care hospital in Kanchipuram, Tamilnadu. It is a teaching hospital attached to Meenakshi Medical College and Research Institute.

Study sample: 200 outpatients were selected at random with an average of 5 patients per day on a daily basis. The patients with a morbidity of a severe nature with the need for admission were excluded from the study.

Study instrument: A process chart was designed for this purpose which was pretested and

implemented. This chart explained systematically the series of activities which each patient has to undergo from entry to exit from the hospital.

METHODOLOGY

Waiting time is defined in various ways –for example “the time that the patient spends since his registration up to the time of the start of consultation” or “the time that the client spends from arrival at the hospital until completing service or prescription”. This time is expressed in minutes ^[2]

As a routine, a patient coming to the hospital stands in the queue to get the OP card, then goes to the concerned department and waits for his/her turn to meet the doctor. When his turn comes, the doctor examines him and is given a prescription with or without investigation requisitions. He goes either to the lab for investigation (x-ray, ECG, USG, Pathology, Microbiology, Hematology etc) or to some referred specialty department. Finally, he goes to the drug centre/pharmacy and waits there in the queue to collect his drugs. The time spent by them at every level of their movement was noted from their entry point to exit point.

Data collection was done with the help of interns who were trained before the beginning of the study. Manual tracking of the patients were done, tracking one patient at a time from the registration counter through the various outpatient departments to the final exit of the patient. Though labor intensive, this method was followed for the purpose of feasibility and accuracy. The waiting time at each point was recorded in minutes and was rounded off to the nearest multiple of 5 minutes.

RESULTS AND DISCUSSION

The patients preferences for availing hospital services is influenced by a number of factors like proximity, perceived quality of services provided, cost factor etc. As health care providers, our main perspective should be to provide cost effective quality based care.

The study population consisted of 200 patients (74 males and 126 females).Majority (77%) of the sample population belonged to 25 -35 years age group.

The mean time spent by the patients in the hospital was 52 ± 25 mins on the whole which reflects the quality of services provided. This result is difficult to

comment upon as there are no standards fixed for patient waiting time in a hospital. As the patient's expectations vary from hospital to hospital and from point to point in a hospital, it is not possible to generalize the standard, for waiting time for different hospitals and for different services. However each hospital can frame its own standard for all its major service areas .Similar findings were observed by Sujatha R Solomon^[1].

The mean time spent at the registration counter was 10 ± 8 mins. This much time is required for data entry to get the patient's reference number and also to retrieve the patients file. Similar findings were observed by K.S.Prasanna et al^[3]. Improper record management and poor filing system can prolong this time as noted by Mohamad Hanaffi Abdullah^[4] where the average waiting time was 4 to 5 hrs. The international suggested standard waiting time in developing countries is 30 mins^[2]

In our set up, multiple registration counters have been established to cater to the patient rush. Numerical system of filing is used where newer patients are given a higher number and activity is concentrated in one segment only. Though misfiling and retrieval are common in this system, the presence of trained staff has overcome the problem. Also, female nursing assistants (FNAs) have been appointed to carry the Outpatient record of the patients to the various respective departments. This saves the patient from waiting at the counter till his file is retrieved. He is directed to go to the respective department and wait there. The only deficiency is the paucity of FNAs at the super specialty outpatient departments and also the long distance of these departments from the registration counters leading to consumption of more patient waiting time for those attending these departments.

The time taken to reach the various outpatient departments (except the super specialty departments) was 5.6 ± 4 mins. This again reflects the proximity of the outpatient departments to the registration counters and the display of name boards to show the route map of various departments.

The mean time taken to meet the doctor was 10 ± 8 mins. The mean time spent with the doctor was also 10 ± 5 mins only. It shows that both the time taken to meet the doctor and time spent with the doctor is the same. The time, the patient spends with the doctor is grossly inadequate as it has been found that a

minimum of 15-20 minutes is required to do a satisfactory thorough check up of the patient. This reflects badly on the quality of service rendered to the patient. Of the mean time of about an hour, only 10 minutes is spent with the doctor, the rest of the time is spent elsewhere. These findings are in contrast to that observed by K.S.Prasanna et al^[3] where the average time required for consulting the doctor was less than 30 minutes in 20% of the cases, 30 to 60 minutes in 57% of the cases Improvement in the skills of doctor patient communication and better patient care in terms of more attention and time needs to be implemented.

The time spent at the drug counter is 10.8 ± 5 . This was calculated as the time taken for his turn to come. This could be reduced by opening multiple counters as presently there is only one counter. This again is far better than that observed K.S.Prasanna et al^[3] where the average time was 26.8 ± 18.36 mins.

Only 10% of the sample had undergone lab investigation. The time taken to reach the laboratory was 8.1 ± 4.9 mins. The time spent waiting for their turn to get the blood/urine sample collected was 21.3 ± 19.2 mins. Our results are far favorable when compared to the study by K.S.Prasanna et al^[3] who observed a mean time of 142.75 ± 234.92 mins for the same.

Limitations in the study:

- Better inference can be drawn from larger sample
- Inclusion of all types of patients
- Loss to follow up: the exact OPD time analysis of patients who went for refreshments in between consultations and investigations/ pharmacy were difficult to record

Recommendations

- A plan layout displaying the exact location of various OutPatient units is properly situated near the OP counter but has to be further simplified to be made understandable by the general public
- At the starting point of each corridor, a display board should be placed enlisting the various units functioning in that corridor. This will enable easy identification by the patients and accessibility will be improved
- The units not located in that corridor can be directed by different colored arrow marks indicating the names of the department OPD.

- For the illiterates, appropriate logos/pictures can be used wherever it is possible e.g male-female, injections, drugs etc.
- Majority of the name boards are not in the local language
- The unusually crowded OPD/units should be identified and more number of doctors posted to these units along with necessary paramedical staff.
- All the staff, both medical and paramedical who mans the OPD should be given periodic training and evaluating sessions so that their interpersonal communication skill is improved leading to improving the quality of services.
- More number of FNAs at the super specialty out-patient departments.
- Reading material in the form of booklets and leaflets to be provided to the patients who are in waiting
- A Television Monitor could be fixed at a corner of the OPD lounge, displaying health programmes to the waiting patients/attendants

CONCLUSIONS

Our findings have suggested that the overall waiting time in the OPD is favorable to the patient at all levels like at the registration counter, or when the time taken to reach the department is considered. But it is not favorable when it comes to time spent with the doctor. This attempt to evaluate the patient waiting time has provided us with certain areas that need corrective efforts to improve hospital service quality. Such studies should be done periodically to serve as an indicator to further improve the quality of health care.

Source of Support: Nil

Conflicts of Interest: Nil

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Study on Non Formal Preschool Education Activities Conducted in Angan Wadi Centers of Kashmir Division of Jammu and Kashmir State

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ABSTRACT

Objectives: Purpose of study was to assess the availability and provision of preschool education (PSE) materials and activities in anganwadi centers of Kashmir division. Evaluation was based on availability of data compiled by anganwadi workers and on observation basis.

Method: The community based study was conducted during June 2007 to June 2008. A total of 139 Anganwadi centers (AWCs) were selected from three districts (Baramulla, Anantnag & Srinagar) of Kashmir valley by multistage sampling technique.

Results: 89 (64%) AWCs were functional out of 139. Among functional AWCs, PSE material was available in 74.2% AWCs. 1216 preschool beneficiaries were registered in 89 functional AWCs and 49.5% were given PSE as per AWC records. Whereas only 4.3% received PSE on the day of survey.

Conclusions: A considerable proportion of AWCs do not open and function at all. Most of AWCs that open and function do not provide pre-school education.

Keywords: Non formal Preschool education, AWCs.

INTRODUCTION

Children are invaluable human assets. It is the state's responsibility to protect the rights of children and provide equitable chances to them for development¹. In India, the scheme of Integrated Child Development Services (ICDS) is considered as single most largest programme to provide the basic services to children for the deprived sections of society. It aims for a better start of life by providing non-formal preschool education in addition to other health services. Regular attendance in anganwadis is likely to improve the regularity in school attendance. It has been designed to promote holistic development of children below 6 years through the strengthened capacity of care givers and communities and improved access to basic needs of health and education at the

community level. It is multi-sectoral program and involves several government departments. The program provides an integrated approach for converging all the basic services for improved childcare, early stimulation and learning.

MATERIAL AND METHOD

This was a community based study carried out over a period of one year from June 2007-June 2008. The study was conducted in AWCs of Kashmir Division of Jammu & Kashmir state. Multistage sampling technique was used for study. Kashmir valley is divided into 3 geographical zones; North, Central and South. From each zone, one district was selected using simple random sampling namely Baramulla, Srinagar and Anantnag respectively. 20% ICDS blocks were

selected from each district using simple random technique that comprised of 2 blocks from Baramulla, 1 block from Srinagar and 2 blocks from Anantnag. Again 20% AWCs were taken from each selected block using above same sampling technique. Thus total of 139 AWCs were selected. Information regarding number of blocks and AWCs in each district were taken from documentary records of Social Welfare Department Srinagar.

Information was gathered from the identified Anganwadi centres regarding the availability of pre-school education material. Records of Angadwadi workers were assessed regarding registration of preschool children (37 to 72 months age). Anganwadi centre records were checked for the attendance of children beneficiary per day in non-formal preschool education activities. Observations were made on the day of visit to selected AWC concerning the number of children attending PSE. Non formal preschool education was assessed by observing utilization of various teaching aids and type of pre school teaching activity was also observed.

Statistical Analysis: Data collected was tabulated and analyzed by using statistical package for social science (SPSS) as a software. Chi square test was applied for the statistical analysis of data.

RESULTS

Out of 139 surveyed AWCs 89 were found operating (considered those AWCs providing ICDS services to beneficiaries and where AWWs were present) and 50 AWCs were non-operating (considered those closed on repeated four visits in a span of one week and AWWs were absent).

However PSE material was available in 66 (74.2%) AWCs out of 89 operating AWCs. While as blackboard; a very important PSE material was available in 22(71%) AWCs in Anantnag followed by Srinagar district, 14 (66.7%) but was not provided in any of the AWCs of Baramullah district showing significant difference amongst districts p value < 0.05. Masks, balls, drawing and painting material was not available in any of the functional AWCs. Further results are shown in the table 1 below.

Table 1: Availability of Pre School Education Material at operating AWC in selected districts

Material	Srinagarn=21		Baramullan=37		Anantnagn=31		Totaln=89		p value
	no	%	No	%	no	%	no	%	
Pre School material	16	76.2	23	62.2	27	87.1	66	74.2	0.065 (NS)
Puppet	0	0.0	3	8.1	0	0.0	3	3.4	0.116 (NS)
Mask	0	0.0	0	0.0	0	0.0	0	0.0	1.000 (NS)
Charts	16	76.2	23	62.2	27	87.1	66	74.2	0.065 (NS)
Black Board	14	66.7	0	0.0	22	71.0	36	40.4	0.000 (Sig)
Magnetic Alpha	16	76.2	23	62.2	27	87.1	66	74.2	0.065(NS)
Beads(abuscus)	0	0.0	2	5.4	3	9.7	5	5.6	0.334 (NS)
Balls	0	0.0	0	0.0	0	0.0	0	0.0	1.000 (NS)
Other Toys (Duplies)	14	66.7	8	21.6	18	58.1	40	44.9	0.001 (Sig)
Drawing and Painting Material	0	0.0	0	0.0	0	0.0	0	0.0	1.000 (NS)

Data of present study in respect of PSE activities was obtained in terms of coverage of children, types

of PSE activities conducted by AWWs and other related aspects shown below in table 2&3.

Tab 2: Distribution of registered preschool beneficiaries (between age of 37 to 72 months)according to status of provision of PSE at AWCs in selected districts

Characteristics		Srinagar (n=21)	Baramulla (n=37)	Anantnag (n=31)	Total (n=89)	p value
Boys	Registered	No	158	175	223	0.000(Sig)
	Attending PSE as per AWC records	No	81	138	51	
		%	51.3	78.9	22.9	48.6
	Received PSE (as observed)	No	5	11	7	0.226(NS)
		%	3.2	6.3	3.1	

Tab 2: Distribution of registered preschool beneficiaries (between age of 37 to 72 months) according to status of provision of PSE at AWCs in selected districts (Contd.)

Characteristics			Srinagar (n=21)	Baramulla (n=37)	Anantnag (n=31)	Total (n=89)	p value
Girls	Registered	No	194	222	244	660	0.000(Sig)
	Attended PSE as per AWC records	No	84	186	62	332	
		%	43.3	83.8	25.4	50.3	
	Received PSE (as observed)	No	6	15	8	29	0.108(NS)
%		3.1	6.8	3.3	4.4		
Total	Registered	No	352	397	467	1216	0.000(Sig)
	Attended PSE as per AWC records	No	165	324	113	602	
		%	46.9	81.6	24.2	49.5	
	Received PSE (as observed)	No	11	26	15	52	0.024(Sig)
		%	3.1	6.5	3.2	4.3	

n=number of operating AWCs, no=number of beneficiaries

Table 2 shows the registered beneficiaries between 37 and 72 months attending pre-school education at operating AWCs in different districts. The total no. of male registered beneficiaries in Srinagar, Baramulla and Anantnag were 158, 175 and 223 as respectively. Out of these (as per AWW records), 138(78.9%) in Baramulla, 81(51.3%) in Srinagar and 51(22.9%) in Anantnag were receiving PSE in AWCs. And out of registered male children 11(6.3%) in Baramulla, 5(3.2%) in Srinagar and 7(3.1%) in Anantnag were observed to be receiving PSE on the day of visit. The total No. Of

female registered beneficiaries in Srinagar, Baramulla & Anantnag were 194, 222, & 244 respectively. As per AWW records out of registered female beneficiaries 186 (83.8%) in Baramulla, 84(43.3%) in Srinagar and 62(25.4%) in Anantnag were receiving PSE. No. of registered female children which were observed to be receiving PSE on the day of visit were 15(6.8%) in Baramulla, 8(3.3%) in Anantnag and 6 (3.1) in Srinagar. As per AWC records PSE of children vary significantly among the districts.

Table 3: PSE Activities at operating AWCs in selected districts observed on the day of visit

		Srinagar n=21		Baramulla n=37		Anantnag n=31		Total n=89		p value
		no	%	No	%	no	%	no	%	
Activity Conducted		3	14.3	7	18.9	4	12.9	14	15.7	0.780(NS)
Type of Activity	Outdoor games	0	0.0	0	0.0	1	3.2	1	1.1	0.775(NS)
	Indoor PSE activities	1	4.8	4	10.8	0	0.0	5	5.6	
	Stories	1	4.8	1	2.7	3	9.7	5	5.6	
	Songs	1	4.8	2	5.4	0	0.0	3	3.4	
	Drawing/painting	0	0.0	0	0.0	0	0.0	0	0.0	
	Counting	0	0.0	0	0.0	0	0.0	0	0.0	

n= Total number of AWCs, no=number of AWCs conducted PSE activities

Table 3 reveals that PSE was conducted in 7(18.9%) AWCs in district Baramulla followed by Srinagar 3(14.3%) and Anantnag 4(12.9%) AWCs observed on the day of visit to respective AWCs. Indoor PSE activities were organized by only 4(10.8%) AWCs in Baramulla and 1(4.8%) in Srinagar. Story telling was observed in 3(9.7%) AWCs in Anantnag and in only one AWC in Baramulla and Srinagar. Children were engaged in outdoor games only in 1(3.2%) AWCs in Anantnag. It is also evident from the table that children were not involved in important activities like painting,

drawing, counting and matching colors in any of the studied AWCs.

DISCUSSION

Pre-school education material for early childhood care education was available in 66(74.2%) AWC'S out of 89 operating AWC'S in three selected districts.

However maximum number of AWCs in Anantnag 27(87.1%) were having PSE material available followed by Srinagar 16(76.2%) and Baramulla 23(62.2%) among

various PSE material; masks, Balls, Drawing and painting materials were not available in any of the surveyed AWC'S through these are very important aids for mental social development of preschool children (3-6yrs) non availability of these reduces impact of ICDS scheme.

Blackboard, a very important aid for preschool education was not available in any of AWC'S in district Baramulla while it was available in 22(71%) and 14(66.7%) AWC'S in Anantnag & Srinagar district respectively. The distribution of black boards among district varied significantly.

Although chart and magnetic alpha were available in most of AWC'S 66 (74.2%) PSE is important component of ICDS program hence availability of the PSE material is crucial to the successful delivery of programme.

Non availability of the adequate and good quality PSE material in almost all operating AWC'S were observed and is a matter of concern which needs to be looked into by the program implementers carefully. PSE material was available in (55.9%) AWC'S reported in NIPCCD (three decades ICDS an appraisal)²

The crux of human resource development lies in providing and enabling environment to the young children so that they are able to grow as healthy & productive adults. Efforts have already been initiated in this direction through ICDS programme by placing children on the priority agenda of ICDS programme.

Preschool education has been envisaged in ICDS programme as an essential component for children who are on the urge of going into formal education system. The need for PSE is also considered most pronounced in case of children from culturally & socio-economically disadvantaged families. The present study revealed that total number of preschool children (37-72 months) registered in all operating AWCs were 1216. Out of which 602 (49.5%) were attending preschool education as per AWCs records. Total number of preschool children, received PSE observed on the day of survey or visit to AWCs were 52 (4.3%) only, present study depicts very low percentage of children attending PSE in contrast to 75% reported in NIPCCD (three decades appraisal)³. Ehtisham Ahmad et al⁴ from Aligarh UP reported (34.52%) children received PSE, which is again high as compared to observed in present study.

However as per AWC records maximum were attending PSE in Baramulla 329 (81.6%) followed by Srinagar 165 (46.9%) & Anantnag 113 (24.2%) while as maximum preschool children attending PSE were observed on the day of visit in Baramulla 26 (6.5%) followed by Anantnag 15(3.2%) of Srinagar 11(3.1%) although the difference between districts was found significant.

In his study, Samridhi Arora et al⁵ from university of Jammu found that AWWs use two-way interaction method in which they jointly sit with children, sing songs & recite poems. Activities like identification of objects, finding missing objects also observed in centers which were not part of present study. The major reason for low attendance for PSE as observed in present study are lack of proper preschool materials like toys, drawing/painting material, story books etc., which are important for gaining interest & for mental and social development. Only 4-5 charts & magnetic alpha-numerical charts were available in most of AWCs but these were not sufficient for providing PSE.

AWWs were not trained properly for conducting pre-school education as they did not undergo any trainings/refresher courses on periodic basis. However, in Srinagar most of AWCs were not having enough indoor/outdoor space for conducting PSE activities. Some children were going to other private schools & crèches.

Preschool education activities were observed in total of 14(15.7%) AWCs out of 89 operating AWCs on the day of visit.

Children were engaged in indoor PSE activities in 5 (5.6%) AWCs & Story telling were observed in 5 (5.6%) AWCs & children were engaged in outdoor games in 1 (1.1%) AWCs only.

Singing activities were observed in 3 AWCs. It was evident from present study that children were not involved in activities like painting, drawing, counting & matching colors which are related to eye hand co-ordination in present study. Aijaz, 1987⁽⁶⁾ observed in his study that most common activities organized at AWCs are morning prayers & free conversation, which were not at all observed in present study; they also observed that lack of teaching aids & play material are considered as major constraints in organizing PSE successfully which is also observed in the present study.

CONCLUSIONS

A considerable proportion of AWCs do not open and function at all. Most of AWCs that open and function do not provide pre-school education.

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A Study of Prescribing Pattern in Type-2 Diabetics with Co-Existing Hypertension

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ABSTRACT

Background and objectives: Diabetes mellitus and Hypertension are closely interlinked to an extent that they can be seen as a cause and effect of each other. Diabetes mellitus with hypertension requires lifelong treatment and needs care while choosing drugs. This study attempts to analyze the prescription pattern of type-2 diabetes mellitus with co-existing hypertension in a tertiary care hospital and give feedback to the prescribers so as to improve quality of healthcare.

Aim: To analyze the prescription pattern in type-2 diabetes mellitus with co-existing hypertension.

Settings and design: A prospective, observational study in medicine department at Victoria hospital with the study population of 160.

Method and material: Prescription given by physicians for patients with type-2 diabetes mellitus and co-existing hypertension were collected and analyzed

Statistical analysis used: Descriptive statistical analysis has been carried out in the present study.

Results: Of the total 160 prescriptions studied, anti-diabetic class of drugs were prescribed in the descending order Biguanides (79.4%), Sulfonylureas (76.3%), Insulin (25%), Alpha glucosidase inhibitors (13%) and Thiazolidinediones (11.9%). Among biguanides metformin was the only drug prescribed and among sulfonylureas glibenclamide was most commonly prescribed. Sulfonylurea plus metformin was the most common drug combination prescribed. Anti-hypertensive drug classes were prescribed in the following descending order, CCBs (41.3%), ACE inhibitors (37.5%), ARBs (18.8%), Beta blockers (17.5%), Diuretics (5.6%) and Alpha blockers (0.6%). Among CCBs, amlodipine and among ACE inhibitor, enalapril were most commonly prescribed. Polypharmacy was seen in 29.4% of the study population. 28.1% of drugs were prescribed by generic name and 71.9% by brand name.

Conclusion: Upon overall analysis it was found that, in the study population biguanides were the most common antidiabetic drugs and CCBs were the most common antihypertensive drugs prescribed. There is polypharmacy seen which needs to be curbed. Use of rational drug combinations needs to be promoted. The present prescribing pattern can be improved by advocating rational drug prescribing, patient education and improving hospitals.

Keywords: Diabetes Mellitus; Hypertension; Prescription Pattern

INTRODUCTION

A changing life style in developing countries like India has enormously increased the burden of chronic diseases like diabetes mellitus, and the presence of hypertension complicates the therapy. Recent studies

of WHO revealed that approximately more than 346 million people have diabetes mellitus worldwide.¹ India leads the world with largest number of diabetic subjects earning the dubious distinction of being termed as “diabetes capital of world”. The number of

people with diabetes mellitus in India are 40.9 million, is set to rise to 69.9 million by 2025.² Globally 50% of the people with diabetes mellitus have co-existing hypertension.

Diabetes mellitus with hypertension requires lifelong treatment and needs care while choosing drugs. There is a wide range of drugs to choose from for the treatment of these conditions and more and more drugs are being made available. The choice of drugs made for these chronic conditions is a matter of interest and concern, especially when these two conditions co-exist.

In a tertiary care centre, prescribing is expected to be judicious, appropriate, safe, effective and economical. Periodic evaluation of drug utilization patterns need to be done to enable suitable modifications in prescription of drugs to increase the therapeutic benefit and decrease the adverse effects.³ Prescription pattern studies are powerful exploratory tools to ascertain the role of drugs in society. They create a sound sociomedical and health economic basis for health care decision making.⁴ Rational prescribing forms the corner stone of successful implementation of rational drug use.⁵

This study attempts to analyze the use of evidence based medicine in a tertiary care hospital, and also give feedback to the prescribers so as to improve quality of healthcare. The results of this study will enable us to compare the data with other studies done at different levels and throw light on emerging trends. This would also aid in the process of planning, supply and distribution of drugs in the hospital.

OBJECTIVES

To analyze the prescription pattern in type-2 diabetes mellitus with co-existing hypertension.

METHODOLOGY

Materials & Method

Patients with type-2 diabetes mellitus with co-existing hypertension attending medicine outpatient and inpatient department, and diabetic clinic in Victoria Hospital who met the inclusion criteria and who gave informed consent were considered for the study.

It's a non-interventional, observational, descriptive study for a period of 1 year 6 months (Jan 2010-June 2011) with a study population of 160.

Statistical analysis: Descriptive statistical analysis has been carried out in the present study. Results on continuous measurements are presented on Mean \pm SD (Min-Max) and results on categorical measurements are presented in Number (%).

Statistical software: The Statistical software namely SPSS 15.0, and R environment ver.2.11.1 were used for the analysis of the data and Microsoft word and Excel have been used to generate graphs, tables etc.

CONDUCT OF THE STUDY

After obtaining clearance and approval from the institutional ethical committee, Prescription given by the physician to patients with type-2 diabetes mellitus and co-existing hypertension (with or without associated chronic complications) were collected and analysis was done using descriptive statistics.

RESULTS

Total 160 case records were collected and were analyzed for epidemiologic profile, disease spectrum and drug prescription patterns.

The mean age of the study population was 54.99 + 6.65 years (table 1). Out of 160 patients studied, 51.3% were male and 48.8% were female.

Mean duration of type-2 diabetes mellitus in the study population was 7.77+ 4.64 years and mean duration of hypertension in the study population was 6.71+4.27 years. The most common diabetic complication in the study population was diabetic peripheral neuropathy (table 2).

Antidiabetic class of drugs were prescribed in the descending order Biguanides (79.4%), Sulfonylureas (76.3%), Insulin (25%), Alpha glucosidase inhibitors (13%) and Thiazolidinediones (11.9%). Individual antidiabetic drugs were prescribed as shown in the table 3.

In the study population, 82.9% of oral antidiabetic drugs were prescribed as single drug formulation and where as 17.1% were prescribed as combination drug formulation. The most common 2-drug combination prescribed was glimepiride with metformin.

25% of the study population was prescribed insulin, out of which short acting insulin being 14.4% and intermediate acting insulin being 10.6%. Long acting insulin like Glargine was not prescribed may be because of cost factor.

Antihypertensive drug classes prescribed in the following descending order, CCBs (41.3%), ACE inhibitors (37.5%), ARBs (18.8%), Beta blockers (17.5%), Diuretics (5.6%) and Alpha blockers (0.6%). Individual antihypertensive drugs were prescribed as shown in the table 4.

Among the prescribed anti-hypertensive drugs, 94.5% were of single formulation and where 5.5% were combination drug formulation. Among combination drug formulation, Telmisartan with Hydrochlorothiazide was the most common combination prescribed.

Drugs for other co-morbid conditions were prescribed in the following descending order : Vitamins and Miscellaneous (41.2% each), Hypolipidemics (38.9%), H2 blockers/PPI (37.5%), Antiplatelets (25.6%) and Antibiotics (18.8%).

Prescribing indicators

Polypharmacy(5 or more than 5 drugs) was seen in 29.4 % of study population. Average number of drugs per prescription was 4.86. It was found that 71.9% of the drugs were prescribed by brand name and 28.1 % of the drugs were prescribed by generic name. In the study population 47.82% of the prescribed variety of drugs were from EDL and 52.18 % of the drugs were not from EDL (summary of prescribing indicators presented in table 5).

Table 1: Age distribution of patients studied

Age in years	Number of patients	%
40-45	20	12.5
46-50	34	21.3
51-55	26	16.3
56-60	43	26.8
61-65	33	20.6
66-70	4	2.5
Total	160	100.0

Mean \pm SD: 54.99 \pm 6.65

Table 2: Prevalence of diabetic complications among study population

Complications	Number of patients (n=160)	%
Diabetic retinopathy	32	20.0
Diabetic nephropathy	8	5.0
Diabetic peripheral neuropathy	46	28.8
Gastroparesis	9	5.6
Diabetic foot	8	5.0
IHD	19	11.8
Stroke /CVA	4	2.5
Without complications	34	21.25

Table 3: Individual antidiabetic drugs prescribed

Antidiabetic drugs	Number of patients (n=160)	%
1. Metformin	127	79.4
2. Glimepiride	43	26.9
3. Gliclazide	19	11.9
4. Glipizide	12	7.5
5. Glibenclamide	48	30.0
6. Insulin	40	25.0
7. Acarbose	2	1.3
8. Voglibose	19	11.9
9. Pioglitazone	19	11.9

Table 4: Individual antihypertensive drugs prescribed

Antihypertensive drugs	Number of patients (n=160)	%
1. Prazosin	1	0.6
2. Atenolol	20	12.5
3. Metoprolol	9	5.6
4. Nebivolol	1	0.6
5. Enalapril	37	23.1
6. Ramipril	21	13.1
7. Losartan	17	10.6
8. Telmisartan	11	6.9
9. Olmesartan	2	1.3
10. Nifedipine	1	0.6
11. Amlodipine	65	40.6
12. Hydrochlorothiazide	10	6.3

Table 5: Prescribing indicators

Indicators	Data
Average number of drugs per encounter	4.86
Percentage of drugs prescribed by generic name	28.1%
Percentage of drugs prescribed from essential drug list	47.82%
Percentage of encounters with injections	26.8%
Percentage of encounters with antibiotics	18.7%

DISCUSSION

In the present study, 51.3% of the study subjects were male and 48.8% were female. The present study revealed that 59.4% of the study subjects were from low socio-economic status and 40.6% were from middle class. In our study none of them were from high socio economic status. This could be because it was done in a government tertiary care center.

The data of the present study revealed that mean duration of the disease under study was 7.77 \pm 4.644 years and the most common diabetic complication was diabetic peripheral neuropathy(28.8%).

In our study population the most common

antidiabetic class of drug prescribed was biguanides (79.4%). Among biguanides, metformin was the only biguanide prescribed. These results are consistent with findings in previous study by Cheng SF which showed that metformin was the most common antidiabetic agent prescribed followed by glibenclamide.⁶This could be because metformin has beneficial effects like effective glycaemic control, weight reduction, less risk of hypoglycemia and it is economical. Among sulfonylureas, glibenclamide was most commonly prescribed and the same was found in a study by Sivasankari V and others⁷. Most of government hospitals supply glibenclamide free which has high incidence of hypoglycemic episodes, instead government organization and policy makers may consider glimepiride in place of glibenclamide as glimepiride has many advantages like low incidence of hypoglycemia and insulin sparing action.

There is rational justification for the use of combination drug formulations because blood glucose control tends to be better and the risk of side effects owing to use of maximal dose of mono therapeutic agent is reduced. Combination of metformin (which reduces hepatic glucose production and improves insulin resistance) with a sulfonylurea (which stimulates insulin secretion) is the rational combination for counteracting the two defects seen in type-2 diabetes mellitus.⁸ In our study, glimepiride with metformin combination was most commonly prescribed. This finding is consistent with the study by Nandy M and others which also showed that Metformin with glimepiride was the most common 2 drug combination prescribed.⁹

In our study, 25% of them were on insulin therapy and 75% on oral anti-diabetic agents. In another study it was found that insulin was prescribed as monotherapy to 81% patients during hospital stay and to 56% patients at the time of discharge.¹⁰ In general, there are several limitations for prescribing insulin in our set-up. The major problems are the cost, difficulty in injecting the drugs, risk of hypoglycemia. Only short and intermediate acting insulin preparations were prescribed. No long acting insulin preparations like glargine was prescribed. This could be because of the cost factor.

Among the antihypertensive agents prescribed, CCBs (41.3%) were the most commonly prescribed of which, amlodipine was most commonly prescribed. In contrast, a study by Dhanaraj E and others showed that prescription of antihypertensive medication was

consistent with guidelines as significantly high use of ACE inhibitors with low dose of diuretics was found and initial choice of monotherapy was ACE inhibitors / ARBs.¹¹ CCBs have very less or no metabolic effects which is beneficial for diabetic hypertensive patients and also it is cheap. These could be the reasons for it to be the most commonly prescribed drug. This prescribing practice differs from current guidelines for hypertension management in diabetes mellitus by JNC-7 and ADA which recommend the use of either ACE inhibitor or ARB which effectively control blood pressure and also have renoprotective action with no metabolic adverse effects. Hence more emphasis should be given on adhering to current guidelines for the benefit of patients in tertiary care hospital. The most common combined drug formulation was telmisartan with hydrochlorothiazide. This combination is a logical step because numerous previous studies have demonstrated that sodium depletion enhances the antihypertensive efficacy of drugs interfering with RAS. Several studies have now demonstrated that the FDC of telmisartan with hydrochlorothiazide is superior in lowering blood pressure than either telmisartan or hydrochlorothiazide alone. Hence use of this rational drug combination must be enhanced.

Many studies have demonstrated the need to prevent complications not just with tight glycaemic control, but also control of other factors associated with increased risk of cardiovascular complications like CAD and Hyperlipidemia. Lipid lowering drugs were prescribed to 38.9% of the study population. Evidence now exists about the benefit of statins in reducing cardiovascular events in diabetic patients independent of lipid levels.¹²

Prescribing indicators

Average number of drugs per prescription was 4.86 which is relatively more compared to a previous study where it was 1.95.¹³The probable reason for prescribing more drugs in diabetic hypertensive patients could be because diabetes mellitus and hypertension are chronic diseases usually associated with other co-morbidities like hyperlipidemia, CAD etc and for the better management of these conditions more drugs may be needed.

Polypharmacy was seen in 29.4% of the study population which needs to be taken care of to minimize the ill effects of polypharmacy like drug interactions, unwanted side effects and economic burden on patients. Polypharmacy also contributes for non-compliance in patients.

Prescription by generic name (28.1%) and prescription of drugs from WHO essential drug list (47.82%) were low compared to a study done previously by L. Sutharson which showed that prescription by generic name was 74.38%,¹³ which is not a good indicator of rational prescription. It was observed that inclination to brand name prescribing was more. Provision of drugs in their generic name, prescribing from EDL and rational drug prescribing of drugs are recognized measures that can considerably reduce cost of the drugs to patients without a fall in treatment standards towards attaining optimal control of diabetes and hypertension. However large number of drugs which are commonly used for treatment of type-2 diabetes mellitus and hypertension are not represented in WHO essential drug list and revision of the drug list should be taken up as a matter of priority.

The frequency of use of injectables in our study was 26.8%. With the expenditure on disposable syringes and needles, prescribing more injections add to the cost of drug treatment and increase the economic burden on patients.

The frequency of use of antibiotics was 18.7%. This could be because diabetic patients are prone for infections.

Limitations: Measurement of drug consumption, estimation of cost of therapy was not done in this study as it was done in a government set up, most of the drugs were supplied free of cost. ADR monitoring could not be done because of poor patient co-operation and lack of awareness among them to report any ADR.

CONCLUSION

Upon overall analysis it was found that, in the study population biguanides were the most common antidiabetic drugs and CCBs were the most common antihypertensive drugs prescribed. There is polypharmacy seen which needs to be curbed. Use of rational drug combinations, prescribing drugs in their generic name and prescribing drugs from EDL needs to be promoted. The present prescribing pattern can be improved by advocating rational drug prescribing, patient education and improving hospitals.

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Cerebral Venous Thrombosis in Adults: An Experience from a Tertiary Teaching Hospital in Dharwad, Karnataka

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ABSTRACT

Background and objectives: Cerebral venous thrombosis is not an uncommon cause of stroke in our country, especially in the young. The symptoms and clinical course are highly variable. Because of its diverse presentation and unpredictable clinical outcome, it remains diagnostic challenge for treating Physicians/neurologists. With increasing awareness of this entity and easily accessible advanced neuroimaging techniques like magnetic resonance imaging (MRI) and magnetic resonance venogram (MRV), cerebral venous thrombosis (CVT) cases are now being diagnosed more frequently such that it occurs more commonly than previously assumed. CVT is more common in under developed countries and is one most common cause of stroke in young in India. Though several studies were done in India and elsewhere on CVT, it has not been extensively studied of late. The objective of the study is to study the clinical profile of CVT.

Method: 50 consecutive patients admitted in medicine wards at SDM College of medical sciences and hospital, Dharwad between April 2009 and March 2010 with radiologically confirmed diagnosis of CVT were included into the study. Detailed history, clinical examination, laboratory investigations were carried out in all the cases.

Results: Out of the 50 patients of CVT studied, 21 were males and 29 were females. Maximum incidence was seen in 21-30 age group comprising 54% of the cases with mean age being 29.52 years. 2/3rd of the patients belong to low socioeconomic class. Majority of them had sub acute presentation with headache in 66%, followed by convulsions (56%) and altered sensorium (46%) being the most common presenting symptoms. Radiologically the most common finding noted was haemorrhagic infarction (56%), followed by nonhaemorrhagic infarction (44%). The most common sinuses to be involved were superior saggital sinus (76%) followed by transverse sinus (38%). The most common risk factors identified were postpartum and anaemia in females, where as in males they were dehydration and alcohol. Mortality was 8% in the present study.

Conclusions: Cerebral venous sinus thrombosis is a challenging condition because of its variability of clinical symptoms and signs. A high index of clinical suspicion is needed to diagnose CVT. Because of the availability of advanced neuroimaging techniques now, CVT is being more readily recognized in both sexes and in all age groups. Apart from postpartum, dehydrated and alcoholic individuals are at high risk for developing CVT. Magnetic resonance imaging with venography is the diagnostic modality of choice in suspected individuals. When the acute stage of illness has been survived, CVT has a good prognosis unlike arterial ischemic stroke.

Keywords: Cerebral Venous Thrombosis, Postpartum, Neuroimaging

INTRODUCTION

Thrombosis of the cerebral veins and sinuses is a distinct cerebrovascular disorder that, unlike arterial stroke, most often affects young adults and children¹. Cerebral venous thrombosis (CVT) is an under

diagnosed condition and less frequent than arterial thrombosis^{2,3}. Cerebral venous sinus thrombosis is an uncommon condition, which over the past 10 years has been diagnosed more frequently due to greater awareness and the availability of better non-invasive

diagnostic techniques. Because of the generally good prognosis and variable clinical signs, many cases remain clinically undetected but some patients suffer complications and die^{4,5}. All age groups can be affected⁶ and has a predilection for younger individuals, particularly women of childbearing age⁷. Magnetic resonance imaging with venography is the investigation of choice^{9, 10}; computed tomography alone will miss a significant number of cases. A high index of clinical suspicion is needed to diagnose this uncommon condition so that appropriate treatment can be initiated. The purpose of the present study is to describe the clinical features, aetiologies, diagnosis and prognosis of CVT.

Materials and methods: 50 consecutive patients admitted in medicine wards at SDM College of medical sciences and hospital, Dharwad between April 2009 and March 2010 with radiologically confirmed diagnosis of CVT were included into the study. Detailed history, clinical examination, laboratory investigations mentioned below were carried out in all the cases and followed until discharge from the hospital or death. The results were analyzed and descriptive statistics was used.

Exclusion criteria

- 1) Computed tomogram (CT) scan inconclusive of CVT
- 2) Hypertensive haemorrhage
- 3) Arterial stroke
- 4) Metabolic encephalopathies
- 5) Space occupying lesions

Data was collected by using proforma meeting the objectives of the study. Purpose of the study was carefully explained to the patients and informed consent was taken.

Investigations: Complete haemogram, blood urea, serum creatinine, serum electrolytes like sodium, potassium and chloride, urine routine, electrocardiography, chest x-ray, ocular fundoscopy, cerebrospinal fluid analysis and CT scan/ MRI + MRV were done. In relevant cases specifically indicated coagulation prolife, serum homocysteine levels, antinuclear antibody (ANA), rheumatoid (RA) factor, antiphospholipid antibodies (APLA) were done.

Statistical methods: The results were analysed by calculating percentages, the mean values, standard deviation.

Statistical software: The statistical software namely SPSS 15.0, STATA 8.0, MEDCALC 9.0.1 and SYSTAT 11.0 were used for the analysis of the data and Microsoft word and excel have been used to generate the graphs and tables.

RESULTS

Out of 50 patients of CVT studied, 21 were males and 29 were females. Females are more commonly affected than males with male: female (M: F):: 1: 1.38. The age of patients varied from 18 – 50 years. Maximum incidence was seen in 21-30 age group comprising 54% of the cases, with mean age being 29.52 years. Majority of the patients were illiterates (60%).

Table 1: Age and sex distribution

Age in years	Male		Female		Combined	
	No	% among males	No	% among females	No	%
≤ 20	0	0.0	4	13.84	04	8.0
21 - 30	9	42.65	18	62.06	27	54.0
31 - 40	9	42.65	6	20.68	15	30.0
> 40	3	14.70	1	3.42	04	8.0
Total	21	100.0	29	100.0	50	100.0

Socioeconomic status of study population was assessed based on modified Kuppaswami’s scale. Class I taken as high class, class II and class III taken as middle class, and class IV and class V taken as low

class. In present study 64% patients came from low class followed middle class (26%) and high class (10%) respectively.

Table 2: Symptomatology

Symptoms	No of patients	%
Headache	33	66.0
Convulsions	28	56.0
Altered sensorium	23	46.0
Vomiting	18	36.0
Focal deficits	16	32.0
Fever	14	28.0

Mode of onset in the present study was classified into acute onset – those presented within 24 hours, sub acute onset- those presented after 48 hours but < 30 days and chronic onset –onset more than 30 days . Majority of the patients had sub acute presentation (68%) with headache in 66% followed by convulsions (56%) and altered sensorium (46%) being the most common presenting symptoms. All the cases in the present study showed varying degree of consciousness. Among them, 54% were found conscious at the time of admission. 26% were found drowsy followed by stuporous (12%) and comatose (8%).

Table 3: Neuroimaging (CT/MRI+MRV) findings

Findings	No of patients	%
Edema	25	50
Mass effect	13	26
Midline shift	05	10
Bilateral infarct	09	18
Haemorrhagic infarct	28	56
Non haemorrhagic infarct	22	44

The most common neuroimaging finding noted was haemorrhagic infarction (56%), followed by non-haemorrhagic infarction (44%). Cerebral edema was observed in 50% of studied population. Superior sagittal sinus was the commonest sinus to be involved in the present study accounting for 76%, followed by transverse sinus (38%) and sigmoid sinus (34%).

Table 4: Causes of CVT

Cause	No of pts (%)
Dehydration	09 (18%)
Infective	05 (10%)
Hyperhomocysteinemia	03 (6%)
OCP induced	02 (4%)
Protein C & Protein S deficiency	01 (2%)
Puerperal	22 (44%)
OCP + hyperhomocysteinemia	01 (2%)
No cause found	07 (14%)
Total	50 (100%)

Out of the fifty patients, postpartum CVT was the most common, seen in 22 patients (44%). The second most common was dehydration (09 pts, 18%), followed by infective CVT [5 pts (10%)- sinusitis (1), CSOM + myringitis (2), meningitis (1), orbital cellulitis + mucormycosis (1)], hyperhomocysteinemia (3 pts, 6%), OCP induced (2 pts, 4%), OCP + hyperhomocysteinemia (1 pt, 2%), protein C & protein S deficiency (1 pt, 2%) and no cause was found in 7 pts (14%).

DISCUSSION

Cerebral venous sinus thrombosis is a challenging condition because of its variability of clinical symptoms and signs. Over the past 5 to 10 years it has been diagnosed more frequently due to greater awareness and the availability of better non-invasive diagnostic techniques. Because of the generally good prognosis and variable clinical signs, many cases remain clinically undetected⁴. CVT is slightly more common in women, particularly in the age group 20–35, due to pregnancy, puerperium and oral contraceptive use⁵. Though several studies were done in India and elsewhere on CVT, it has not been extensively studied of late. 50 consecutive cases with a radiologically confirmed diagnosis of CVT were included into the study. The observations are compared with the studies done by others on the same subject.

In our study of 50 patients, maximum numbers of cases (84%) were seen in the age group of 21-40 years. This correlates well with a similar study by Mehta et.al¹¹ (77.8%) and Ameri et.al⁷ (61%). Mean age of onset in the present study was 29.5 years which is comparable with Daif et.al¹² study (27.8 years). While study done by Nagaraja D et.al¹³ showed mean age was 24.2 years. This can be attributed to peripartum being very common cause in their study (200 out of 230 cases were puerperal CVT).

Females are more affected than males in the present study with M: F:: 1:1.38. This is comparable to a similar study done by Mehta SR et.al¹¹ (M:F ::1:1.4). Because of easy accessible advanced neuroimaging techniques like magnetic resonance imaging (MRI) and MR venogram, employed by our study it has enabled us a better and correct sex ratio.

Majority of the patients in the present study were illiterates (60%). This may be due to unhygienic health practices like home delivery, local traditional practice

of water restriction in the peripartum period, etc. more common among illiterates. M Alexander et al¹⁴ in their study suggested possible role of fluid restriction practice in the causation of CVT and also they noticed that although, this traditional practice is followed even in the hot summer months, there was no increase in the incidence of CVT in the summer months.

Majority of the patients in the present study were in low socio-economic group. This is because the hospital where the study was conducted provides services to the socio-economic deprived persons. Prakash C et al¹⁵ in their study mentions that reasons for its frequent occurrence in socioeconomically backward persons especially of Indian origin need to be researched.

Headache (66%) was the most common symptom noted. Apart from headache, convulsions (56%), followed by altered sensorium (46%). This is comparable to a similar study done by Kumar S et al¹⁶ (headache-66%, seizures-67%).

In the present study, CVT was commonly seen in peripartum period (44%). The experience of other authors from India had been similar like Neki NS et al¹⁷ had found 62% of cases of CVT in postpartum period but Nagaraja et al¹³ had found that 200 out of 230 cases (86%) of CVT, seen over eight years, were puerperal in nature. Dehydration was second most common cause noticed. Interesting all these patients were males and alcoholic and had secondary polycythemia (Hb e" 16 gm %). No cause was identified in 14% of cases. Gates PC¹⁸ and Ameri A⁷ in their study noticed that in 20-30% patients of CVT, no underlying cause was found in spite extensive workup, indicating need for close follow up.

The most common neuroimaging finding was haemorrhagic infraction (56%), followed by non-haemorrhagic infraction (44%). Nagaraja et al¹³ noted hemorrhagic infraction in 40.9% and non hemorrhagic infraction in 51.6%. Dixit et al study reported hemorrhagic infraction in 48.4% and non hemorrhagic infraction in 32.3%.

Superior saggital sinus was the commonest sinus to be involved in the present study accounting for 76%, followed by transverse sinus (38%) and sigmoid sinus (34%). This correlates well with Ameri et al⁷ study (superior saggital sinus- 72%, transverse + sigmoid sinus- 70%).

Compared to arterial stroke, CVT has favourable outcome. Overall mortality in the present study was 12% (8%- expired and 4%- discharged against medical advice). This is comparable with Strolz E et al¹⁹ study (15%). Nagaraja et al¹³ (n=200, 21.7%), Srinivasan et al²⁰ (n=138, 25.9%) and Bansal et al²¹ (n=135, 27.5%) have observed slightly higher percentage of mortality. This is probably because these studies involved more number of patients.

Conclusions: Cerebral venous sinus thrombosis is a challenging condition because of its variability of clinical symptoms and signs. A high index of clinical suspicion is needed to diagnose CVT. Because of the availability of advanced neuroimaging techniques now, CVT is being more readily recognized in both sexes and in all age groups. Apart from postpartum, dehydrated and alcoholic individuals are at high risk for developing CVT. Magnetic resonance imaging with venography is the diagnostic modality of choice in suspected individuals. When the acute stage of illness has been survived, CVT has a good prognosis unlike arterial ischemic stroke.

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Home Remedies for Toothaches-Myths and Consequences

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ABSTRACT

Acute toothaches should be examined by a dentist as soon as possible, since they may be signs of more serious conditions. The average toothache causes discomfort and pain. It may be of short duration and often lasts for only a few minutes or hours. Because they are transient, most people do not seek medical treatment for mild toothaches. Rather, they treat them with over-the-counter medications and simple home remedies, in spite of their consequences.

We conducted a survey regarding the awareness and a few of the most popular home remedies for toothaches used by general population in Nashik.

Keywords: Home-remedies, Myths, Consequences

INTRODUCTION

Toothache is an ailment that can make life miserable...

Due to the intense and unbearable pain patients won't be able to sleep, eat, drink or even draw in cold air through the mouth because of the tender tooth!

For the same, various treatment modalities are available such as pharmacotherapy, complementary / alternative therapies. The World Health Organization has identified oral health as a neglected area of general health. In developing countries, like India, there is low awareness of the importance of oral health care. Also as we are having a rich traditional background; home remedy may serve as *Toothache first aid*.

By keeping these things in mind, the survey was carried out with the following objectives:

1. To find out the most popular home remedies of toothache used by general population in Nashik.
2. To assess the awareness of myths and consequences of these remedies.
3. To evaluate the overall awareness about the dental care and public approach towards it.

MATERIAL AND METHOD

200 survey questionnaires were distributed randomly in the college OPD. The information was shared regarding the use of home remedies used for toothache and dental health care awareness. The questionnaires included were with reference to:

- a) Demographics,
- b) First step done after experiencing the toothache,
- c) When did you seek the medical/dental advice,
- d) Reasons for delay in seeking the medical/dental advice,
- e) Home remedy used for the same,
- f) Benefits of the home remedy,
- g) Awareness regarding the disadvantage of the use of home remedy, if any.

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FINDINGS

Most of the respondents were adult males from the middle class family background. First step done after experiencing the toothache by the patients was the use of home remedy (49%), over the counter medications (22%), visit to general practitioner (16%) and visit to dentist (12%) as shown in table 1 below:

Table 1. First Step Done After Experiencing the Toothache by the Patients

Remedy	Number of Respondents	Percentage (%)
Use of home remedy	98	49.00
Use of over the counter medications	45	22.50
Visit to general practitioner	33	16.50
Visit to dentist	24	12.00

92 % patients seek the dental advice for toothache after unbearable and repetitive pain. Reasons for delay to take the dental advice were lack of time and laziness (58%), cost (20%) and fear of the dental treatment (12%), as shown in table 2. 82% patients experienced temporary relief by the use of home remedies. 90% respondents had awareness regarding the disadvantage of the use of home remedy, Only 4% among those who answered yes, knew the disadvantage of the same!

Table 2. Reasons for Delay to Take the Dental Advice

Resons	Number of Respondents	Percentage (%)
Lack of time and laziness	116	58
Cost of the treatment	40	20
Fear of the dental treatment	24	12
Other	20	10

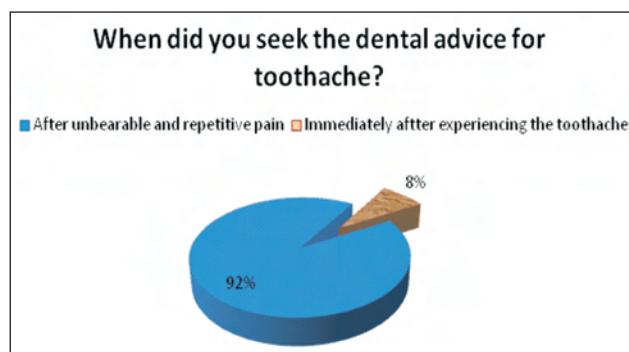


Table 3. Most Commonly Used Home Remedies

Remedy Used	Number of Respondents	Percentage (%)
Salt water	28	14
Balm	36	18
Camphor	24	12
Tobacco	10	5
Lime	8	4
Herbal remedies	22	11
Other	32	16

REMEDIAL AGENT	MYTH/ EFFECT	FACT (SCIENTIFIC BASIS)	CONSEQUENCE
Clove, Clove oil	Relieves pain	Antiseptic and anesthetic	Burning or irritation of oral mucosa
Turmeric	Relieves pain	Anti-bacterial and anti-inflammatory	-
Garlic	Relieves pain	Antibacterial and anti-inflammatory effect	Quite strong, cause irritation to mucosa-burning sensation
Ginger or Red pepper, Camphor	Numb the area	Counterirritant	Strong taste and cause irritation to mucosa
Warm salt water	Soothing effect and relaxant	Antibacterial	-
Ice cube	Reduces the swelling and pain	Acts by overwhelming the pain impulses that usually travel along the nerve pathways	-
Herbal-Miswak, Neem, Tulsi, Guava leaves	Soothing effect and Relaxant	Antimicrobial	-
Tobacco, lime	Soothing effect and Relaxant	Astringent	Chemical burn, Carcinogenic
Hot fomentation, Balm application, Whisky/any other liquor, kerosene -dipped cotton pellet	Reduces the discomfort	?	Swelling Raise blood pressure level Addiction?

The use of plants and herbs for healing purposes goes back to ancient times, in Ayurveda, over 5,000 years back... Home remedies are made at home, hence less expensive than other forms of medicine. Being harmless in comparison to other forms of medicines, they rarely cause side effects. They provide temporary relief from the toothache, but few of them might worsen the situation. They can be used in certain conditions- for those who cannot turn to pharmaceutical products, or those suffering a toothache during pregnancy, for children for some quick relief. They are used in some dental products like Toothpastes, Mouthwashes, Dental cements, Gumpaints, Obtundants etc.

Most of the times, people hesitate to visit the dentist because of the high costs and the discomfort/fear of the most dental treatments. But being health care personnel we should convince them that it is unavoidable and delaying treatment with ineffective remedies or simply neglecting it can only cause the problem by making it even more expensive and invasive.

CONCLUSION

Results of our survey revealed that, there is an overall lack of knowledge and understanding amongst general population in relation to home remedies used

for toothache and dental care. Home remedies simply treat the symptoms, to reduce discomfort and pain. Though cannot be used as substitute for dental treatment, few of them do have some scientific basis and we use them in dental products.

For their proper utilization, the important scientific basis behind the above mentioned remedial agents should be taken into consideration. Further clinical trials are required for their appropriate use in certain dental products on commercial basis.

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A Study of Unwanted Pregnancy and Knowledge of Emergency Contraception in Currently Pregnant Women in Bangalore Rural

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ABSTRACT

Background: Unwanted Pregnancy is a pregnancy that pregnant woman or girl decides, of her own free will, is undesired. A major reason for unwanted pregnancy is the shortcomings of contraceptives and family planning delivery systems. Emergency Contraception occupies a unique position in the range of family planning methods currently available to women, as it averts unplanned and unintended pregnancies, which, in turn, reduces unsafe abortion.

Objectives: 1. To determine the proportion of unwanted pregnancy among the currently pregnant women. 2. To identify the social, economic, and contraceptive use factors leading to unwanted pregnancies. 3. To study the abortion seeking behaviour among the women having unwanted pregnancy. 4. To assess the knowledge of emergency contraception in the study group.

Method: The study was conducted in urban health centre of a tertiary care hospital. All the currently pregnant women attending the ANC clinic during the study period from September 2011 to November 2011 were included in the study. Total 104 currently pregnant women were interviewed by a well designed pretested questionnaire. The data was analyzed by percentages and chi-square test.

Results: In the study group, 22(21.15%) women reported the pregnancy as unwanted. There were 2(9.09%) unmarried women with unwanted pregnancy. Among the women with unwanted pregnancy, 20 (90.91%) women wanted to abort the pregnancy. There were only 17 (16.35%) women having knowledge of emergency contraception.

Interpretation and conclusions: Unwanted pregnancy was reported more in women who were married below the age of 18 yrs. As the duration of marriage and parity increases the reporting of unwanted pregnancies also increased. ($p < 0.0001$) The knowledge of emergency contraception was reported more in graduates. ($p < 0.0001$)

Keywords: Unwanted Pregnancy, Emergency Contraception, Currently Pregnant, Family Planning

INTRODUCTION

In India abortion has been legal for over 30 years following the enactment of the Medical Termination of Pregnancy (MTP) Act in 1971. The role of the family

planning programme in India has been transformed by shifting from being merely one providing contraceptives to one which is more integrated - providing safe abortion services, helping couples restrict ill-timed and unwanted pregnancies and thereby controlling levels of maternal mortality.¹

Unwanted Pregnancy is a pregnancy that pregnant woman or girl decides, of her own free will, is undesired. Most commonly, pregnancies are considered unwanted when the desired number and sex of children had already been obtained or when they followed a birth or marriage too closely. Unwanted

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pregnancies also occurred as a result of pre- or extramarital sexual relations or when the couple had older children who were already parents themselves. Other reasons given for unwanted pregnancies include poverty, marital discord and the poor health of the mother. Women who have an unmet need for family planning are among those most likely to have unwanted pregnancies and, in turn, seek abortions.²

A major reason for unwanted pregnancy is the shortcomings of contraceptives and family planning delivery systems.³ The reasons for which people are not using contraception for the prevention of unwanted pregnancies include lack of access to family planning information and services, personal or religious beliefs, inadequate knowledge about the risks of pregnancy following unprotected sexual relations, women's limited decision making ability with regard to sexual relations and contraceptive use, and incest or rape. On the other hand, contraceptive methods, even the most effective ones may fail for a variety of reasons related to the technologies themselves and/or to the way they are used.⁴

Unwanted pregnancies and births can have many negative consequences, for the children themselves, their siblings, their parents, and the society as a whole. Women bear the physical, emotional and financial burdens and heartache of unwanted pregnancies. Deciding whether to carry the pregnancy to full term or to have an abortion presents a painful dilemma. A woman may not be mentally or physically prepared to bear a child. Often she must weigh serious risks to her own health and the health of her existing children against another pregnancy. The decision to have an abortion is a complex process that often involves a woman's spouse and in-laws.⁴

Many girls and women have little information with which to make these decisions. They probably know little or nothing about sexuality and reproduction. They may not know when they are fertile and when they are not. They may be unable to raise the subject of contraception with their partners and may have little influence over their own or their partner's behaviour in any case. Many women who are forbidden to use contraception by a husband or mother-in-law do not have the social support to act independently.⁵

Prevention of unwanted pregnancy and prevention and management of unsafe abortion are the key interventions for safe motherhood. Enabling women and families to choose whether, when, and how often

to have children is central to safe motherhood. The availability of family planning information and services to women, including adolescents, helps to limit pregnancies in which complications may occur. Women who have unwanted pregnancies should have ready access to reliable information and compassionate counselling, so that they can adopt an appropriate method and prevent another unwanted pregnancy.

Emergency Contraception (EC) occupies a unique position in the range of family planning methods currently available to women. EC enables women to prevent pregnancies after they have unprotected sex. Thus, it averts unplanned and unintended pregnancies, which, in turn, reduces unsafe abortion. Emergency contraceptives can help those women to fend off unwanted pregnancies and unsafe abortions.

It should be kept in mind that the reporting of ill-timed and unwanted births is subject to some biases. A birth may be reported as ill-timed depending on the possible adverse situation prevailing in the household at the time of the birth. A birth could become unwanted for its not qualifying for the desired sex composition. Therefore, not all unwanted and ill-timed births are due to contraceptive failure or the unmet need for effective contraception.¹

Aim: To find out the proportion of the unwanted pregnancy among the currently pregnant women in patients attending the ANC clinic.

OBJECTIVE

1. To determine the proportion of unwanted pregnancy among the currently pregnant women.
2. To identify the social, economic, and contraceptive use factors leading to unwanted pregnancies .
3. To study the abortion seeking behaviour among the women having unwanted pregnancy.
4. To assess the knowledge of emergency contraception in the study group.

MATERIALS AND METHOD

The study was conducted in urban health centre of a tertiary care hospital. All the currently pregnant women attending the ANC clinic during the study period from September 2011 to November 2011 were included in the study. Total 104 currently pregnant women were interviewed by a well designed pretested

questionnaire. The data was analyzed by percentages and chi-square test.

RESULTS

Among the currently 104 pregnant women interviewed, 22(21.15%) reported the pregnancy as unwanted. The socio-demographic variables of all the participants are described in table 1. There were 2(9.09%) women with unwanted pregnancy who revealed that they are unmarried.

All the respondents with unwanted pregnancy were asked about the reasons for it. There were 9 (40.90%) women who did not want another child, 5 (22.73%) women said that they cannot afford the child because of economic reasons, 2(9.09%) women were unmarried, 4 (18.18%) women reported that the pregnancy has resulted because of contraceptive failure. In 1(4.55%) woman there was a medical reason endangering mother’s health and 1 (4.55%) woman said that the pregnancy is unwanted as it is a malformed foetus.

Among 22 women with unwanted pregnancy, 20 (90.91%) women wanted to abort and only 2 (9.09%) women wanted to continue the pregnancy.

There were 4(18.18%) women having previous history of abortion and now again willing for abortion because of unwanted pregnancy. All the 20(90.91%) women who wanted to abort preferred the hospital as they thought it is safe.

Among 104 women interviewed, there were 17 (16.35%) women having knowledge of emergency contraception, however not a single woman practiced it ever.

Table I: Unwanted pregnancy and the related variables

Study Variable	Unwanted pregnancy		p Value
	Yes	Total	
Age group (yrs)			
16-18	1(08.33)	12	p>0.05
18-20	8(19.51)	41	
20-22	6(16.67)	36	
22-24	6(46.15)	13	
24-26	1(50.00)	02	
Education			
Illiterate	02(20.00)	10	p>0.05
Primary School	04 (30.77)	13	
Secondary School	12(19.35)	62	
High school	02(22.22)	09	
Graduate	02(20.00)	10	

Table I: Unwanted pregnancy and the related variables (Contd.)

Study Variable	Unwanted pregnancy		p Value
	Yes	Total	
Religion			
Hindu	16(18.60)	86	p>0.05
Muslim	05(33.33)	15	
Christian	01(33.33)	03	
Socio economic status			
Upper	04(26.67)	15	p>0.05
Upper middle	09(20.45)	44	
Lower middle	06(25.00)	24	
Upper lower	02(12.50)	16	
Lower	01(20.00)	05	
Age at marriage(yrs)*			
Less than 18	12(23.53)	51	p>0.05
18-20	07(17.07)	41	
20-22	01(10.00)	10	
Duration of marriage(Yrs)*			
0-2	01(02.13)	47	p<0.0001
2-4	11(25.58)	43	
4-6	04(66.67)	06	
6-8	04(66.67)	06	
No. of children prior to unwanted pregnancy			
0	03(06.98)	43	p<0.0001
1	05(13.51)	37	
2	11(57.89)	19	
>2	03(60.00)	05	

*Excluded 2 unmarried girls from sample

(Figures in brackets represent percentages)

Table 2: Distribution of the respondents according to the knowledge of emergency contraception and educational status.

Educational status	Knowledge of emergency contraception	
	Yes	Total
Illiterate	01(10.00)	10
Primary School	01(07.69)	13
Secondary School	05(08.06)	62
High School	03(33.33)	09
Graduate	07(70.00)	10

p<0.0001

(Figures in brackets represent percentages)

DISCUSSION

Among all the currently pregnant women, 21.15% women reported pregnancy as unwanted. Similarly, in a study by Shahina begum et al, 27% of the currently pregnant women had experienced unintended

pregnancies.⁶ These women are less likely to obtain antenatal care and also their babies are at high risk of both low birth weight and of being born prematurely.

Unwanted pregnancy was reported more in the age group of 24-26 yrs followed by 22-24 yrs. This is the age by which, usually in India women either complete their family or at least they would had one child. Similarly, in the study by Friday E. Okonofua et al ,women aged 25–34 were more likely to report an unwanted pregnancy as compared to those aged 24 years or younger .⁷

Among the women with unwanted pregnancy, all the women with different educational and socio-economic strata had more or less the same chance of unwanted pregnancy.

Unwanted pregnancy was reported more in women who were married below the age of 18 yrs. It was reported maximum (66.60%) by the women who had duration of marriage between 4-6 yrs and 6-8 yrs. As the duration of marriage increases the reporting of unwanted pregnancies also increased. ($p < 0.0001$) This shows that the women with more duration of marriage are highly vulnerable to unwanted pregnancy if they do not adopt effective contraceptive measures. This is the group which should be targeted by the country's national family programmes.

Majority (60.00%) of the women having more than 2 children reported unwanted pregnancy. As the parity increases, the reporting of unwanted pregnancies also increases. The association between unwanted pregnancy and parity was found highly significant statistically. ($p < 0.0001$) Also in a study by Gilda Sedgh et al, women with more than three live births had greater odds than nulliparous women of having had an unwanted pregnancy.⁸

On eliciting the reasons for unwanted pregnancy, most of the women said that they had already completed the family. Other reasons given were unmarried primi, contraceptive failure, economic reasons and medical grounds. Also in the study by R. Sharma et al, the main reason for unwanted pregnancies was women thought that they had completed their family (83.7%) and other reasons mentioned were inadequate spacing between the pregnancies and failure of contraceptive.⁹

Among the women with unwanted pregnancy, most (90.91%) of them were willing for abortion. In a study by Ganatra B.R. et al, about 74.1 per cent of the

pregnancies were terminated as they were unwanted.¹⁰ It indicates the vast unmet need for contraceptive services. Similarly in a study by Huntington et al, about 65 per cent of women who had an unwanted pregnancy, tried to obtain an induced abortion.¹¹

In 18.18% of the women, previous history of abortion was revealed. Also in a study by Shahina begum et al, 33.6% of the women with unwanted pregnancies had experienced abortion.⁶ This shows the lack of post abortion counselling and unmet need for contraception.

Also, there were 2 adolescent girls who were unmarried reporting unwanted pregnancy. In this conservative setting in which pregnancy among unmarried women is extremely stigmatized, such unintended pregnancies are almost always terminated. This focuses the need for adolescence sex education incorporation and implementation in current public health programmes

Only 16.35% women were aware of emergency contraception but none of them used it. The knowledge of emergency contraception was reported more in graduates. ($p < 0.0001$)

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A Rare Presentation of Posterior Duodenal Ulcer Perforation

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ABSTRACT

Perforated peptic ulcer perforation involves sudden onset of pain and exhibits sign of perforation. A posterior perforation is rare presentations and awareness of such entity is important in surgical practice. In the present case report, perforated duodenal peptic ulceration with its intestinal complication in gangrene of the Right hemi colon has been highlighted.

Keywords: Peptic Ulcer, Perforation, Lesser sac, Mesenteric Vessels

INTRODUCTION

The classical presentation in a perforated peptic ulcer involves sudden onset of epigastric pain and exhibit sign of perforation at presentation. Diagnosis of an acute abdomen can often be made on clinical grounds and erect abdominal x-ray will reveal free air below the domes of diaphragm in approximately 65 per cent cases. In rare occasions a posterior ulcer perforates into lesser sac.¹

Posterior perforations of peptic ulcers are of unique category with a rare distinct clinical presentations and awareness of this Surgical emergency is important as this is associated with high mortality and morbidity. The diagnosis is commonly missed because of indolent nature of the initial symptoms with catastrophic outcome. Hence, following case report on posterior duodenal ulcer perforation and its rare consequences is not only informative but also interesting.²

CASE REPORT

History : A 57 year old female patient admitted with history of

- Pain abdomen since 7 days.
- Distension of abdomen 5 days.
- History of fever 4 days.
- History of constipation 4 days.

Patient is known tobacco chewer since last 25 to 30 yrs. There is no history of heart burn or chest pain in the past.

Examination

An elderly female moderately built and nourished with dehydration and pallor. There was gross distension of abdomen with rigidity and obliteration of peristalsis, she is in shock and acute renal failure.

Investigations

Her hemogram was low, abnormal renal functions.

X-rays: Gas under the both domes of diaphragm and Rt. Pleural effusion.

Working Diagnosis

Perforation peritonitis with septicemic shock with renal failure and pleural effusion and anemia.

Patient was resuscitated on stabilized blood pressure and urine output involved. It was decided to take the patient for Laparotomy with high risk under epidural anesthesia.

Laparotomy Findings

- Collection of about 15 liters in peritoneal cavity bile stained and black coloured.
- To our surprise stomach and duodenum normal.

- There was gangrene of the Rt. Hemi colon.

It was decided to do the Rt hemicolectomy and ilio – transverse anastomosis.

While doing the procedure.

- The mob which was kept in the Morison pouch was getting soaked with fresh bile. On palpation of the duodenum the posterior wall was sluffed out and Ryle's tube was felt.

As an emergency procedure Cysto-jejunostomy, Anterior Gastro-Jejunostomy and Jejuno – jejunostomy was done.

Post. Operative period

- Patient was in shock and she was on isotropic drugs but responded well to our treatment.
- She had wound infection.
- She developed fecal fistula.
- There was burst abdomen.

Which were treated accordingly.

- After 15 days, the fistulas discharge was coming down. Patient was recovering well and got discharged.
- Patient had come for follow up after 3 months, without any major complications.

DISCUSSION

Peptic ulcer perforation is one of the serious complications of GIT heading to high mortality and morbidity.³ Number of cases and controversial management with high mortality and morbidity made it a subject of interest to Surgeons. In most cases the perforation is easily recognized.^{4,5} The anterior stomach ache inspected first (as these are common sites). If no perforation becomes apparent at these sites, remainder of the stomach and duodenum are inspected. In rare occasions posterior perforation occurs into the lesser sac.^{6,7}

Usually following methods of treatment have been used in treating perforated duodenal ulcer.^{1,2}

- i) Repair of the perforation
- ii) Repair of the perforation and definitive ulcer operation later.
- iii) Immediate definitive operations

- iv) Emergency vagotomy and pyloroplasty

- v) Emergency vagotomy and antrectomy

- vi) Emergency partial gastrectomy

- vii) Non – operative (Naso – gastric decompression)

- viii) Peritoneal drains

In our case the perforation was detected while dissecting the colon. The posterior duodenal perforation has caused the collection in the lesser sac. It has caused delay in the presentation and masking of symptoms. The collection got infected and might have caused the thromboembolism of the mesenteric vessels leading to right hemi colonic ischemia and gangrene.

As the situation demanded accordingly the emergency procedures were done. With review of literature we are not able to find any related articles on such complications. So, still the abdomen is a magic box and we should be prepared to face such complications.

SUMMARY

Peptic ulcer perforation is one of the most serious and commonly encountered Surgical emergency of GIT. In spite of understanding the Pathogenesis, no satisfactory 'cure' has yet been discovered and still facing the complications. In rare cases posterior ulcer perforates into the lesser sac. It is a rare, awareness of this Surgical emergency is important, as this condition is associated with high mortality and morbidity.

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A Cross-sectional Study of Domestic Violence Perpetrated by Intimate Partner Against Married Women in the Reproductive Age Group in an Urban Slum Area in Mumbai

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ABSTRACT

Background: Gender-based violence is universal, differing only in scope from one society to the other. The most common form of violence against women is domestic violence or violence within families.

Objectives: 1.To study the prevalence and different forms of domestic violence perpetrated by intimate partner against married women.2.To study socio economic and demographic factors which affect the victimization of woman for domestic violence.

Methods: Total 548 currently married women in the reproductive age group (15-45 yrs) were interviewed by systematic random sampling with prior consent using a well designed, pre- tested questionnaire . The questionnaire addressed both current and past episodes of domestic violence within one year. The data was analyzed by percentages and chi-square test.

Results: Prevalence of domestic violence was found to be 36.86% in the study group. Verbal abuse was reported by 33.21% of the women, Physical abuse by 26.82% of the women ,Psychological abuse by 12.59% of the women and Sexual abuse by 24.64% of the women. Among the 202 victimized women none of them reported to the police.

Interpretation and conclusions: The vulnerability to domestic violence was found significantly associated with age education of women and husband, employment status, duration of marriage and addiction of husband to alcohol.

Keywords: Abuse, Domestic Violence, Physical Abuse, Victimization

INTRODUCTION

The family is often equated with sanctuary ,a place where individuals seek love, safety, security and shelter. but the evidence shows that it is also a place

that imperils lives, and breeds some forms of the most drastic forms of violence perpetrated against women. Research consistently demonstrates that a woman is more likely to be injured, raped, or killed by a current or former partner than by any other person.¹

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Gender –based violence is recognized today as a major issue on the international human rights agenda. Violence against women is present in every country, cutting across the boundaries of culture, class, education, income, ethnicity and age. Even though most societies proscribe violence against women, the reality is that violations against women’s human rights

are often sanctioned under the grab of cultural practices and norms or through misinterpretations of religious tenets.¹

Domestic violence exists in 'a culture of silence. It has long been considered a 'private' affair and has contributed to the serious gap in public health policy making and the lack of appropriate programmes.

Gender power imbalances and women's limited control over resources in many settings compounds their lack of decision-making and makes them socially and economically dependent on their husbands in matters of sex and reproduction as well as in areas of health care, including care during pregnancy and child birth or at the time of abortion. It leads to far-reaching physical and psychological consequences, some with fatal outcomes.²

Domestic violence is rooted in patriarchal notions of ownership over women's bodies, sexuality, reproductive rights, mobility and levels of autonomy. deep-rooted ideas about male superiority enable men to freely exercise unlimited power over women's lives.³

In 1993, the United nations General Assembly passed the Declaration on the Elimination of Violence against women, UN Resolution 48/104.⁴

In May 1996, the 49 th World Health Assembly adopted a resolution declaring violence a public priority. in 1999, the United Nations Population Fund declared violence against women 'A Public Health Priority'.⁵

In India, Protection of women from domestic violence Act, 2005 is intended to protect women from domestic violence of any kind including dowry - related harassment. Even a threat of physical, sexual, verbal, emotional or economic abuse would attract penal action against the provision of the act.

AIM

- To study the prevalence and identify epidemiological factors influencing domestic violence perpetrated by intimate partner against married women in a rural area.

OBJECTIVES

- To study the prevalence and different forms of domestic violence perpetrated by intimate partner against married women.

- To study socio-economic and demographic factors which affect the victimization of woman for domestic violence.
- To study the treatment seeking behaviour of women in crisis situations of domestic violence.
- To suggest suitable recommendations for combating domestic violence against women.

MATERIALS AND METHOD

Study design: Cross sectional study

Study period: August 2004 to July 2005

Sample size: 548

The present study is a community based study conducted in an urban slum pocket situated in Northwest Mumbai. a semi structured questionnaire was prepared and pilot study done to evaluate the feasibility .A well designed, pre- tested questionnaire was used and a house to house survey was conducted. The questionnaire addressed both current and past episodes of domestic violence within one year. Total 548 currently married women in the reproductive age group (15-45 yrs) were interviewed by systematic random sampling with prior consent. There were 11 women who refused to give consent were excluded from the study. The data was analyzed by percentages and chi-square

FINDINGS

Out of the 548 women interviewed, 202(36.86%) women reported domestic violence. 182(33.21%) reported verbal abuse, 147(26.82%) physical abuse , 69(12.59%) psychological abuse and 135(24.64%) women reported sexual abuse .Of the 147 women victims of physical violence, 62 (42.18%) got injured at some time during violence episodes.

The frequency of violence was at least once in a week in 93(46.04%) women, once in 15 days in 62(30.69%), once in a month in 28(13.86%) and once in 1-3 months in 19(9.41%) women.

Among the victimized women, 21(10.40%) currently pregnant women had experienced physical violence during the pregnancy. There were 4(1.98%) women who attempted to commit suicide due to domestic violence. The findings have been displayed in tables as follows:

Table I : Domestic violence and the related variables

Study Variable	Domestic Violence		p Value
	Yes	Total	
Age group (yrs)			
15-25	072(41.86)	172	p<0.001
25-35	104(43.33)	240	
35-45	026(19.11)	136	
Education			
Illiterate	102(37.78)	270	p<0.05
Primary School	044(48.35)	091	
Middle School	023(22.77)	101	
High school	028(38.36)	073	
Diploma	004(44.44)	009	
Graduate	001(25.00)	004	
Socio economic status			
Upper middle	015(27.27)	055	p>0.05
Lower middle	059(34.50)	171	
Upper lower	126(39.75)	317	
Lower	002(40.00)	005	
Employment status			
Employed	047(26.26)	179	p<0.001
Unemployed	155(42.01)	369	
Age at marriage(yrs)			
Less than 18	142(38.90)	365	p>0.05
18-20	046(30.87)	149	
20-22	011(52.38)	021	
22-24	0(0)	002	
24-26	003(27.27)	011	
Duration of marriage(Yrs)			
0-5	31(27.68)	112	p<0.001
5-10	64(52.46)	122	
10-15	54(49.09)	110	
15-20	45(43.69)	103	
20-25	06(08.82)	068	
>25	02(06.06)	033	
Education of Husband			
Illiterate	65(41.14)	158	p<0.05
Primary School	46(40.35)	114	
Middle School	21(21.21)	099	
High school	63(43.15)	146	
Diploma	05(19.23)	026	
Graduate	02(40.00)	005	
Type of family			
Nuclear	165(63.22)	261	p>0.05
Joint	037(43.53)	085	
Addicted to alcohol	p<0.001		
Yes	081(72.97)	111	
No	121(27.69)	437	

*figures in brackets represents percentages

Table II: Distribution of respondents according to the help sought

After experience of violence complained to	No. of women(n=202)
Parents	61(30.20)
In-laws	27(13.37)
Relatives or neighbours	15(07.43)
Police	0
Not complained	99(49.01)

Table III: Distribution of the injured women according to the type of injury

Type of injury	No. of women (n=62)
Scratch/Bruise/Contusion	51(82.26)
Laceration	08(12.90)
Fractured or Dislocated joint	06(9.68)
Chipped or Broken tooth	03(4.84)
Head/Spinal cord injury	01(1.61)
Musculo-skeletal injury	59(95.16)
Ocular damage	01(01.61)
Abdominal or Thoracic injury	0
Burns	0

{Multiple response}

Among 62 women who had bodily injury, only 36(58.06%) received medical care. Among the 36 women who received medical care after getting injured, 4(11.11%) women were admitted in the hospital.

Table IV: Distribution of women according to their perception of causes of Violence

Women's perception of cause of violence	No. of women
Dowry demands	27(13.37)
Alcoholism of spouse	73(36.14)
Childlessness	08(03.96)
Not having male child	14(06.93)
Financial stress	128(63.37)
Suspicious nature of husband	29(14.36)
Instigation by in-laws	05(02.48)
Conflicts over domestic roles or responsibilities	32(15.84)

{Multiple response}

Out of the 202 victimized women, 121(59.90%) were not using any contraceptive method (p<0.001).

Among the 548 women, 214(39.05%) said that wife beating is justified.

DISCUSSION

Prevalence of domestic violence was found to be 36.86% in the study group. This finding is consistent with the findings of the study in Rural Karnataka by Rao V in which 22% women reported being beaten by their husbands.⁶ Also the finding is coherent with the statistics published in 1997 by WHO which states the prevalence of domestic violence in women between 20-50% of the interviewed women.⁷ Also Jeejebhoy S. found the prevalence of domestic violence against women as 42-48% in Uttar Pradesh and 36-38% in Tamilnadu.⁸

Verbal abuse was the most common form of violence followed by physical and lastly psychological violence. However sexual violence may be underreported. The reason for sexual coercion within marriage could be that marriage is interpreted as granting men the right to unconditional sexual access to their wives and the power to enforce this access through force, if necessary. In a study by Leela Visaria, 23% of the women reported psychological and physical abuse and 42% reported only psychological abuse.⁹

Also they suffered more than one type of violence. Similarly, Khan M E et al reported that violence was multiple in nature and most of the women were subjected to more than one type of violence.¹⁰

In this study, among the 147 victims of physical violence, 42.18% of the women got injured at sometime during the violence episodes. This finding is coherent with the population based studies, which suggest that 40-75% of the women who are physically abused by a partner are injured at some point in life.¹¹

Among the victimized women none of them reported to the police. In a study by Koenig M. Et al, 68% of the abused women never told any one, 30% told family members and not a single woman contacted police for help.¹² The reason for this behaviour may be that a women's response to the abuse is often limited by the options available to her. Women remain in abusive relationship because of lack of other means of economic support, concern for children, emotional dependence, lack of support from family and abiding hope that 'he will change'. At the same time denial and fear of social stigma often prevent women from reaching out for help.

Only half of the injured women received medical care. This finding is similar to the study by Rodgers K. Et al in which 43% of the women injured had to receive medical care.¹³

Among the victimized women 10.40% had experienced physical violence during pregnancy. Similarly, Campbell J.C. et al reported that 10% of the ever pregnant women had been physically assaulted during pregnancy.¹⁴

In the present study it was observed that as age increases the prevalence of domestic violence decreases. This finding is similar to the study by Anjali Dave and Gopika Solanki in which 37.2% of the victims falling within the age group of 25-34 years and 28.2% in the age group of 18-24 years have reported abuse. Only 4.9% were in the age group of 40-45 years.¹⁵ This is because in India as women grow older, they gain more power and have increased access to resources.

In the present study, reported violence declined with higher education, so higher education women.⁹ makes the women less vulnerable to domestic violence. Also, Leela Visaria reported that abusive relationship was more frequent in illiterate.

Housewives were abused more than working wives. They develop the tolerance of such violence as they do not have any other option for fulfilling their economic needs, which places them in a subordinate position as compared to their husbands.

It was observed that majority of the women suffering from domestic violence were married before 18 yrs of age. Also as the age at marriage increases the prevalence of domestic violence decreases. This finding supports the findings of the study by Mishra P K that out of the total 60 respondents who got married at the age of below 18 years, 45% were victims of domestic violence in contrast to this who were married after the age of 21 yrs, only 24.71% were the victims of domestic violence.¹⁶ From this findings it was perceived that perhaps violence against women at during the younger age is a form of socialising the young bride into the marital family.

As the duration of the marriage increases the prevalence of domestic violence decreases. These finding resonates with the findings of Leela Visaria that domestic violence was more prevalent in the women having duration of marriage between 5 to 20 yrs.⁹ It may be due to the fact that during this period addition of children in the family puts enormous demands and stresses which vent out in the form of violence.

Domestic violence was more common nuclear families. The finding is similar to the finding by Leela Visaria that 53 % of the women in joint families report

abuse compared to 73% of the women in nuclear families.⁹

The association between addiction of the husband to alcohol and vulnerability of women to domestic violence was highly significant (Odds Ratio=7.25; 95% CI 3.62-14.6). Martin S E et al found that a woman was one and a half times more likely to be injured if her partner had been drinking alcohol.¹⁷ It is seen that conflict escalates into violence more readily when alcohol has been consumed because alcohol is a psychopharmacological dis-inhibitor.

Among the victimized women, majority were not using any contraceptive methods. In a study by Bawah A.A. et al, 51% of the women and 43% of the men agreed that a husband is justified in beating his wife when she uses a family planning method without his knowledge.¹⁸

The co-ordinate efforts of various sectors such as legal, educational, medical etc. are essential to combat domestic violence against women.

CONCLUSION

One-third of the women in the community suffered from the domestic violence by their partners in the past 12 months.

Financial stress, alcoholism of the spouse, conflicts over domestic roles and responsibilities, suspicious nature of the husband, dowry demand, childlessness and not having male child were the commonest causes for the domestic violence. The domestic violence declined with age, improved educational status of women and husband, economic independence, increase in the age at marriage. Alcoholism of the husband makes them more prone to violence. It limits their ability to use contraceptive methods.

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Emerging Infections with Rare Human Pathogen Shewanella

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ABSTRACT

Shewanella is a rare human pathogen, infrequently recovered from clinical specimens that can lead to fatal infections in humans [1, 2]. Although a number of clinical syndromes have been attributed with Shewanella spp the pathogenic role of the agent remains undefined. The present study was conducted to isolate Shewanella spp which were wrongly reported as Pseudomonas spp [3] and to add the pathogenic role of Shewanella in isolated cases. We report here seven Shewanella isolates, five among the seven are Shewanella algae and two are Shewanella putrefaciens.

Keywords: *Shewanella algae*, *Shewanella putrefaciens*, Gram Negative Bacilli, Emerging Pathogen, Non healing ulcer, H₂S, TSI, Cephalosporins

INTRODUCTION

Shewanella is a saprophytic Gram Negative rod which belongs to the family Vibrionaceae [3], they are found throughout the world in marine environments and most reported human infections occur in countries with warm climates or especially during warm summers in temperate climates [4]. It is more frequently recovered from aquatic reservoirs (fresh water, sewage) natural energy reservoirs (oil, gas), fish, poultry, beef and dairy products, it is rarely considered pathogenic to humans [4,5]. Initially they were considered to be colonizers or saprophytes on previously damaged tissue [2,6].

Shewanella spp are motile Gram Negative Bacilli with major phenotypic characteristic of production of large amounts of H₂S in the butt of TSI and KIA [6,7]. S.algae and S.putrefaciens are the two species of Shewanella that are more frequently implicated in human infections [3,7]. Shewanella putrefaciens, named by Mac Donell and Colwell in 1985, it was isolated from dairy products and classified as Achromobacter putrefaciens by derby and Hammer in 1931. S.putrefaciens has been described by other investigators under different names as Pseudomonas putrefaciens, Pseudomonas rubescens, group "Ib" bacteria, Flavobacterium group 4 and Alteromonas putrefaciens. [8].

The taxon S.algae was previously considered one biogenetically heterogeneous S.putrefaciens spp. In 1990 S.alga was first recovered from red algae and was proposed to be a tetrodotoxin producing microbe. A subsequent study disclosed that the high G+C content in the previously recognized S.putrefaciens isolates were genetically related to S.alga and most of the clinical S.putrefaciens isolates were therefore be reclassified as S.alga. In 1997, S.alga was renamed S.algae [7]. Although S.algae was recognized as a new species in 1992, misidentification of S.algae as S.putrefaciens has persisted ever since. This misidentification have resulted from the failure of both conventional phenotypic characteristic testing and commercial bacterial identification systems in differing from S.algae [4]. Out of the more than 30 already known Shewanella spp, S.algae and S. putrefaciens were considered pathogenic for humans [7], 80% of human infections are due to S.algae [4, 9, 10], because of the production of hemolytic substance or exotoxins [1, 11, 12].

Often in clinical laboratory oxidase positive non fermentative Gram negative rods grow in routine laboratory culture medium are considered as Pseudomonas spp and no further identification is made. Therefore the so called pseudomonas should be further studied to exclude other oxidase positive gram negative rods. Here we present seven cases

Shewanella species over a period of two years four months.

MATERIALS AND METHOD

Clinical isolates from various samples were studied over a period of Two years four months. All the clinical Samples were inoculated on Blood agar, MacConkey agar, Chocolate agar and Stool sample were plated on S.S agar and the culture plates are incubated at 37 C for overnight, if there was no growth plates are further incubated for overnight. Bacterial colonies isolated in pure culture are tested for oxidase and catalase test, the catalase and oxidase positive isolates were further preceded with conventional biochemical reactions like Urease (Christensen's Urease agar slope), Citrate utilization by Simon citrate agar, H₂S Production and

fermentation is detected by TSI, SIM (Sulfide Indole Motility Medium) detects the production of H₂S and motility.

Since it is the only non fermentative Gram Negative Bacilli producing H₂S and oxidase positive, it is considered as isolate of Shewanella spp^[6]. These isolates of Shewanella isolates were further differentiated in to S.algae and S.putrefaciens. Optimal biochemical characterization to differentiate between the two species includes the ability of S.algae to produce mucoid colonies with α -haemolysis on sheep blood agar, to grow at 42 C and in 6.5% NaCl agar, growth on S.S.Agar, metabolism of mannitol, ribose, maltose, sucrose, and arabinose, decarboxylation of amino acids arginine, lysine, and ornithine were also performed^[3,10,13], the results are depicted in the table I.

Table I: Biochemical Reactions of Isolates

Biochemical Test	Isolate of case No						
	1	2	3	4	5	6	7
Oxidase	P	P	P	P	P	P	P
Catalase	P	P	P	P	P	P	P
Urease	N	N	N	N	N	N	N
Citrate	N	N	N	N	N	N	N
Indole	N	N	N	N	N	N	N
H ₂ S in TSI	P	P	P	P	P	P	P
Haemolysis on B.A	N	P	P	P	P	P	N
Growth on 6.5% NaCl	P	P	P	P	P	P	P
Ornithine decarboxylase	P	P	P	P	P	P	P
Arginine decarboxylase	N	N	N	N	N	N	N
Lysine decarboxylase	N	N	N	N	N	N	N
Acid from mannitol	N	N	N	N	N	N	N
Acid from ribose	N	P	P	P	P	P	N
Acid from maltose	P	N	N	N	N	N	P
Acid from sucrose	N	N	N	N	N	N	N
Acid from arabinose	N	P	P	P	P	P	N
Growth at 42 C	N	P	P	P	P	P	N
Growth on SS Agar	N	P	P	P	P	P	N
Interpretation	S.putrefaciens	S.algae	S.algae	S.algae	S.algae	S.algae	S.putrefaciens

*B.A- Blood Agar, *P-Positive, *N-Negative

Antimicrobial Susceptibility testing is performed by Kirby – Bauer disk diffusion method. Ampicillin, Amikacin, Amoxicillin-Clavulanic acid, Ceftazidime, Ceftriaxone, Cefipime, Ciprofloxacin, Piperacillin-

tazobactam, Polymyxin B, Meropenem, imipenem, Cotrimoxazole, and Zone of inhibition was measured and reported as sensitive or Resistant (Himedia). Results are depicted in the table II.

Table II: Antibiotic Sensitivity of Shewanella isolates

Case No	A	AK	AC	CA	C	CPM	CF	PT	PB	MR	IM	CT
1	R	S	S	R	S	S	S	S	S	S	S	S
2	R	S	S	S	S	S	R	S	S	S	R	S

Table II: Antibiotic Sensitivity of Shewanella isolates (Contd.)

Case No	A	AK	AC	CA	C	CPM	CF	PT	PB	MR	IM	CT
3	S	S	S	S	S	S	S	R	S	S	S	S
4	R	S	S	S	S	S	R	S	S	S	S	S
5	S	S	S	S	S	S	S	S	S	S	S	S
6	S	S	S	S	S	S	S	R	S	S	S	S
7	R	S	S	S	S	S	R	S	S	S	S	S

A-Ampicillin, AK-Amikacin, AC-Amoxycillin-Clavulanic acid, CA-Ceftazidime, C-Ceftriaxone, CPM-Cefipime, CF-Ciprofloxacin, PT-Piperacillin-tazobactam, PB-Polymyxin B, MR-Meropenem, IMP-imipenem, CT- Cotrimoxazole.

FINDINGS

Mixed growth was seen in all the seven cases, Five out of seven cases shown growth of Shewanella algae and the remaining two were Shewanella putrefaciens. Shewanella algae grown with Staphylococcus aureus, E.coli, Klebsiella and Pseudomonas aeruginosa and Shewanella putrefaciens grown with Staphylococcus aureus and Coagulase –negative Staphylococcus.

Case

A male patient aged about 58 years with a non healing ulcer on left leg since three months and he have a history of trauma with motor bike accident three months back, which developed in to an ulcer with foul smelling discharge, the patient was neither diabetic nor immunocompromised. The patient also gave a history of injury at the same site seven years ago, which was healed completely. Biochemical tests showed elevated C-reactive protein levels (32 mg/l), Culture of the discharge showed Shewanella putrefaciens and Staphylococcus aureus.

Case

A female patient aged about 58 years admitted with burns over both hands in female medical ward. Blood investigations were within normal limits. Swabs were collected from the raw area and subjected to culture. Swab culture showed growth of Shewanella algae, and Staphylococcus aureus.

Case

A male patient aged about 59 years presented with non healing ulcer over skin covering the dorsum of the foot of right leg with a history of abrasion occurred with iron rod five months back which gradually developed in to a non healing ulcer, there was swelling and discharge from the lesion of the foot, the patient was diabetic. The wound swab culture showed growth

of Shewanella algae and Coagulase - negative Staphylococcus.

Case

A male patient aged about 52 years admitted to hospital with complaints of diarrhoea and vomiting since two days after consuming under cooked sea fish, there was no history of diabetes. No cysts or trophozoites were seen by saline and iodine preparation. Stool culture was performed on SS agar and MacConkey agar, culture showed the growth of Shewanella algae and E.coli.

Case

A female patient aged about 65 years was admitted with multiple diabetic ulcers on the dorsum of the foot and the median aspect of the first and fourth left leg toes with spreading cellulitis, culture of the wound showed growth of S.algae and Staphylococcus aureus.

Case

A male patient aged about 31years was attended with an ulcer on the lateral aspect of the right leg, with a history of injury at the same site one year back, which was healed completely and he was exposed to small abrasion on the same site one month back and he had an exposure of sea water at the same time, gradually he developed a non healing ulcer, he consulted a local practitioner as there was no progress he was referred to our hospital. Biochemical tests showed that his C-reactive protein level was elevated (32mg/l) and mild leucocytosis. wound culture showed the growth of Shewanella algae and Klebsiella spp.

Case

A male patient aged about 39 years was admitted to hospital with severe burns over upper and lower extremities and over the abdomen, the patient was

neither immunocompromised nor diabetic and all the biochemical parameters were in normal range, swabs were collected from the raw area and subjected to culture. Swab culture showed growth of *Shewanella putrefaciens*, *Pseudomonas aeruginosa* and Coagulase negative *Staphylococcus*.

DISCUSSION

The skin and soft tissue infections caused by *Shewanella* spp are commonly associated with chronic ulcers or infected burns of the lower extremities. Skin ulcers have been reported to be colonized or infected with *Shewanella* spp, skin ulcers are the port of entry for systemic infections. Most human isolates of *Shewanella* spp occur as a part of mixed flora clouding their clinical significance^[9], however a number of monomeric illness have been documented^[11]. *Shewanella* spp have been implicated in skin and soft tissue infections, bacteremia, biliary tract infections, thoracic empyema, endocarditis, dacryocystitis, intra cranial abscess, arthritis, peritonitis, ventilator associated pneumonia and ear infections^[9, 14].

In our study six of the seven strains were isolated in skin and soft tissue infections, with a common risk factor of preexisting chronic ulcers^[7]. All these organisms were isolated from mixed growth. Here we reported a case with sea water contact and a case with consumption of under cooked sea food.

In recent publication four of the five cases were skin and soft tissue infections, all the soft tissue infections having chronic ulceration of prolong duration as a preexisting risk factor and *S.algae* is the predominant isolate, it was also reported in stool sample in a patient with severe gastroenteritis^[3]. One case of *Shewanella* algae-associated osteomyelitis was isolated in pure culture from an osseous tissue sample, no underlying conditions were seen in this patient, and the isolate was first misidentified as *S.putrefaciens* by phenotypic tests and was subsequently identified correctly as *Shewanella* algae by 16S rRNA gene sequencing^[1]. One case of monomeric infection with *S.algae* was reported in a patient with a non healing ulcer over the distal end of right leg without any predisposing factors^[9]. A case report and literature review reported a chronic ulcer over the leg as the most common risk factor for infection by *Shewanella* spp ,of the 27 patients with soft tissue infections limb involvement was seen in 22 patients^[7]. One case report of cerebellar abscess and meningitis with *Shewanella putrefaciens* and *Klebsiella pneumonia* has been reported in a river trap

fisherman^[14]. Previous reports shown *Shewanella* infections should be treated aggressively with a combination of surgical therapy/debridement and appropriate antibiotics^[9].

There were no standard guidelines for treatment of *Shewanella* infections^[9], however *Shewanella* spp is usually sensitive to commonly used antibiotics that target Gram negative bacteria^[10]. In this study Antimicrobial susceptibility were same as those described in earlier literatures^[3,9]. Treatment with third and fourth generation Cephalosporins, Aminoglycosides, Carbapenems and Quinolones gave good results.

CONCLUSION

The present study emphasizes the emerging infections with *Shewanella* and their association in different complications, which provides the clinical spectrum of this agent. Microbiological vigilance is crucial in identifying such unusual agents. It becomes necessary to formulate accurate diagnostic and treatment procedures. Scientifically conducted epidemiological studies are helpful in this regard.

Conflicts of Interest: Nil

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Role of Magnesium in Convulsive Disorders

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ABSTRACT

It is estimated that 3 to 5% of the population will have at least one seizure during their lifetime and that 5% have a significant problem with recurrent seizures¹. Magnesium is required by over 300 chemical reactions in humans. (Shils ME. 1999)². Individuals with low cerebrospinal fluid levels of magnesium tend to have lower cerebrospinal fluid levels of 5-hydroxyindoleacetic acid (5-HIAA), a metabolite of serotonin, indicating lower central nervous system serotonin levels. (Banki CM. 1985 & Banki CM. 1986)^{3,4}.

A number of 150 patients belonging to various diseases leading to convulsions were taken up for study along with 75 controls. Serum and C.S.F. levels of Magnesium were estimated and analyzed along other relevant investigations pertaining to the diagnosis of the respective cases.

A significantly low levels both in serum and CSF were observed in idiopathic epilepsy, eclampsia and meningitis groups. Other groups viz., Encephalitis group, febrile convulsions, and Hysteria groups did not show any significant changes.

Schizophrenic patients showed slightly low magnesium levels in serum and CSF but improved after E.C.T., but statistically insignificant.

Keywords: Seizures, Magnesium, CSF, Convulsions etc.

INTRODUCTION

It is estimated that 3 to 5% of the population will have at least one seizure during their lifetime and that 5% have a significant problem with recurrent seizures¹. Seizures can be induced in any normal human (or vertebrate) brain with a variety of different electrical or chemical stimuli. Many factors (metabolic & anatomical) can influence the Normal brain to cause seizures. Conversely, there could be no Pathognomic lesion in an Epileptic brain. Extensive work done, implicates that alterations of Mg levels is important in the etiology of Seizures. Hence this work is undertaken to know the serum and CSF levels in Epileptic patients.

MATERIALS AND METHOD

- The present study was conducted on 150 patients with convulsions of varying etiologies admitted in Medical wards of SVS Medical College Hospital, Mahabubnagar.A.P, during the years 2006-10.
- The study comprised of estimation of Serum and Cerebrospinal fluid magnesium levels in 150

patients with convulsions of different age groups and both sexes.

- 75 normal subjects were taken as controls.
- Patients undergoing surgery under spinal anesthesia (50 in number), twenty five normal volunteers served as control. It was ensured that none of them was suffering from any illness involving liver, gastrointestinal tract, bones, kidneys and cardiovascular system at the time of the study.
- Detailed history taking, clinical examination and all available investigative procedures were done to establish the etiology of convulsion in each.
- Statistical analysis was done using Quickcals (Graphpad soft ware) technology.
- The entire study was approved by the ethical committee of SVS Medical College & informed consent was obtained from all the participants.

OBSERVATIONS

Table 1. Showing cases distribution amongst the various diseases

S. No.	Disease/Condition	No. of Cases
1	Idiopathic Epilepsy	40
2	Children With Febrile Convulsions	16
3	Encephalitis	22
4	Csvt (Cerebral Sinus And Venous Thrombosis)	28
5	Meningitis	18
6	Postpartum Eclampsia	12
7	Ect (Electro-convulsive Therapy)	12
8	Hysterical	12
9	Control	75

- In all the patients the magnesium levels in the serum and cerebrospinal fluid were estimated within the 24hrs of the seizures.
- Additional samples in the inter seizure periods could be taken only in patients with meningitis because of their long hospital stay.

- Twelve patients of Schizophrenia with induced convulsions (as a part of Electro Convulsive Therapy) were also included in the study, in which the samples were taken before and after ECT.
- Blood and CSF samples were collected in clean dry bottles. Serum and CSF magnesium was estimated by the Colorimetric method using Calmgite.
- RBC's have double the magnesium content compared to serum and hence hemolysed samples should not be used.
- Serum and CSF magnesium levels in 75 control subjects ranged from 1.76-2.23 with a mean of 1.93 ±0.16 and 2.25-2.80 with a mean of 2.60 ± 0.19 respectively.
- No difference was detected with the age and sex.

Table 2. Showing Magnesium Levels in Serum and C.s.f. in Various Disorders

S. No.	Disease/Condition	No. of Cases	Serum levels of Magnesium (mean with standard deviation)	CSF levels of Magnesium (mean with standard deviation)	Significance 'p' value
1	Idiopathic Epilepsy	40	1.20-1.68 (1.46±0.15)	1.68-2.16 (1.90 ± 0.13)	Significant 0.045
2	Children With Febrile Convulsions	16	1.02-1.43 (1.20±0.20)	1.52-1.82 (1.65±0.15.)	Significant 0.05
3	Encephalitis	22	1.82-2.26 (2.04±0.28)	2.42-2.86 (2.60±0.23)	Not significant 0.12
4	CSVT (Cerebral Sinus and Venous Thrombosis)	28	1.20-1.58 (1.39 ± 0.26)	1.78-2.12 (1.95±0.24)	Significant 0.045
5	Meningitis	18	1.42-1.92 (1.59±0.16)	1.60 - 2.30 (1.91±0.20)	Significant 0.05
6	Postpartum Eclampsia	12	1.02-1.43 (1.22 ± 0.12)	1.52-1.82 (1.62 ± 0.25)	Significant 0.05
7	ECT (Electro-convulsive therapy)	12	1.80-2.15 (1.92 ± 0.04) before ECT.2.10-2.25 (2.15 ± 0.12) after ECT	2.40-2.62 (2.54 ± 0.24) before ECT.2.48-2.76 (2.62 ± 0.23) after ECT	Not significant0.104
8	Hysterical	12	2.18-2.22 (2.20 ± 0.20)	2.42-2.68 (2.55 ± 0.18)	Not significant0.124
9	Control	75	2.10 – 2.23 (2.22 ± 0.14)	2.45 – 2.71 (2.56 ± 1.4)	

Table 3. Showing serial serum and C.S.F. magnesium levels in cases of meningitis

In meningitis cases the magnesium levels were estimated at the time of admission, after one week and after one month. The following table shows the results

	Admission (<24 hours)	After 1 week	After 1 month
Serum Magnesium levels	1.59 ± 0.16	1.69 ± 0.16	2.26 ± 0.17
C.S.F. Magnesium levels	1.91 ± 0.20	1.96 ± 0.26	2.26 ± 0.19

Table 4. Showing serial serum and C.S.F. magnesium levels before and after ECT

	Before E.C.T.	After E.C.T.	SIGNIFICANCE
Serum Magnesium levels	1.80-2.15 (1.92 ± 0.04)	2.10-2.25 (2.15 ± 0.12)	NO
CSF Magnesium levels	2.40-2.62 (2.54 ± 0.24)	2.48-2.76 (2.62 ± 0.23)	NO

Table 5. Magnesium Levels in Serum And C.S.F. in Various Disorders

S. No.	Disease	SERUM Magnesium levels	C.S.F. magnesium levels
1	Idiopathic epilepsy	1.46	1.90
2	Febrile convulsions	2.00	2.43
3	Encephalitis	2.04	2.60
4	C.S.V.T.	1.39	1.95
5	MENINGITIS	1.59	1.91
6	POST PARTUM ECLAMPSIA	1.02	1.65
7	SCHIZOPHRENIA (ECT)	2.15	2.62
8	HYSTERICAL	2.20	2.55
9	CONTROL	2.22	2.56

Magnesium Levels in Serum and C.s.f. In Various Disorders

Analysis of variance of the serum and CSF magnesium data for 150 subjects show statistically significant difference among the etiology groups. (for serum $F=26.13$ and p' value 0.006) and for the CSF

$F=36.07$ and ' p' value <0.006). There is also a statistically significant correlation among the serum and CSF values in the 75 subjects as evident with ' r' value of 0.865 and ' $p' < 0.001$.

DISCUSSION

Magnesium is required by over 300 chemical reactions in humans. (Shils ME. 1999)². Individuals with low cerebrospinal fluid levels of magnesium tend to have lower cerebrospinal fluid levels of 5-hydroxyindoleacetic acid (5-HIAA), a metabolite of serotonin, indicating lower central nervous system serotonin levels. (Banki CM. 1985 & Banki CM. 1986)^{3,4}.

Depletion of endogenous GABA was ascribed to the hyper excitability of the nervous system⁵. GABA levels are decreased in Mg deficiency³. Mg involvement in Glutamine formation has been established in earlier studies^{5,6,7,8}.

Table 6. Comparative Analysis of Present Study with Earliear Studies

S. No.	Magnesium Levels (MG/100C.C.)	BABEL et al ⁹	AFZAL et al ¹⁰	Present Study
Control	Serum Mg CSF Mg	1.60 – 2.172.40 – 3.18	1.76 – 2.402.51 – 3.0	2.10 – 2.232.42 – 2.68
EPILEPSY	Serum MgCSF Mg	1.08 – 1.80 2.34 - 3.03	1.32 – 1.702.20 – 2.40	1.20 – 1.681.68 – 2.16
FEBRILE CONVULSIONS	Serum MgCSF Mg	2.08 – 2.212.72 – 2.94	2.06 – 2.20 2.74 – 2.90	1.86 – 2.262.20 – 2.68
ENCEPHALITIS	Serum MgCSF Mg	1.72 – 2.112.70 – 2.90	1.84 – 2.112.74 – 2.86	1.82 – 2.262.42 – 2.86
ECLAMPSIA	Serum MgCSF Mg	1.25 – 1.582.48 – 3.18	-	1.02 – 1.431.52 – 1.82
MENINGITIS	Serum MgCSF Mg	1.86 – 1.971.97 – 2.10	1.12 – 1.281.92 – 2.00	1.23 – 1.621.42 – 2.00

In idiopathic epilepsy there was a significant fall in both serum and CSF in all the three studies compared to their respective controls but the reduction in CSF magnesium was much significant in the present study. Further this was observed in all the cases of idiopathic epilepsy studied by Afzal et al and the present study but Babel et al have observed in few cases the CSF magnesium level to be in the normal range. In the other two series, the values in the inter seizure periods after the last convulsion were higher compared to their initial samples drawn within 24 hrs after the convulsions. In the present study the samples in the inter seizure periods could not be taken in the patients with idiopathic epilepsy because of their short hospital stay. In febrile seizures and encephalitis no

significant reduction was observed in all the three studies. Hence more number of studies with more number of patients are needed to know the cause. The patients with Post Partum Cortical vein Thrombosis also showed significant reduction in magnesium levels in the serum and cerebrospinal fluid. In eclampsia Babel et al have observed reduced magnesium levels in the serum with normal values in CSF. In the present study magnesium in both serum and CSF was significantly lowered. In meningitis there was a fall in both serum and CSF magnesium in all the three studies and here again the fall in CSF magnesium was more in the present study compared to the others. In addition, in the present study the values in the inter seizure periods at one week and one month intervals

after the last convulsion reached normalcy in both serum and CSF. In the patients with Schizophrenia there was no significant change of magnesium in the serum or CSF after induced electroshock convulsions compared to their pre-convulsive values. This is inconsistent with the Afzal et al. it indicates that Hypomagnesaemia observed in epilepsy and other convulsive disorders was the cause and not the effect of the seizures. Pallis¹¹ and Woodbury¹² claimed that the serum levels of magnesium may not accurately reflect the state of magnesium depletion or otherwise, so an estimation of intracellular magnesium may be of more value.

CONCLUSIONS

1. Magnesium levels are more in C.S.F. when comparative to that in Serum.
2. Both serum and CSF levels of Magnesium are significantly low in Epilepsy group as compared that of control group.
3. The Magnesium levels are also significantly low in Eclampsia, C.S.V.T. and Meningitis groups. The difference was significant.
4. Other groups viz., Encephalitis group, febrile convulsions, and Hysteria groups did not show any significant changes.
5. Schizophrenic patients showed slightly low magnesium levels in serum and CSF but improved after E.C.T., but statistically insignificant.

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Fetal Alcohol Spectrum Disorders

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ABSTRACT

Fetal alcohol spectrum disorders (FASDs) is a health problem that can be traced back into history. FASD is a preventable event and occurs due to alcohol consumption of women during pregnancy. No amount of alcohol is considered to be safe during pregnancy. The growing embryo within the womb pays the price for this habit. The ingested alcohol causes serious physical and mental abnormalities and causes irreversible changes in the baby, which follows him into his adolescence and adulthood. Usually children have a tough time adjusting with everyone. There is no cure for the disorder but with proper love, care and support given by the parents and teachers the victim can be brought back to life. Once a woman plans to get pregnant, total abstinence of the alcohol is the only way to prevent this hazard. With these efforts the incidence of this disease can be reduced up to an extent.

Keywords: Alcohol Consumption, Fasds, Fetal Alcohol Spectrum Disorder, Fetal Alcohol Syndrome, Pregnancy

INTRODUCTION

Alcoholism and its related health problems has been part and parcel of our society till date. Earlier alcohol abuse has always been considered to be male oriented. But in this modern era the numbers of female drinkers are also increasing. The consequences that can arise due to this habit are alarming. Especially, when a woman drinks alcohol during her pregnancy, she gives birth to a child who will pay the price in mental and physical deficiencies for his or her entire life. Yet many pregnant women do drink alcohol with or without knowing this fact. The physical and mental abnormalities that arise are referred to as fetal alcohol syndrome (FAS), while the rest are born with fetal alcohol effects (FAE)¹. The term Fetal Alcohol Spectrum Disorders (FASDs) has been proposed to include individuals experiencing significant impairments associated with prenatal alcohol exposure, including not only those with FAS, but also those who might be diagnosed with other related conditions, such as

Partial FAS, Alcohol Related Neurodevelopmental Disorder (ARND), or Alcohol Related Birth Defects (ARBD)^{2,3}. Studies have shown that if anyone includes the full spectrum, for example Partial FAS or Alcohol Related Neurodevelopmental Disorder, the incidence is at least 10 in 1,000. This estimate translates into approximately 40,000 children every year born with FAS or another alcohol related disorder. Nowadays FASDs are far more common than other more well-known developmental disabilities, such as Down syndrome and autism^{4,6}.

Historical perspective

The traces of FASD date back to the period of Aristotle. It has also been described in the bible. In 1700 in England, a group of physician described the children of alcoholics as weak, feeble, and distempered. The first study on adverse effects of alcohol on birth was done by Sullivan in 1899, where he described the offspring of alcoholic women imprisoned in England. His studies stated that these women produced children characterized by a pattern of birth defects and higher rates of miscarriage in alcoholics and there was an increase in number of healthier infants when gestation occurred in prison, thus indicating abstinence as prevention. These children were not productive members of society as they aged, and male alcoholism was not the reason behind it. It was after a span of 70 years later that Lemoine of France in 1968 reintroduced

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the apparently ignored or misunderstood concept of adverse outcomes resulting from fetal alcohol exposure. He observed more than 100 children of women who drank heavily and documented many of the physical and behavioral patterns among those children but did not present any definitive diagnostic criteria for diagnosing FAS or FASD. Later in 1973, Jones, Smith and colleagues were the first to describe in detail the pattern of physical and mental abnormalities among children of mothers with significant prenatal alcohol intake and it was them who provided the diagnostic criteria for the condition they termed FAS^{7,8}.

Clinical features

The two kinds of impacts that can be produced are the primary disabilities which are the direct effect of alcohol on baby and the secondary disabilities which are as a result of primary disabilities⁹. Primary disabilities are divided into two categories that include deficits that result from damage to the brain, and deficits that result from damage to other parts of the developing fetus, such as the bones or organs. The brain deficits include Neurological impairment. Small head and an underdeveloped brain are quite evident for this impairment¹⁰. The I.Q. may vary from well below average to above average. Information processing deficit are the inconsistencies that arise in understanding, sequencing, and auditory processing of information. Memory and attention deficit becomes a reason for spotty or faulty memory and a limited attention span. 80 percent of children with FASD demonstrate hyperactivity¹¹. Delay or dysfunction of language skills causes limited vocabulary and comprehension, problems related to clarity of speech, or speech impairment. Other deficits/delayed development can result in delayed milestones, tremors, or problems with balance, coordination, and fine motor skills. Other damaged or underdeveloped parts of the brain may affect overall intellectual development, learning ability, and social judgment. Some children with brain damage will be easily distracted, impulsive, or perseverant, which means that they continue to respond to a stimulus even after it is gone. In addition to this; child may be having certain co-existing conditions of Attention Deficit Hyperactivity Disorder, Depression or psychosocial impact¹². The next group of disabilities is physical abnormalities which can affect the school performance and achievements. The main features include facial features which are characterized by reduced palpebral fissure length/inner canthal

distance ratio, smooth philtrum, and thin upper lip. Other facial features which can be present are short upturned nose, depressed nasal bridge, hypo plastic maxilla, ear anomalies like low set ears, malformed ears, recurrent ear infections and sensorineural hearing loss^{13,14}.

The eye malformations include crossed eyes, near sightedness, curved or twisted retina, astigmatism and optic nerve abnormalities. The defects in relation to teeth include crowded teeth, teeth deviations, cleft palate. There might also be trouble in breathing especially at night due to obstruction in upper airway passages. The skeletal abnormalities are radio ulnar synostosis, hemivertebrae, shortened fifth vertebrae, scoliosis, clubfoot, hypoplastic nails, hip dislocation, deformed hands and legs, pectus excavatum and carinatum. The various problems affecting organs are heart murmurs, fallots tetralogy, ventricular septal defect, atrial septal defect, urogenital and genital anomalies, aplastic kidneys, dysplastic kidneys, hypoplastic kidneys, hydronephrosis, and horse shoe kidneys. The patient can also exhibit tactile defensiveness like the patient does not wants to be touched, or conversely may feel to be cuddled or to touch others. Hyper or hyposensitivity to light, noise, touch or smell. The immune system of the patient is weakened making the patient prone for infections throughout the lifetime^{14,15}.

Children and adults suffering from FASD can have epilepsy, poor coordination or fine motor skills, poor socialization skills, which include difficulty in making and maintaining friendships and relating to groups, difficulty to understand concepts such as time and money, language comprehension is poor, poor problem-solving skills, behavioral problem, unable to concentrate, social withdrawal, stubbornness, impulsiveness, and anxiety. Problems associated with FAS worsen as children move into adulthood. These can include mental health problems, troubles with the law, and the inability to live independently. Kids with FAE are frequently undiagnosed. This is applicable to those with alcohol-related neurodevelopmental disorder (ARND), a recently found category of prenatal damage which refers to children who have only the behavioral and emotional problems of FAS or FAE without showing any signs of developmental delay or physical growth deformities. Usually in kids with FAE or ARND, the behavior appears to be mere stubbornness. They may do well in intelligence tests, but their behavioral deficits often hinders their success.

Good education and training for the parents, health care professionals, and teachers who care for these victims are necessary¹³⁻¹⁵.

DIAGNOSIS

For confirming a case of FAS by conventional method, certain minimal criteria should be met. This include the victim having low weight and small size prior to birth and even after it, characteristic appearance of the head and face having at least two out of the three signs of head size being small, small eyes and/or eye openings being short and/or the upper lip being underdeveloped, absence of the groove between the lip and nose, and flattened cheekbones and evidence of delayed brain development, intellectual impairment, or abnormalities in central nervous system. The criteria for diagnosis are important as FAS is difficult to diagnose at and after birth, thereby helping the family and social work groups to do the needful help for the victims. It can easily be confused with many other disorders like autism. There is not a particular clinical feature that is helpful in the diagnosis. Moreover no lab test has been helpful in diagnosis till date¹⁶.

Legal Problem

The victims of FASD have lifelong cognitive, social and behavioral disabilities. FASD is most often misdiagnosed for ADHD. The behavioral changes in the child are mistaken for the poor upbringing but the real cause maybe the poor development of brain due to alcohol ingestion. Those having FASD often have to face problems related to law and order due to their cognitive problems like poor grasping ability, lack of impulse control and showing immature behavior with respect to their age. During police encounters they may get perplexed or sometimes to please everyone they might say that they did a crime when in real they are innocent. Questioning further confuses them due to their short or long term memory loss or due to their problems in differentiating between fact and fiction. Every criminal will not be a victim of FASD, hence a screening should be done for the offenders to know the exact cause of their criminal nature. Detention is not advisable for those diagnosed with FASD as it can result in copying deviant behavior¹⁷.

Management

Treatment differs for people with FASDs depending on the symptoms. Various researches clearly show that early intervention treatment services can improve a

child's development. It enables children from birth to 3 years of age to learn important skills. The many other services included are therapy to help the child talk, walk, and interact with others. Therefore, a talk with the child's doctor if you think your child is a victim of FASD or other developmental problem is a must^{16,18}.

TREATMENT METHOD

Therapy can generally be divided into five categories which are medication, behavior and education therapy, parent training and alternative approaches. For treatment no medications have been approved specifically to treat FASDs. But, several medications are found to be helpful that can improve some of the symptoms of FASDs by managing high energy levels and resolving depression. The various medications used for treatment are stimulants which are helpful in treating symptoms such as hyperactivity, problems paying attention, and poor impulse control, antidepressants are used to treat symptoms which include sad mood, loss of interest in daily activities, sleep problems, disruptions in school activities, negativity, irritability, aggression, and criminal behaviors. Neuroleptics are used to control symptoms such as anxiety and certain other behavior problems. The anti-anxiety drugs are to relieve the anxiety symptoms. Effect of medicines differs from one child to another; it might act well for one but not for other. The doctor must choice the most apt treatment for the welfare of the child^{18,19}.

The other important method of treatment is the behavior and education therapy. Though different varieties of therapy for children with developmental disabilities exist, only a few have been tested. The therapies that have been effective are friendship training which given to FASD children as they have a tough time making and maintaining friends. It teaches them the way to interact, the way to enter a group of children who are already playing, the method to arrange and handle in-home play dates, and the different ways to avoid and solve conflicts. A research study found that special classes for mathematics, good innovative teaching methods and tools can help improve knowledge in mathematics and hence improve the skills in children. Effective functioning training helps in improving self control, helps in executing functioning skills which include memory, reasoning, planning and solving problems. Therapy to improve proper interaction between the parent and the child helps in improving the duos relationships, thereby reducing behavior problems in children with

FASDs. It was found to be effective in bringing down the distress in parents and child behavior problems. Training for parenting and behavior management deals with the problems related to behavior and learning that affect the victims can increase the level of stress for the children's parents. This training can give comfort to both the parents as well as the affected children. The next step in treatment is parent training. It was found to be successful in making the parents aware about their child's disability and the different ways by which they can teach their child many skills and thus help them cope with their FASD-related symptoms. It can be done in groups or with individual families. The other parenting tips that can be helpful is to give priority to one's child's positive part which include the child's strengths and talents, the parent must be in a state to accept their child's limitations and be consistent enough in everything like discipline and school. Parents must follow stable routines that don't change quite often and must be precise in what they do. They must take initiative to provide a good foundation for their child. Moreover they must encourage the improvements in the child by praising it. Parents can get more innovative ideas from local support groups, in which parents of children with FASDs can discuss their concerns, ask questions, and find a bit relief. The next group of treatment is the alternative treatment which includes many therapies that are untested and becomes known by informal networks at the time of any disability, injury or medical condition. Proper guidance from the doctor is essential before starting such treatments. Some of the alternative treatments used for people with FASDs include biofeedback, proper training for auditory problems, therapy for relaxation, visual imagery, and meditation mainly for sleep related problems and anxiety, creative art therapy ,yoga and exercise , acupuncture and acupressure, massage , Reiki , and energy healing, vitamins, herbal supplements, and homeopathy^{20,21}.

CONCLUSION

Fetal alcohol spectrum disorders have a high incidence rate compared to other behavioral disorders like ADHD. It takes place when a woman consumes too much alcohol during her pregnancy period. This prenatal alcohol exposure affects the growing embryo, causing irreversible changes in the brain. Hence alcoholic ingestion should be stopped when a woman plans to get pregnant and should continue it during her lactation period too. Cultural changes and corporative life are the main reasons for this change.

Alcohol rehabilitation centers are available for those wishing to recover from this addiction. Those children and adults who are victims of FASD can be brought back to life with the proper guidance of their parents and teachers.

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Burnout among Dental Faculty and Students in a Dental College

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ABSTRACT

The dental professionals face wide variety of physical and psychological ailments that are induced or aggravated by the work environment, among them burnout is one which results from excessive handling of patients, may have certain negative effects on their personal and professional life and well-being.

Aim: Present study is conducted among the dental faculty and students in a dental college to know the burnout levels and effect on learning abilities of dental students.

Materials and method: After obtaining Permission and ethical clearance from concerned authorities an anonymous survey was conducted in dental professionals by using Maslach Burnout Inventory questionnaire to check the burnout rates.

Results: Dental professionals were experiencing considerable levels of emotional exhaustion (EE) and diminished personal accomplishment (DPA) in the clinical period of dental education. Higher EE scores were observed among third years and postgraduate students with a significant p value (*p = 0.0000). The scores of DPA were high among third and fourth years suggesting increased levels of burnout with significant p value (*p = 0.0032). Scores of depersonalization (DP) were high among second years and staff (*p = 0.0001).

Conclusion: we conclude by saying signs of EE and DPA should be taken as early warnings for burnout syndrome. Fortunately, treatment modalities and prevention strategies can help dentists conquer and overcome these disorders.

Keywords: Burnout, Emotional Exhaustion, Depersonalization, Diminished Personal Accomplishment

INTRODUCTION

Today dentistry is an attractive, rewarding, but not an easy profession, as it demands physical and mental efforts as well as people contacts.^[1] Dentists are subjected to wide variety of occupational factors that is limited job setting, unique social interaction between helper and the recipient, exposure to sensitive and intimate area of human body, personal characteristics and emotions of dentists and patients.^[2] Altogether make the dental profession extremely stressful, and

it's true for all stages of dental careers (that is for established dentists, young dentists, and dental student).^[3] This result in high degree of stress among dentists compared with other health care professionals due to which certain clinical disorders such as burnout, anxiety, and depression may result. These disorders may have certain negative effects on dentists' personal and professional relationship, health and wellbeing.^[4]

Burnout is considered as one of the possible consequence of chronic occupational stress among professionals who are in excessive contact with the people.^[5,6] In psychosocial literature it is described as a clinical complex, adapted to humans in the mid-1970s by Freudenberg.^[7] Burn out is defined as a "syndrome of emotional exhaustion, depersonalization, and diminished personal accomplishment among service

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providers such as dentists, doctors, nurses, social workers and teachers who are in persistent contact with other people".^[8]

Burnout rates can affect personal lives of professionals leading to early retirement and indifferent treatment outcomes their by impeding their professional growth.^[9] The contributing factors include - Fear of failure,^[10] the load of academic and clinical work^[11,14], unavailability of materials for study and clinical training^[13], Performance pressure, Self-efficacy beliefs and long working hours.^[12]

Feelings of loneliness, apathy, mood disorders, hypertension and fatigue are also observed, in dental professionals with high burnout rates, who are unable to continue working as they find the interaction with patients unbearable and withdraw from staff and colleagues.^[15]

Recently Burnout an occupational disorder has become an area of interest among dental professionals, either as reflection of study atmosphere or as predictor of negative course of professional career of dentists. Chronological sequence of burnout includes Emotional exhaustion (EE): becoming mentally exhausted. Depersonalization (DP): the development of a negative, cynical attitude distancing from one's work. Diminished Personal accomplishment (DPA): is the tendency to feel dissatisfied with their accomplishments and to evaluate himself negatively.⁽⁵⁾ These effects of burnout, although work related, often will have a negative impact on people's personal relationships and well being.^[4,16]

Many studies reported the existence of stress among dental students,^[1] and a few studies on the prevalence of burnout^[1] but none to our knowledge compared burnout rates in dental students and staff in dental college, and affect of these burnout levels on learning abilities of dental students. Therefore the study work carried to know the burnout among dental students and faculty and affect on their learning abilities which make them competent professionals.

MATERIAL AND METHOD

The extent of burnout in 416 dental professionals (including dental faculty and dental students) of the dental college was assessed in an anonymous survey by employing the Maslach Burnout Inventory (MBI) questionnaire. MBI a gold standard measure, to assess all the three core dimensions. This inventory has reliability and validity in detecting the degree of burnout in human services workers. But the way of its application and the elaboration of the results varied. Emotional exhaustion (EE) subscale consist of nine items (e.g. 'I feel emotionally drained from my work'), Diminished Personal accomplishment (DPA) consists of eight items (e.g. 'I deal very effectively with the problem of my patients'), Depersonalization (DP) consists of five items (e.g. I don't really care what happens to some patients'). Each of these 22 items can be answered on a seven point likert scale ranging from 0 ('never') to six ('every day'). The results were statistically analyzed and compared with SPSS 14 software with significant p value. Pair wise comparison of qualifications of subjects with respect to dimensions of burnout by Tukeys multiple post hoc procedures.

RESULTS

A total of 416 dental professionals (includes dental students and dental faculty) participated in the present study. When burnout levels compared among females and males, no significant difference was observed between the EE, DPA and DP values of the participants. [Female mean EE=30.3, DP=12.8, PA 37.9, whereas male values EE=30.9, DP=12.1, PA=37.5.o] The results were similar to the previous study conducted in Spanish periodontology practitioners.^[8] (Table 1) when Pair wise comparison of qualifications of subjects were made with respect to dimensions of burnout by Tukeys multiple post hoc procedure, higher EE scores were observed among third years and postgraduate students with a significant p value (***p = 0.0000 <0.05**). (table 2) The scores of DPA were high among third and fourth years suggesting increased levels of burnout with significant p value (***p = 0.0032 (<0.05)**) (graph1). Scores of DP were high among second years and staff (***p = 0.0001 (<0.05)**) (graph 2).

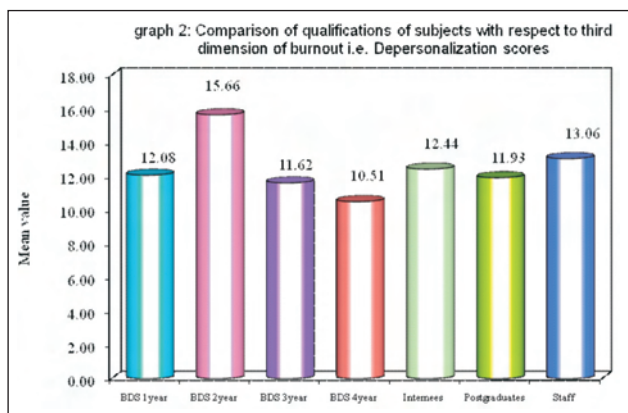
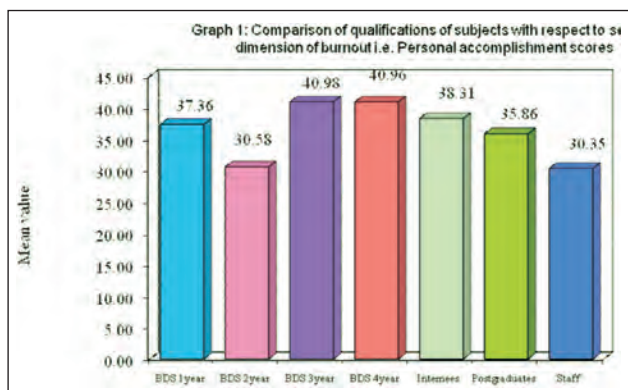
Table 1: burnout levels in male and female.

Gender	Total burnout	Emotional exhaustion	Personal accomplishment	Depersonalization
Male	81.2269	30.3697	37.9916	12.8655
Female	80.5623	30.9192	37.5051	12.138

Table 2: Pair wise comparison of qualifications of subjects with respect to first dimension of burnout i.e. Emotional exhaustion scores by Tukeys multiple post hoc procedures

Qualifications	BDS 1year	BDS 2year	BDS 3year	BDS 4year	Internes	Postgraduates	Staff
Mean	22.5590	25.7740	37.7650	32.7000	30.7480	37.1430	29.7650
BDS 1year	-						
BDS 2year	0.7379	-					
BDS 3year	0.0000*	0.0000*	-				
BDS 4year	0.0000*	0.0084*	0.0866	-			
Internees	0.0004*	0.1124	0.0011	0.9221	-		
Postgraduates	0.0006*	0.0176*	0.9998	0.8468	0.4667	-	
Staff	0.2747	0.8758	0.1368	0.9661	0.9999	0.5832	-

*p<0.05



DISCUSSION

Even though burnout was considered as work related condition, but difference in culture, society and educational setting may vary significantly leading to conflicting results about burnout levels therefore the results of this study shall be considered valid only for our study sample.

Emotional exhaustion is considered to be the key dimension, showing the most robust relationships with various job stressors, such as work overload, or lack of social support.^[5] The results showed higher scores of EE (exhausted mentally or emotionally) among all

the students of third years and postgraduates. A previous study ^[1] conducted among dental students in Jordanian university reported high degree of EE among 4th and 5th years in two dental schools. In another study ^[17] only 22% of the surveyed students from seven dental schools showed higher degrees of EE. The causes of high levels of EE in our study may probably relate to either failure of fulfillment of clinical requirements and long working hours or study atmosphere and the competition. The results showed no statistical significance when compared among students and staff.

High scores of Personal Accomplishment mean more involvement with the patients and more satisfaction with the profession and consequently, lower degrees of burnout. In the present study high rates of DPA (tendency to feel dissatisfied with their accomplishments and evaluate themselves negatively) observed among third and fourth years. A previous study ^[1] reported lower scores of personal accomplishment in 5th year students. The causes of high rate of DPA in our study may be due to increased patient contact in terms of frequency and duration negatively contributing to their feelings of personal accomplishment.^[1]

This scale of burnout is extremely important and should be closely monitored during the clinical training period of dental students and even after their graduation to ensure the DPA.^[1]

Depersonalization is one of the critical aspect of burnout among dental professionals which makes them to think patients as an impersonal object rather than a human being. The scores of Depersonalization (DP) were high among staff and second years. A previous study ^[1] reported significantly higher scores of DP in 5th than 4th year students in two dental schools,

which varied in our study that is higher score among second years that may be attributed to influences by fellow students while filling the questionnaire. In our study high score of DP among staff is attributed to insecurity arising due to increased workload differences in culture, society and education settings. ^[1]

The curriculum of the dental college should be accordingly improved to minimize burnout levels. The faculties in the dental college should adopt a clinical training system which obligates the students in fulfilling the clinical requirements to pass clinical course successfully.

Management of Burnout

Individual: Oriented approaches

Stress inoculation, Training, Relaxation, Time management, Assertiveness training, rational emotive therapy, Training in interpersonal and social skills, Teambuilding, Management of professional demands and Meditation. ^[18]

Managerial interventions

Stress management workshops, Professional help, Counseling services, Support networks Managerial interventions may be insufficient unless Individual - oriented approaches convey the necessary individual skills and attitudes. ^[18]

CONCLUSION

From this study, we conclude that signs of EE and DPA should be taken as early warnings for burnout syndrome. It can thus considered a serious risk to the dental profession, being a threat to the available work force as well as personal tragedy for the individual dentist. Fortunately, treatment modalities and prevention strategies can help dentists conquer and overcome these disorders. Therefore, monitoring burnout risk, and subsequent prevention and timely intervention deserves continuous attention.

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Menstrual Problems in Adolescent Girls of Slum Areas

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ABSTRACT

Background: Menstrual problems are highly prevalent in adolescent girls. So an effort is made to study the menstrual problems in adolescent girls.

Research question: What is prevalence of menstrual problems in adolescent girls in slum areas?

Objective: Study menstrual problems in adolescent girls and its variation with the age.

Study design: Community based cross sectional study.

Method: 400 adolescent girls were interviewed from selected 10 urban slums of Solapur Municipal Corporation area.

Results: The average age of the participant was 15.92 ± 2.33 years. 302 (75.5%) girls in the present study had either one or more menstrual problems. The most common menstrual problem was dysmenorrhea (45%). Followed by oligomenorrhea (15.25%), menorrhagia (13.75%) and polymenorrhea (8.25%). Prevalence of dysmenorrhea and oligomenorrhea was more in the higher age group while, menorrhagia and polymenorrhea decreases as the age advances. But overall menstrual problems were significantly less as the age of the adolescent advances ($\chi^2 = 9.48$; $P = 0.01$). Significant number of adolescent girls had menstrual problems like dysmenorrhea, oligomenorrhea etc. So there is need to formulate appropriate counseling and management plans/ policies to tackle these problems.

Keywords: Adolescent, Menstrual Problem, Dysmenorrhea, Age

INTRODUCTION

Menarche and menstruation are important aspects of female life. The early menstrual cycles in the adolescent girls may be unovular, irregular but are not devoid of problems for them. Irregular or abnormal menstruation can be a harbinger of a sinister pelvic pathology or denote a relatively minor problem,

therefore through investigation into the problem is called for every patient presenting with complaint. The menstrual problem like dysmenorrhea is highly prevalent in the teenage girls, affecting their routine work as well as the academic career.^{1,2} Menstrual problems of adolescents has been poorly studied in slum set up of India. So study was conducted to study menstrual irregularities in the adolescent girls residing in slum areas. That may helpful to formulate and design menstrual health programs for adolescents.

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MATERIAL AND METHOD

Study design: Community based cross sectional study. **Setting:** Conducted in the urban slum areas of Solapur Municipal Corporation during June 2010 to August 2010. **Study Sample:** 400 adolescent girls in the age group 13- 19 years. **Sample size estimation:** $4pq/L^2$ (5% absolute allowable error). **Sampling technique:**

Initially list of slums were collected from the Solapur Municipal Corporation area. There were total 127 slums with varied population ranging from 500 to 10000. Out of 127 slums, 10 slums were selected by lottery method. It was decided to take 40 respondents from each slum by simple random sampling method. If the respondents found less in a particular slum then the remaining were covered in next big slum. The data was collected with the help of pre-tested & pre-designed performa by taking the informal consent of the adolescent girl. Interview was taken by skilled social workers making the rapo with respondents. The questions covered menstrual problems, regularity of menses in last three cycles of menstruation. Due care was taken so has to not hamper the privacy of the girl. Girls in the age group 13-19 years who had menarche for at least one year at the time of study were included in the interview. Analysis done by using SPSS version 12. Percentages were calculated for drawing the references. Chi square test was used to test the level of significance.

Definitions of the menstrual problems: ¹

1. Dysmenorrhea: means painful cramping pain accompanying menstruation.

2. Oligomenorrhea: denotes infrequent, irregularly timed episodes of bleeding usually occurring at intervals of more than 35 days.
3. Menorrhagia: denotes regularly timed episodes of bleeding that are excessive in amount (>80 ml) and/or duration of flow (> 5 days).
4. Polymenorrhea : denotes frequent episodes of menstruation, usually occurring at intervals of 21 days or less.

RESULTS

Total 400 adolescent girls were studied. Out of 400, 102 (25.5%) were in the age group of 13-14 years followed by 115 (28.75%) in 15-16 years and 183 (45.75%) of more than 17 years. The average age of the participant was 15.92 ± 2.33 years. 302 (75.5%) girls in the present study had either one or more menstrual problems. The most common menstrual problem was dysmenorrhea (45%). Followed by oligomenorrhea (15.25%), menorrhagia (13.75%) and polymenorrhea (8.25%). Prevalence of dysmenorrhea and oligomenorrhea was more in the higher age group while, menorrhagia and polymenorrhea decreases as the age advances as shown in table-1. But overall menstrual problems were significantly less as the age of the adolescent advances (÷2 =9.48; P=0.01).

Table 1. Age-wise distribution of Menstrual Problems in Adolescent Girls (N=400).

Menstrual problems	Age of the Adolescent Girls						Total	
	13-14 year		15-16 years		>17 years			
	No.	%	No.	No.	%	No.	No.	%
Dysmenorrhea	43	23.89	56	31.11	81	45.00	180	45
Oligomenorrhea	14	22.95	19	31.15	28	45.90	61	15.25
Menorrhagia	25	45.45	18	32.73	12	21.82	55	13.75
Polymenorrhea	13	39.39	10	30.30	10	30.30	33	8.25
No Menstrual Problem	18	18.37	22	22.45	58	59.18	98	24.5

DISCUSSION

Menstruation though a normal physiological process but many times is associated with various abnormalities affecting the day to day work of the adolescent. 75.5% girls in the present study had menstrual problems but Deepali S Deo et al ³ found 83.54% adolescent having either one or more menstrual problems.

The prevalence of dysmenorrhea in the present study was 45%, exactly similar (45%) finding was observed by Widholm O ⁴. But Singh A et al ⁵, Zegeye DT et al ⁶, Avril M Houston et al ⁷ and Sharma P ⁸ found high prevalence of dysmenorrhea i.e. 73.83%, 72%, 65%

and 67.2% respectively. Deepali S Deo et al ³ found less percentage (31.64%) of dysmenorrhea in their study. The variation may be due to tolerance and acceptance of the symptoms among the selected study groups.

15.25% girls in the present study had oligomenorrhea similar finding (11.3%) was observed by Bachmann GA et al ⁹. In the present study 13.75% girls had problem of menorrhagia. Similarly Deepali S Deo et al ³ and Avril M Houston et al ⁷ found menorrhagia in 10.13% and 8.6% of adolescent girls respectively. Polymenorrhea was observed in 8.25% adolescent girls but Deepali S Deo et al ³ noted the prevalence of polymenorrhea in only 1.26% girls

which was very low as compared to present study. Present study shows that the problem of dysmenorrhea and oligomenorrhea was more as the age of the adolescent advances. This finding was similar to Widholm O⁴.

Conclusion and Recommendation

This study shows significant number of adolescent girls had menstrual problems like dysmenorrhea, oligomenorrhea etc. So there is need to formulate appropriate counseling and management plans/policies to tackle these problems.

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Knowledge and Practice of Breast Self-Examination among Females in Kolar, Bhopal

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ABSTRACT

Background: Breast cancer is the most common cancer among women worldwide and it can be detected at an early stage through breast self-examination (BSE). It is a more common than cancer cervix in the developed as well as in developing countries.

Aim: To determine levels of knowledge and practice of Breast Self-Examination among females in Kolar, Bhopal.

Study Design: Cross sectional study

Materials and Method: A community based cross sectional study was carried out in Danish Kunj, an suburban area located in Kolar, Bhopal during month of December 2010- Feb 2011. 152 females were selected for interview. Data was collected by pre-tested questionnaire. Data entry and analysis were done using SPSS Version 16.0.

Results: 25.7% of the respondents were aware of breast-self examination. Only 14.5% respondents practiced BSE. Awareness of breast self examination was found to be related to educational attainment ($p=0.006$).

Conclusion: Majority of the respondents were aware of breast-self examination. Knowledge about screening methods for breast cancer was poor. The practice of breast - self examination amongst females should be encouraged.

Keywords: Breast, Cancer, Examination, Awareness, Knowledge And Practice

INTRODUCTION

Cancer afflicts all communities worldwide. Breast cancer appears to be a disease of both the developing and developed worlds. Breast cancer is the most common cancer in women worldwide, comprising 16% of all female cancers. It is estimated that 519 000 women died in 2004 due to breast cancer, and although breast cancer is thought to be a disease of the developed world, a majority (69%) of all breast cancer deaths occurs in developing countries (1).

It is a more common than cancer cervix in the developed as well as in developing countries(2). In past 20 years, breast cancer incidence in the world has shown a dramatic increase of 50-100%. Breast cancer accounts for about 20% cancers in Indian women. The population based cancer registry for Bhopal in India for 2004-05 puts incidence of breast cancer at 26.01% of all cancers in females with a death rate of 19.39%

among all cancer deaths. The cumulative risk among females aged 0-64 years is put at 2.02 (3). Appropriate intervention is often effective in avoiding fatal outcome following diagnosis of breast cancer, which strongly supports the need for breast cancer prevention, and screening programmes (4). Breast cancer is easier to treat if diagnosed early. Early detection of breast cancer can be achieved by performing periodic breast self examination (BSE), mammography, and clinical breast examination.

Currently there is no population-based mammography-screening program in place in India. In a bid to reduce the incidence of mortality from breast cancer there is need for an effective screening program. Empowering female health workers and creating awareness amongst them could go a long way in enhancing the screening programme for breast cancer. Prevention or identification of breast cancer at an early

stage is of paramount importance in saving lives as well as improving the quality of life (5).

Breast self-examination (BSE) is one of the important steps for identifying breast tumors at an early stage (6). For that reason, some experts recommend that women over age 20 perform a monthly breast self examination to look for new lumps and other changes(4). Breast self-examination (BSE) remains the most controversial of commonly recommended strategies for breast cancer screening. The self breast examination has some limitations, but it has definite role for early diagnosis in countries like India and however, one should not forget the importance of regular breast examinations by doctor or screening by mammogram.

MATERIALS AND METHOD

The study was carried out in Danish Kunj, an urban area located in Kolar suburb of Bhopal city during December 2010-Feb 2011. It was a community based cross sectional study and a house to house survey was undertaken in the area. Two hundred and twenty women were selected for interviewing by simple stratified random sampling of the households, out of which forty one females were not found at their residence. One hundred fifty two healthy females were interviewed with the aid of structured questionnaire. Informed consent was taken from all the respondents. Twenty seven women refused the interview and were excluded from the study.

A pre-tested structured questionnaire containing both closed and open-ended questions was administered. The questionnaire sought information on socio-demographic and occupation characteristics of the respondents, common health problems, care seeking behaviour, reproductive health status and clinical assessment of the respondents. Questionnaires were coded and statistical analysis was done using Statistical Package for Social Sciences software programme (SPSS) Version 16.0 to calculate frequencies and chi-square analysis to test for associations between categorical variables.

RESULT

Social and Demographic Characteristics

A total of 152 respondents were interviewed and their social and demographic characteristics are presented in Table 1. The mean age of the respondents was 41.85 ± 9.3 years (range was 26 – 66 years), of these, 56 (36.6%) were aged between 30 and 39 years. One

hundred forty seven (96.7 %) were married. Fifty one (36.6%) had secondary education and 39 (25.7%) had University education. Most of the respondents are housewives and only 14(9.2%) of the respondents were employed. Family history of breast cancer was given by 8 (5.4%) of the females (Table 1).

Awareness and Practice of Breast Self Examination among female

One hundred thirteen (74.3%) of them were not aware of breast self-examination while 39 (25.7%) were aware and 22 (14.5%) of them practiced BSE.

The level of awareness of breast self examination was highest (33.3%) among those aged 30-39 years and was lowest among those more than 60 years (7.7%) ($p = 0.158$). The women who had university education level were more knowledgeable about breast self-examination while those who had secondary, primary or no education were the least knowledgeable ($p = 0.006$) (Table 2)

Twenty two (14.5%) of the respondents reported that they practiced breast self-examination. The practice was highest amongst those aged 30-39 years and lowest for those aged 50-59 year and more than 60 years ($p = 0.116$). The practice of breast self examination was reportedly higher among women who had university education and lowest amongst those with primary and no education ($p = 0.065$) (Table 3).

Table1. Socio-demographic characteristics of the respondents

Characteristic	n (152)	%
Age group (Years)		
<30	13	8.6
30-39	56	36.8
40-49	47	30.9
50-59	24	15.8
>60	12	7.9
Marital status		
Unmarried	5	3.3
Married	147	96.7
Education level		
Illiterate	31	20.4
Primary	31	20.4
Secondary	51	33.6
University	39	25.7
Women's occupation		
Housewife	138	90.8
Outside work	14	9.2
Family history of breast cancer		
Yes	8	5.3
No	144	94.7

Table 2: Awareness of Breast Self-Examination by Age and Level of education

Characteristic	Awareness of Breast Examination (n=152)			p-value n=152
	Yes (%)	No (%)	χ^2	
Age group (Years)				
<30	7(17.9)	6(5.3)	6.611	0.158
30-39	13(33.3)	43(38.1)		
40-49	12(30.8)	35(31.0)		
50-59	4(10.3)	20(17.7)		
>60	3(7.7)	9(8.0)		
Education level				
Illiterate	3(7.7)	28(24.8)	12.286	0.006*
Primary	5(12.8)	26(23.0)		
Secondary	14(35.9)	37(32.7)		
University	17(43.6)	22(19.5)		

*P<0.05

Table 3: Practice of Breast Examination by Age and Level of education

Characteristic	Practice of Breast Examination (n=152)			p-value
	Yes (%)	No (%)	χ^2	
Age group (Years)				
<30	5 (22.7)	8(6.2)	7.381	0.117
30-39	8 36.4)	48(36.9)		
40-49	5(22.7)	42(32.3)		
50-59	2(9.1)	22(16.9)		
>60	2(9.1)	10(7.7)		
Education level				
Illiterate	2(9.1)	29(22.3)	7.213	0.065
Primary	2(9.1)	29(22.3)		
Secondary	8(36.4)	43(33.1)		
University	10(45.5)	29(22.3)		

DISCUSSION

Breast self-examination (BSE) provides an inexpensive method for early detection of breast tumors, thus knowledge and consistent practice could protect women from severe morbidity and mortality due to breast cancer (7). The procedure, though simple, non invasive requiring little time, can only be practised with the right attitude to sustain it and achieve the desired goal.

In the qualitative study conducted by Johnsona et al. showed that all women need to be educated about breast cancer and to learn early intervention techniques such as breast self examination at an early age. Lack of knowledge about breast cancer and breast cancer risk may lead to inaccurate perceptions of the disease and a lack of utilization of early detection techniques.

Low levels of knowledge and a lack of perceived risk coupled with the inundation of breast cancer information that focuses on older women reinforces the belief that young women are not at risk and do not need to be aware of breast cancer (8).

This study assessed the knowledge and practice of breast self-examination among women in Danish Kunj, Kolar, Bhopal. Approximately one fourth of the respondents (25.7%) were aware of BSE. This is less than in the study in Ibadan, Nigeria (31.7%) (9). The level of awareness is however higher than 11.9% of women in China who were aware of BSE (10). This may be due because the respondents in the later are all from rural area.

In this study association was observed between level of education and awareness regarding breast self

examination. This is similar to that found in the study in traders in Ibadan, Nigeria and also in the study in health workers in Iran (9, 11).

It was also observed that BSE was practiced by very less women. It is almost similar to figures reported in the study among women in Iran (12) but more than the study in South Asian women and those reported in a study in Egypt(10.4%)(13,14).

Thorough clinical examination and patient education in self-examination can have a crucial impact on early identification of breast cancer; its diagnosis and, ultimately, enhanced survival. In many countries, especially developing countries like India, BSE will most likely be the only feasible approach to wide population coverage as it is a cheap and easy method (2).

CONCLUSION

The results indicate that most women in our study were not well informed on pertinent issues surrounding breast cancer and have poor BSE practices. There is need to create awareness about the importance of BSE amongst women so as to improve this practice in a bid to detect breast cancer at an early stage. This may in turn lead to an overall decrease in the mortality associated with breast cancer in developing countries like India.

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Nosocomial Fungal Infections in Tertiary Care Hospital

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ABSTRACT

Of late, there has been sudden rise in frequency and change in pattern of presentation in fungal infections. We conducted a prospective study to understand the epidemiology and changing pattern of these infections. Records of 243 cases with fungaemia were analyzed. Out of which the *C. tropicalis* was the most common yeast isolated. While Antifungal susceptibility testing report modified therapy has a better prognosis in many patients. The present study highlights the rise of non-*Albicans* *Candida* species in our hospital with differential distribution in surgery and burn wards are noted.

Keywords: *Candida*, *Fungaemia*, *Blood Stream Infection*

INTRODUCTION

Nosocomial fungal infection due to *Candida* and related yeasts has become a persistent health problem. *Candidaemia* is the fourth most common cause of nosocomial blood stream infection (BSI) accounting for around 8 % of nosocomial sepsis [1, 2]. Of all fungal infections, those caused by *Candida* species are associated with high mortality [3]. Even in non neutropenic patients, *candidaemia* showed the crude mortality rate exceeding 50 percent [4, 5].

Despite major advances in the field of antifungal therapy the incidence and mortality due to *candidaemia* have remained grossly unaltered in the last 2 decades [2].

It has also been observed that the change in species distribution of fungal infections with the emergence of many non –*albicans* *Candida* species infections [1]. The *C. glabrata* has emerged second to *C. Albicans* [2, 6-7] while in other countries, *C. tropicalis* and *C. parapsilosis* are main source of infection.

In India, there is been a rise in frequency of infection caused by non-*Albicans* *Candida* species, with its isolation rate ranging from 50 percent to 96 percent [10-14]. Dramatic increase in *candidaemia* due to non-*Albicans* *Candida* species had been documented from 20% in 1991 to more 90% in 1997 [8, 12].

However, predominant isolation of *C. tropicalis* instead of *C. glabrata* in all age groups in the Indian scenario is unique in this context [8-10]. The difference in temporal association of *Candida* species in different countries may be linked to hospital care practices and endemicity of that particular *Candida* species. No systematic study has been conducted in south India to analyze the peculiarities of fungal infections in this area. Hence an effort here is made to understand the epidemiology of candidemia in south Indian hospitals and management of these cases.

MATERIAL AND METHOD

SAMPLE: 243 patients during the study period 167 from surgery and 76 from burns

Study center: KLE Dr Prabhakar kores hospital and medical research centre, Belgaum, India it is a 2000-bed multi-speciality tertiary care centre in south India.

Inclusive criteria

1. All hospitalized patients with ee1 blood culture positive for yeast during their hospital stay from august 2009 through august 2010 were included in this study.
2. The patients with burn wound 50 to 75% and major surgery were also considered for the study.
3. Detailed clinical history, laboratory

investigations and management of each patient were recorded prospectively and analyzed.

Yeasts isolated were identified using conventional phenotypic and physiological methods including germ tube test, morphology on corn meal agar, sugar fermentation, nitrate assimilation, and ascospore formation [16]. Antifungal susceptibility testing of each isolate was performed by broth microdilution technique according to CLSI M27-A2 guidelines against amphotericin B, fluconazole, itraconazole, voriconazole, 5-flucytosine, and caspofungin [12]. The report of minimum inhibitory concentrations (MICs) was communicated to the respective clinician within 2-3 days of yeast isolation.

The interpretive guideline for in vitro susceptibility testing of candida species of CLSI was followed for 5-flucytosine, fluconazole, and itraconazole [17]. Voriconazole breakpoints considered were 1 mg per me (Susceptible) and 4 mg per me (resistant) [13]. If the results of the MICs fell between the susceptible and resistant categories, they were considered to belong to the susceptible-dose dependent category (S-DD). Due to the lack of interpretive breakpoints for caspofungin, a categorical assignment to this drug was not performed.

As large numbers of fungaemia cases were detected in the surgery, a case control study was performed starting from the second month of the study to determine the potential risk factors for fungaemia in the same ward. All patients with fungaemia (67 patients), and consecutive 64 patients without fungaemia from the surgery were included in this *case-control* study. The latter group served as control. The difference in mortality between these 2 groups was considered as attributable to mortality.

Risk factors for fungaemia were analysed by univariate analysis (ANOVA) and multivariate analysis by the SPSS 15.0 tool. Data of this study were analysed in Microsoft Excel 2007, SPSS version 15.0.

RESULTS

Yeast was isolated from the blood of 243 patients during the study period. Out of 243 patients, 167 were from surgery and 76 from burn wards. The mean age of the patients with fungaemia was in the range 20 to 85y. In 19 patients yeast was isolated with another bacterium, signifying mixed infection.

Among the isolates *C. Albicans* accounted for 18.1% while non *Albicans* accounted for 81.9%.

The *C. tropicalis* was the overall commonest (58.7%) yeast isolated followed by *c. gullermondii* (27.3%) and compared patients with burns the patients who had abdominal surgery ward patients showed higher proportions of yeast isolates.

The result of antifungal susceptibility testing showed increased resistance to azoles was noted in *C. albicans*, *C. tropicalis*, and *C. glabrata* strains and use of Systemic antifungal therapy was done in 93 patients (76 surgery and 17 burns) patients.

DISCUSSION

Several important observations were made in the present study. The present study showed an 11-fold increase of the number of patients with candidaemia was reported in the second half of the 1980s [14]. A further 18 fold increase was observed in 1995 compared to 1991 [10]. In 1996 and 1997, nearly 500 cases with candidaemia were observed per y [9]. Since then, this trend had been slowed to 165 cases in 2000 due to the strategy of antifungal prophylaxis to high-risk patients [9].

However, it is also observed that there has been increase in the incidence of fungal infection in spite of use of antifungal prophylaxis. Fungaemia or candidaemia is more prevalent in surgery patients than the burns.

It is also found that surgery patients are more prone to get candidaemia infection as compare to burns patients. Abdominal surgery, repeated surgery, prolonged use of antibiotics, invasive manipulations such as central line catheterization, endotracheal intubations and weak defense immunity risk factors provided the perfect setting for nosocomial candidaemia.

C. Albicans is still the leading cause of Candidaemia in most centers [2]. However, in India, non-*Albicans* candida species are the major cause of candidaemia in tertiary care medical centers [8-10]. In the present study, *C. Albicans* was isolated from 18.1% of patients only, and non-*Albicans* species from 79.1% of patients. The emergence of such a high rate of non-*Albicans* Candida species may indicate inadequate hospital care practices, as a majority of these species are exogenous in origin. Aggressive use of

intravascular devices and carriage of the organism on the hands of health care workers are probable reasons for nosocomial transmission via direct contact [2, 14, 15, and 16].

Among non-Albicans Candida species, *C. glabrata*, *C. parapsilosis*, and *C. tropicalis* constitute the 'top 3' candida isolates from BSI in most hospitals worldwide, although difference in distribution among these 3 species is reported from different countries. *C. glabrata* is more prevalent in the hospitals of United States in adult wards, whereas *C. parapsilosis* is common in pediatric wards [2-8, 15, 16, and 17].

A recent global trend of increasing frequency of BSI due to *C. tropicalis* has been observed, especially in Latin America and Asia-pacific countries, although there appears to be a decreasing frequency of BSI due to *C. tropicalis* in the United States [2]. *C. tropicalis* ranks second in Latin America (20%) and is more common than *C. glabrata* in the Asia-Pacific region (21% vs. 12% respectively) [2]. In India *C. tropicalis* ranks among non-albicans candida species isolated [8-10, 17] except during the outbreak period due to particular species [15]. In present study the isolation of *C. tropicalis* from 44.1% of patients (35.3% surgery 8.8% burins) and *C. guilliermondii* (28.7% from surgery patients and 3.7% in burin). *C. guilliermondii* is relatively uncommon species of candida that appears to be increasing frequency as a cause of invasive candidiasis especially in Latin America [18] This species has been responsible for clusters of infection in a hospital setting, and demonstrates decreased susceptibility to fluconazole [19, 20].

The list of Candida species causing invasive infections constitutes to grow as more laboratories engage in species level identification as an aid to optimize the therapy of invasive candidiasis [2].

Antifungal susceptibility testing may play an important role in selection of antifungal treatment and helps to modify antifungal therapy [21, 22], although it may not be entirely useful owing to multiple host risk factors that may modify the outcome in patients with candidaemia [5, 7, and 23]. In the present study antifungal testing leads to improved therapy in 16 patients, and 7 of them responded to changed therapy and azole resistance in study is matter of concern. Fluconazole has been the focus of resistance surveillance worldwide since its introduction in early 1990s. In a large study from Iowa University, fluconazole resistance was observed in d"3% of

candida strains with the exception of 9% and 40% in *C. glabrata* and *C. krusei*, respectively [24]. Similarly, in the ARTEMIS Disk study, infrequent resistance was observed in *C. albicans*, *C. tropicalis*, and *C. parapsilosis* [25].

The choice of antifungal therapy did not appear to have in a significant impact on survival and patients with invasive candidiasis, although amphotericin B is associated with a higher rate of adverse events than fluconazole and echinocandins [26]. In the present study the patients were treated either with fluconazole or amphotericin B. No statistically significant difference was observed in mortality between the 2 therapy. However, our concern is that 53 patients died before initiation of therapy, and the majority of deaths occurred within 10 d of diagnosis of candidaemia. It suggest that need for quicker diagnostic method for candidaemia and further increase in awareness among clinicians to suspect this in patients with defined risk factors.

In conclusion, candidaemia associated with high morbidity and mortality, and non-albicans candida species are more isolated pathogen from those patients in our tertiary care centre. So need to improve health care practices to combat this threat. In this *C. tropicalis* being the commonest isolate of non-albicans candida species. The emergence of azole resistance is also matter of concern. Further studies are to be followed to find out to study between in vitro antifungal testing and outcome results.

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Homeopathy in Dentistry- A New Avenue Visited

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ABSTRACT

Homeopathy in dentistry is a less visited avenue in the management of orofacial diseases. Homeopathy is a safe and natural alternative that is effective in both adults and children. Homeopathic remedies are used in dentistry to improve the psychological or emotional condition of patients without the side effects of conventional drugs. A Medline search was made to gather evidence in support of homeopathic drugs used in dentistry and various RCT, case control studies as well as reviews published in several journals were studied to bring out this paper.

Keywords: Homeopathy, Chamomile, Hepar Sulphuris Calcareum, Holistic Medicine

INTRODUCTION

Dental health care professionals are facing challenges in managing acute or chronic dental conditions due to failure in regression of symptoms or side effects of traditional treatment regimens. In light of these facts, dental health care approach is directed toward holistic methods like ayurveda, acupuncture, naturopathy or homeopathy in managing diseases and conditions related to orofacial structures. Homeopathy as a part of holistic dentistry is said to provide effective treatment to the patients while minimising side effects. Homeopathy is not a replacement or alternative to clinical dental care but can be used alongside conventional treatments and drug regimens. This review concentrates on history of homeopathy, its indications in dentistry, drugs and dosages used along with evidences supporting uses of homeopathy in dentistry.

History of Homeopathy ^{1,5}

Homeopathy is an alternative therapy that has been used for over 200 years. It was discovered by the German Physician Samuel Hahnemann (1755-1843), who was carrying out research into a cure for malaria. He found that "cinchona bark" (Peruvian bark from which quinine is derived) stimulated a fever similar to malaria in healthy patients, and deduced that substances triggering these symptoms could be used to treat similar signs of sickness in an ill person. He then discovered that by diluting remedies, their

medicinal powers were not reduced but rather enhanced. Hahnemann was dissatisfied with the medicine of his day due to its harmful effects, and wished to discover better and safer ways of prescribing medicines. He decided to investigate the effects of various medicinal substances on himself and other healthy volunteers. From these experiments, which were called "provings", led him to observe and describe the basic principles of homeopathic medicine as described below.

According to Hahnemann¹, "The causes of our maladies cannot be material, since the least foreign material substance, however mild it may appear to us, if introduced into our blood-vessels, is promptly ejected by the vital force". Consistent with this philosophy is the belief that it is more important to pay attention to symptoms than to the external causes of disease. Knowing the specific symptoms of illness, treatment is then a matter of finding a substance or substances that induced the same symptoms in a healthy individual. This is the basis of Hahnemann's "Principle of Similars."

The Principles¹

Law of Similars: This is based on the principle "Similia Similibus Curentur", which means "Like is cured by Like" i.e. a substance which produces symptoms in a healthy person cures similar symptoms in a sick person.

Individuality

The homeopath attempts to best match the patient's symptoms to a remedy "symptom picture". A "symptom picture" is comprised of all the patients' symptoms (physical, mental and emotional) and includes such things as food cravings, temperature preferences and personality, as well as conventional physical symptoms. Such individualized treatment of specific symptoms is fundamental in the practice of "classical" homeopathy.

The Minimum Dose

This refers to the use of the smallest possible dose to evoke a healing response. The use of "infinitesimal doses" is the most controversial principle of homeopathy. This principle states that the more a substance has been potentized, the more potent it is. Homeopathic remedies are derived from original substances (plant, animal or mineral) and are reduced to an "infinitesimal dose" through a pharmaceutical process known as "potentization".

The Potentized Remedy

Homeopathic remedies are mostly derived from plants, but minerals, animal products, healthy and unhealthy tissues and secretions and other sources are also used to prepare the remedies. This involves the preparation of a base substance (or Mother Tincture) of the original substance in a hydroalcoholic solution, successive dilutions of the mixture and succession (vigorous pounding) of the mixture after each dilution. Through this process of potentiation, no chemical or physical trace of the original substance remains past the 12th decimal dilution.

Rationale for homeopathy in dentistry is

1. Prevent or inhibit the development of disease processes in the oral cavity.
2. Provide treatments that work alongside conventional medicine.
3. Prevent or limit complications of surgical intervention.
4. Reduce dental phobias and anxieties.
5. Facilitate recovery from dental trauma.
6. Manage dental conditions with a holistic approach.

Homeopathy for Dental Problems: Here are some

dental problems and the homeopathic remedies that can be used in their management: as in all homeopathic prescribing, the remedy selection is more important than potency.

Abscesses

1. Belladonna early dental abscesses accompanied by redness and throbbing which is aggravated by slightest touch .(30X every 30-60 minutes)
2. Hepar sulphuris calcareum : where is abscess is accompanied by pus formation , increased salivation,and where gums are sour to touch and bleed easily.repeated doses of 6X will encourage pus discharge , while higher potency(30x-200x two or three times daily) will help abort pus formation.
3. Silicea once pus is draining,silicea6X will hasten the discharge.
4. Myristica where abscess is swollen and accompanied by numbness of the area, especially suited for wisdom teeth in potency of 6X
5. Calendula dilute the tincture 1 part to 20 parts of water . use as a gentle but effective mouth rinse.

Apprehension (anticipation of dental visit)

- i. Gelsium fear accompanied by "weak knees", diarrhea, and drowsy behavior.30x to be taken the night before , the morning of and ½ to 1 hour before the dental visit.
- ii. Aconite when fear is accompanied by great panic as well as physical and emotional restlessness, 30x to be taken the night before , the morning of and ½ to 1 hour before the dental visit.
- iii. Coffe cruda when anxiety is accompanied by intolerance to noise or music . 30x to be taken the night before , the morning of and ½ to 1 hour before the dental visit.
- iv. Chamomilla this is not for apprehension , per se , but may greatly help those individuals with lowered pain threshold,three doses of 30 x over several hours prior to dental visit.

Bleeding: Almost all post surgical bleeding is well controlled by pressing moist gauze pad or tea bag over the bleeding area.in cases where bleeding is not controlled by local measures certain homeopathic intervention can be used such as

1. Phosphorous 6X to 20x every 10 -30 minutes till bleeding stops.
2. Arnica if bleeding is accompanied by bruising or soreness, 30x every 10-30 minutes until bleeding is controlled.

Diseases involving pulp and periapical region^{1,5}

Diseases Related to Gingival and Periodontium

Arsenicum album: Use for unhealthy, bleeding gums.

Ferrum phosphoricum: Use for poor gum tone or gums that bleed after brushing.

Hypericum: Use for tender gum tissue and to promote healing.

Kali chloricum: Use for acute ulcerative tissue.

Naturium muriaticum: Tissue integrity.

Hepar sulphuris: Tissue with suppuration, chronic abscesses.

Silicea: Periodontal abscess with swollen glands.

Staphysagria: Loose teeth, pain increased by pressure.

Symphytum: Injuries to periosteum. Stimulates growth of epithelium on ulcerated surfaces.

Mercurius solubilis: Use for acute ulcerative tissue with a coated tongue and metallic taste in the mouth.

Nux vomica: Use for swollen painful gums when the back of the tongue has a whitish coating and when the patient consumes a lot of stimulants such as coffee and tea.

Phosphorous: Use on swollen gums that bleed easily, and when there's an overproduction of saliva.

Ruta graveolens ("dry socket"): Use for injured bone and alveolitis.

Diseases Related to Trigeminal Nerve^{7,9,10,12}

Aconite: Trigeminal neuralgia

Aranea diadema: Use for radiating pain in the right side of the face that is aggravated by cold. Also use for sudden, severe pain in the teeth at night after lying down.

Cuprum metallicum: Use for cramping of muscles.

Gelsemium sempervirens: Use to relieve headache

and pain of the upper back and neck, which extends over the head and for dizziness and numbness.

Ignatia: Use for headache as if a nail were driven through the side of the head.

Lachesis: Left-sided complaints.

Lycopodium: Right-sided complaints.

Magnesia phosphorous: Use for spasmodic pains made worse by cold water and made better by heat and rubbing.

Sanguinaria: Right-sided neuralgia, facial migraine.

Spigelia: Use for pain involving the eye, cheek, and left temple areas.

Zincum phosphoricum: Sharp pains on the right side of head.

Zincum valerian: Sharp pains on the left side of head.

Postoperative Complications

Apis mellifica: Good for post injection soreness after dental work.

Chamomilla: Give one hour prior to dental appointment for patients with a low pain threshold. It also expedites the wearing off of the numbness.

Hypericum: Use where there is an injured nerve.

Ledum: Use for puncture wounds and soreness resulting from a dental injection.

Magnesia phosphorica: Use for stiff, sore jaws following prolonged dental work when the muscles are cramped and feel better with warmth.

Staphysagria: Use for incision-type wounds after soft tissue surgery.

Symphytum: Use for trauma of bone and periosteum.

Emphasis on Conditions Involving Tooth Socket Post Extraction eg Dry socket

1. Belladonna 30x every 30-60 minutes if accompanied by throbbing pain.
2. Ruta graveoleus 6x for any surgery or other injuries to the jaws or other facial bones.
3. Calendula dilute the tincture 1 part to 20 parts of water and use as a mouthwash.

Conditions Related to Salivation^{7,11,12}

Baryta carbonica: Use when there is excessive saliva during sleep.

Bryonia alba: Use for an extremely dry mouth, with dryness of mucous membranes and great thirst.

Phosphorous: Use for hyper salivation and when gums are swollen and bleed easily.

Pulsatilla: Use for diminished saliva with no thirst.

Diseases Related to Temporomandibular Joint (TMJ)^{1,10,11,12}

Arum triphyllum: Use for pain in joint on swallowing.

Calcarea flourica: Use for hypermobile joints

Calcarea phosphorica: Use when mouth cannot be opened without pain.

Carbo vegetabilis: Use for vertigo with nausea and tinnitus.

Chamomilla: Use for low pain threshold. Unbearable spasms of pain, radiating into the ear.

Cuprum metallicum: Use for trismus of muscles.

Granatum: Use for painful cracking of the joint.

Mangesium phosphorica: Use for muscle spasms.

Phytolacca: Use for earaches with pain extending into teeth, jaw, and throat.

Rhus toxicodendron: Use for joint stiffness that improves with movement and for "Popping" of TMJ.

Tooth Eruption⁵

Calcarea carbonica: Use for a delayed eruption.

Chamomilla: Use for difficult teething.

Zincum metallicum: Use for teeth gritting during difficult dentition with loose teeth and bleeding gums.

Oral Ulcerations^{5,7,8,12}

Natrum muriaticum: Use for cold sores and fever blisters. Lips and corners of mouth dry and cracked lips.

Nitircum acidum: Use for ulcers with irregular edges and a raw appearance with a tendency to bleed easily.

Decay of Milk Teeth^{1,2}

Kreosotum: This remedy has premature decay of milk teeth; they become yellow, and dark and then decay. It also has aching pains in diseased teeth.

The current and proposed uses of homeopathy covers a wide range of diseases and ailments. An attempt has been made here to classify the quality of evidence that supports these various applications. This classification is based on existing studies, most of which are cited in the references, and not on an exhaustive review of the entire literature on homeopathy. The broad classification include applications with proven benefits, applications with substantial evidence that require additional support, promising applications that need substantial additional evidence, and proposed future applications. Proven benefits of homeopathy include the treatment of oral ulcerations^{5,7,8,12}, sialorrhea^{7,11,12}, neuralgias^{7,9,10,12}, xerostomia^{7,9,11,12}; applications with substantial evidence include the prevention TMJ disorders,^{1,10,11,12}; promising applications include the autoimmune disorders affecting oral mucosa; and proposed future applications include the treatment of lichen planus, bruxism. The use of homeopathy in medical practice is rapidly increasing, as there are no dearth of studies that demonstrate the efficacy of homeopathy^{5,9,10,11,12}.

CONCLUSION

Homeopathy is an emerging field of dental medicine that is useful in management of conditions affecting orofacial structures. With advantages of minimal side effects and favourable treatment outcome, homeopathy has emerged as one of the alternative therapy in cases of treatment failure or poor response to conventional drugs. The knowledge and understanding of Homeopathic approach of treatment is still an ongoing process and further research should be carried out in this regard. A note of caution should be applied, negative findings are being reported^{13,14}, as would be expected as more studies are being performed and as more applications are being sought for the use of homeopathy. Overall, homeopathy appear to be here to stay as part of the physician's armamentarium for the prevention and treatment of disease; however, more evidence-based research is required to firmly establish medical areas of use and areas in which homeopathy is not applicable.

Conflict of Interest: None

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Role of Stem Cells in Dentistry- A Review

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ABSTRACT

There has been a tremendous development in the field of tissue engineering in past two decades that can be applied in the dentistry. With the more recent advances in understanding the cellular and molecular basis controlling the development and regeneration of tooth structures, great changes are expected in conventional dental therapies. These biologically based procedures can result in continued root development, increase in dentinal wall thickness and induction of apical closure even in the case of necrotic immature permanent teeth. In this review role of stem cells in bio- root engineering will be discussed.

Keywords: Tissue Engineering, Stem Cells, Regeneration, Bioroot Engineering

INTRODUCTION

A vast number of clinical case reports have raised the possibilities for a new protocol for treatment of lost tooth substance due to trauma or caries. The three main components believed to be essential for tissue regeneration are stem cells, scaffold and growth factors¹. Among three most important being the stem cells. The term "*stem cell*" was proposed by Russian histologist *Alexander Maksimov* in 1908 at congress of hematologic society in Berlin who postulated existence of haematopoietic stem cells.² Dr. Songtao Shi discovers new source of adult stem cells in children's primary teeth in 2003.³ Seo et al reported multipotent stem cells from human periodontal ligament.⁴

A stem cell is characterized by the ability to renew themselves through mitotic cell division and differentiating into a diverse range of specialized cell types. First type of human stem cells are isolated from

dental pulp tissue of extracted third molars and named dental pulp derived stem cells DPSCs for their clonogenic properties and ability to differentiate into odontoblasts like cells and form dentin pulp like complexes.⁵

Subsequently a variety of dental mesenchymal stem cells have been isolated including stem cells from human exfoliated deciduous teeth SHED⁶, human periodontal ligament stem cells (PDLSCs)⁴ and Stem cells derived from apical papilla SCAP⁷

Types of Stem Cells

A. According to stage of development

- i) **Embryonic Stem Cells:** That are found in blastocysts.
- ii) **Adult Stem Cells:** That are found in adult tissues.

B. According to potency: The capacity to differentiate into specialized cell types.

- i) **Totipotent:** Stem cells can differentiate into embryonic and extra-embryonic cell types. Only the morula's cells are totipotent, able to become all tissues and a placenta.
- ii) **Pluripotent:** These are the descendants of totipotent cells and can differentiate into cells

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derived from any of three germ layers. These stem cells originate as inner mass cells within a blastocyst.

- iii) **Multipotent:** Stem cells can produce cells of a closely related family of cells e.g. hematopoietic stem cells differentiate into red blood cells, white blood cells, platelets, etc.
- iv) **Unipotent:** produce only one type of cells.

C. According to their source:

- a. **Autologous stem cells:** Are obtained from the same individual to whom they will be implanted.
- b. Allogenic cells originate from a donor of the same species.
- c. **Xenogenic cells:** Are those isolated from individuals of another species.

Embryonic stem cells (ESCs)

These are stem cells derived from the inner cell mass of an early stage embryo known as a blastocyst. Human embryos reach the blastocyst stage 4–5 days post fertilization, at which time they consist of 50–150 cells. Embryonic Stem (ES) cells are pluripotent. This means they are able to differentiate into all derivatives of the three primary germ layers: ectoderm, endoderm, and mesoderm. These include each of the more than 220 cell types in the adult body. Pluripotency distinguishes ES cells from multipotent progenitor cells found in the adult; these only form a limited number of cell types

Adult stem cells

These are undifferentiated cells also known as somatic stem cells (from Greek, meaning *of the body*), found throughout the body after embryonic development, that multiply by cell division to replenish dying cells and regenerate damaged tissues. Postnatal stem cells have been sourced from umbilical cord blood, umbilical cord, bone marrow, peripheral blood, body fat and almost all body tissues, including the pulp tissue of teeth. Examples of adult stem cell types in dentistry are-

- Dental Pulp Stem Cells
- Stem Cells from Human Exfoliated Deciduous Teeth (SHED)
- Stem cells from apical papilla(SCAP)

- Periodontal Ligament Stem Cells (PDLSCs)

Dental Pulp Stem Cells

Multipotent stem cells have been successfully recovered from dental pulp in the perivascular niche, they have been shown to have the same cellular markers and differential abilities of mesenchymal stem cells.⁸ Although the regenerative capacity of the human dentin/pulp complex is not well-understood, it is known that, upon injury, reparative dentin is formed as a protective barrier for the pulp.⁹ In addition, dental pulp cells are capable of forming mineral deposits with distinctive dentin-like crystalline structures.^{10,11,5} Recently, dental pulp stem cells (DPSCs) have been isolated from extracted human third molars.^{12,5} Reparative dentin like structure is deposited on the dentin surface if DPSCs are seeded onto a human dentin surface suggesting the possibility of generating pulp and dentin in pulpless canals.¹³

Stem Cells from Human Exfoliated Deciduous Teeth (SHED)

As deciduous baby teeth are shed naturally, this is a non invasive, painless way to harvest stem cells either for storage or future medical use. The exfoliated deciduous tooth contains living pulp remnants consisting of connective tissue, blood vessels, and odontoblasts. *Ex vivo*-expanded SHED expressed STRO-1 and CD146 (MUC18), two early cell-surface markers for bone-marrow-derived MSCs. In addition, SHED expressed a variety of osteoblast/odontoblastic markers, including Runx2, alkaline phosphatase (ALP), matrix extracellular phosphoglycoprotein (MEPE), bone sialoprotein (BSP), and DSPP. After implantation into immunocompromised mice, with hydroxyapatite/tricalcium phosphate (HA/TCP) as a carrier, SHED differentiated into odontoblast-like cells that formed small dentin-like structures.¹⁴ These results suggest that SHEDs are distinctive from DPSCs with respect to odontogenic differentiation and osteogenic induction.¹⁴

Stem cells from apical papilla (SCAP)

SCAP exhibit adipogenic, neurogenic and dentinogenic potential and they are a unique population of postnatal stem cells and have a potential role in continued root formation, pulp healing and regeneration of immature teeth with periradicular periodontitis or abscess undergo apexogenesis.⁷ Both SCAP and HERS (Hertwig's epithelial root sheath) appears to important for continued root development

after replantation and transplantation.¹⁵ SCAP appear to be the source of odontoblasts responsible for formation of root dentin. Whether SCAP are a more suitable stem cells source for pulp generation than DPSCs and SHED because of their natural role as source for primary odontoblasts than the replacement odontoblasts requires further investigations.¹⁵

Periodontal Ligament Stem Cells (PDLSCs)

The periodontal ligament (PDL) connects the cementum to alveolar bone, and functions primarily to support the tooth in the alveolar socket. A recent report identified stem cells in human PDL (PDLSCs) and found that PDLSCs implanted into nude mice generated cementum/PDL-like structures that resemble the native PDL as a thin layer of cementum that interfaced with dense collagen fibers, similar to Sharpey's fibers.¹⁶ Thus, the PDLSCs have the potential for forming periodontal structures, including the cementum and PDL.

Stem Cells & Regenerative Endodontics

Regenerative endodontic procedures can be defined as biologically based procedures designed to replace damaged structures, including dentin and root structures, as well as cells of the pulp-dentin complex.

Regeneration of damaged coronal dentin and pulp

No restorative material (presently available) has been able to mimic all physical and mechanical properties of tooth tissue so the regeneration of tooth tissue facilitates physiologic dentin deposition that forms an integral part of the tooth thereby restoring structural integrity, minimizing interfacial failure, microleakage, and other consequent complications. Similarly, young permanent teeth that require apexogenesis or apexification are the perfect candidates for the regeneration of pulp as they allow completion of both vertical and lateral root development, improving the long-term prognosis. Pulp tissue regeneration involves either delivery of autologous/allogenic stem cells into the root canals or implantation of the pulp that is grown in the laboratory using stem cells. Both these techniques will have certain advantages and limitations that need further research.¹⁷

Revascularization of Infected Pulp Space

It has been shown that under certain conditions revascularization can be achieved in young teeth that

have been traumatically avulsed, leaving a necrotic but uninfected pulp. The immature avulsed tooth has an open apex, short root, and intact but necrotic pulp tissue. Therefore, the new tissue has easy access to the root canal system and a relatively short distance for proliferation to reach the coronal pulp horns. The apical portion of a pulp might remain vital and proliferate coronally after reimplantation, replacing the necrotized coronal portion of the pulp.¹⁸

Several case reports described the treatment of an immature second lower right premolar with radiographic and clinical signs of apical periodontitis. The canal was disinfected without mechanical instrumentation but with copious irrigation with 5.25% sodium hypochlorite and the use of a mixture of ciprofloxacin, metronidazole, and minocycline. A blood clot was produced to the level of the cemento-enamel junction to provide a scaffold for the ingrowth of new tissue followed by a double seal of mineral trioxide aggregate in the cervical area and a bonded resin coronal restoration above it. Clinical and radiographic evidence of healing was observed as early as 22 days. Results revealed that the root walls were thick, and the development of the root below the restoration was similar to the adjacent and contralateral teeth.¹⁹

Stem Cells and Bioengineered Teeth

SCAP and PDLSCs are also investigated to form a bioroot⁷ using a mini pig model, analogous SCAP and PDLSCs were loaded onto hydroxyapatite/tricalcium phosphate and gelfoam scaffold, respectively and implanted into the sockets of the lower jaw. A post channel is created for future post insertion. Three months later, bioroot exposed and a porcelain crown was inserted. The bioroot is encircled from periodontal ligament and appears to have a natural relationship with the surrounding bone. This bioroot engineering can be utilized as an alternative to dental implants as they lack natural root contour and do not have direct integration with bone.¹⁵ Significant advances have been made in defining the molecular basis for the regulation of tooth development through epithelial-mesenchymal interactions.

Both epithelial and mesenchymal tissue layers have been found to express signaling molecules that trigger new gene expression at progressive developmental stages. The reciprocal and sequential nature of these inductions has been found to be the basis for advancing differentiation of dental tissues. The understanding of

mechanisms for tooth development is now being applied in dental tissue-engineering toward regeneration of teeth.

Bioengineering For Dental And Craniofacial Structures By Stem Cells

The majority of craniofacial structures derive from mesenchymal cells (MSCs). During development, MSCs originating from the neural crest are known to migrate, differentiate, and subsequently participate in the morphogenesis of virtually all craniofacial structures, such as cartilage, bone, ligaments, cranial sutures, musculature, tendons, the periodontium, and the teeth. Once migrated, MSCs work synergistically with mesodermal cells in the morphogenesis of craniofacial structures. Both mesenchymal cells and mesodermal cells are derivatives of embryonic stem cells, a few hundred cells of the inner cell mass of the blastocyst. Advances that have been made in craniofacial tissue engineering are:

- Stem cells have been isolated from several craniofacial tissues, with ongoing effort to purify and apply them in the tissue engineering of craniofacial structures.
- Several prototypes of the human-shaped temporomandibular joint condyle have been engineered with integrated cartilage and bone layers from a single population of mesenchymal stem cells.
- Various elements of the periodontium, including the periodontal ligament and cementum, have been engineered via cell-based or non-cell-based approaches.
- Craniofacial bone has been engineered from stem cells, growth factors, and/or biomaterials. A cranial suture-like structure has been engineered from cell- and growth-factor-based approaches.
- Adipose tissue has been engineered in vivo from mesenchymal stem cells, with potential applications in facial plastic and reconstructive surgeries.

The tissue-engineered craniofacial structures to date are undoubtedly prototypes that warrant further development and refinements, but nonetheless were not even available a few years ago.^{20,21} This is optimistic view that functional craniofacial tissues and organs

can be grown *via in vitro* and/or *in vivo* approaches for ultimate therapeutic applications.^{22, 23, 24}

Ethical and immunological issues regarding stem cell therapy

Stem cells isolation, expansion, and storage is a very technique-sensitive procedure. MSCs are considered immune-modulatory as they lack MHC type II (major histocompatibility complex) antigen and therefore do not provoke immune reactions. However, foolproof evidence for their immune suppression characteristics needs to be established. As of now, autologous stem cells are ideally suited for a patient as there is no risk of immune rejection, the process is least expensive, and avoids legal and ethical concerns but the process is time consuming.²⁵ The use of pre-existing allogenic cell lines and cell organ culture removes the problem of harvesting cells from the patients themselves and saves considerable time²⁶ but safety in terms of immune suppression and pathogen transmission is questionable.²⁷

CONCLUSION

With tissue engineering it can be possible to replace a tooth or a dental tissue in clinical practice and can bring a revolutionary change in dentistry as studies have already met success in animal studies to fill the defect in calvarial bone, mandibular condyle, regeneration of dental pulp like tissue, salivary gland, and regeneration of even teeth with rudimentary roots but yet to achieve complete root formation and a function tooth, regeneration of periodontium.

Conflict of Interest: None

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An Economic Analysis of Extraction Treatment in Dental Caries in Thoothukudi District, Tamilnadu

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ABSTRACT

Oral health is much more than healthy teeth and integral to general health. Oral health status is not determined solely by biology. The factors such as social, economic, environmental and others may also be important. Oral diseases, particularly dental caries and periodontal disease at their end stage result in tooth loss. Dental status is a trustworthy measure of the oral health status among adult population. Rather than health system-related factors, socio-demographic and geographical determinants, particularly social class, are associated with tooth loss. This study was carried out with the following objectives: 1) To study the relationship between socio demographic factors, Oral health practices and opting for only Extraction and 2) To estimate the cost involved in the extraction treatment for dental caries.

Materials and Method: The study was conducted in Thoothukudi district, Tamil Nadu. Patients treated in the month of March 2010 from four dental clinics in the district were chosen randomly. Sample size for the study was arrived by using the formula, Sample size (n) = $(1.96)^2 pq / d^2$ as 366. So 100 patients between the age group of 18 and 50 yrs were randomly selected from each clinic.

Results: Out of the 400 patients, 153 (38.3%) have simply extracted their teeth. There is a statistically significant difference in extraction of tooth among rural and urban patients ($p < 0.01$). Among the socio demographic factors, rural dwelling, living in non-concrete houses, education lesser than graduate, occupation- employed and income ? Rs.8000 per month are significantly associated with extraction. The practices such as not having previous RCT, not having regular checkup, smoking, food- vegetarian., brushing with finger, using of powder as brushing material, not rinsing always, not using hygienic aids have the significant association with extraction.

Conclusion: Extraction of tooth remains the simple and common method of treatment for dental caries. This pattern is more prevalent among rural population. The decision on choice of treatment for direct extraction is significantly associated with educational status, occupation, income, previous experience of root canal treatment and regular check up with the Dentist.

Keywords: *Extraction of Tooth, Cost of extraction, Oral health Practices*

INTRODUCTION

Oral health means much more than healthy teeth. Oral health is integral to general health¹. The promotion of general health, with oral health as an integral component, has been recognized as one of the key factors for a successful and productive society.

Oral health status is not determined solely by biology. The factors such as social, economic,

environmental and others may also be important. Growing disparities between the rich and poor countries and between different population groups within the same nation are important characteristics of economic globalization. These differences are reflected in the growing disparity in oral health between the rich and the poor throughout the world².

Populations in the developing nations are afflicted by the same oral diseases such as dental caries periodontal disease and oral cancers as those found in the developed nations. In poorer nations, oral diseases are superimposed on poverty and lack of education. A major obstacle is the lack of commitment by national leaders in developing countries in providing cost-effective approaches to the prevention and treatment of dental diseases³.

Dental caries and periodontal diseases, as the most common oral diseases, have burdened the majority of populations with heavy treatment needs⁴. Direct risk factors such as poor oral hygiene practices and dietary habits, tobacco use and excessive consumption of alcohol are factors that may lead to biological disturbances causing oral diseases⁵. The poor and risky health behaviour mostly characterizes those of a low social level⁶.

Studies on smoking uniformly address inferior periodontal conditions and a higher risk for tooth loss among tobacco smokers⁷. The level of accumulated exposure to smoking that causes oral disease outcomes, however, is still under study⁸. A wide range of behavioural risk factors from smoking to brushing and flossing the teeth, or regularly attending a dental check-up have an influence upon oral health⁹.

Oral diseases, particularly dental caries and periodontal disease at their end stage result in tooth loss and edentulousness. Dental status is a trustworthy measure of the oral health status among adult population¹⁰. Rather than health system-related factors, socio-demographic and geographical determinants, particularly social class, are associated with tooth loss and wearing a denture¹¹.

OBJECTIVES

This study was carried out with the following objectives:

- 1) To study the relationship between socio demographic factors, Oral health practices and opting for only Extraction.
- 2) To estimate the cost involved in the extraction treatment for dental caries

MATERIALS AND METHOD

The study was conducted in Thoothukudi district,

Tamil Nadu. Patients treated from four dental clinics in the district were chosen. Names and addresses of the patients treated in these clinics in the month of March 2010 for any kind of dental treatment were collected. Sample size for the study was calculated by using the formula, Sample size (n) = $(1.96)^2 pq/d^2$. The prevalence of dental caries in the age of 15 years in Tamilnadu was 60.9%. Allowing for 5% precision and a error of 5% the required minimum sample size was 366. The patients between the age of 18 and 50 as the most productive age group were considered for the study. Hence 100 patients between the age group of 18 to 50 yrs were selected randomly from each clinic. A well structured questionnaire was used to collect the relevant data from the patients at their home.

Statistical Analysis

Data were entered in and processed by using SPSS Version 18. The analyses were based on the simple and relevant statistical tools such as percentages and averages. In addition to these, data were analysed by using appropriate statistical techniques, such as logistic regression, t- test and chi-square test in order to examine the significance of the association between the variables taken for the analysis.

RESULTS

The total samples of 400 patients taken for this study consist of 202 (50.5%) males and 198 (49.5%) females. The mean Age is 34.1 years. Of the 400 patients, 246 patients (61.5%) are from rural background and 154 (38.5%) are from urban area.

About 360 (90.0%) respondents reported they had dental decay or caries problem. Among these 360, 221 (55.3%) respondents are from rural area and 139 (34.7%) respondents are from urban area.

Regarding the treatment, out of the 400 patients, 153 (38.3%) have simply extracted their teeth. About 133 (33.2%) patients have filled their teeth. About 74 (18.5%) patients have extracted their teeth and fixed with dentures. Other treatments have been taken by 40 (10.0%) patients.

The relationship of socio-demographic factors and Oral health practices with the treatment of only extraction has been given in the Table 1 and Table 2 respectively.

Table 1. Socio-demographic factors and Extraction

Factor	Extraction Only (N= 153)	Others (N= 247)	Odds Ratio	Chi ² value	p - Value
Age< 34 Yrs	79 (51.6%)	121 (49.0%)	1.11	0.265	0.607
Sex - Male	77 (50.3%)	125 (50.6%)	0.98	0.003	0.957
Area - Rural	107 (69.9%)	139 (56.3%)	1.80	7.445	0.006
Education <Graduate	120 (78.4%)	124 (50.2%)	3.61	31.646	0.000
Occupation- Employed	109 (71.2%)	138 (55.9%)	1.96	9.451	0.002
Income ≤ 8000	108 (70.6%)	94 (38.1%)	3.91	39.998	0.000

Of the 153 patients in the extraction only group 51.6% (79) are in the age group < 34 yrs, and of the 247 patients of other treatments category, only 49% (121) are in the same age group. Odds ratio is 1.11. This means that age < 34 years have 1.11 times risk for having only extraction. But the difference is not statistically significant (p-value 0.607).

Within this extraction group 50.3% (77) are males, and within the other treatments group 50.6% (125) are males. Odds ratio is 0.98. This means that females are slightly more exposed to have only extraction. But the difference is not statistically significant (p-value: 0.957).

Of the extraction group, 69.9% (107) are from rural area, and in the other treatments group 56.3% (139) are from rural area. Odds ratio is 1.8. This means that people from rural area have 1.8 times risk for having only extraction. The difference is also statistically significant (p-value: 0.006)

About 78.4% (120) respondents who are in the extraction group are educated up to Higher secondary level (i.e. < Graduate). 50.2% (124) respondents who are in other treatments category are educated up to graduation or professional level (e" Graduate). Odds ratio is 3.61. This means that those who are educated up to < graduate have 3.61 times risk for having only extraction. The difference is statistically significant (p-value 0.000).

Within the extraction group, 71.2% (109) patients are in the employed category whereas in the other treatments group 55.9% (138) patients are in the employed category. Odds ratio is 1.96. This means that employed group people have 1.96 times risk for having extraction only. The difference is also statistically significant (p-value: 0.002).

About 70.6% (108) of patients extraction only group are earning a monthly household income of ≤ Rs.8000/- . Only 38.1% (94) of other treatments group are earning a monthly household income of ≤ Rs.8000. Odds ratio is 3.91. This means that those who are earning ≤ Rs.8000/- per month have 3.91 times risk for having only extraction. The difference is also statistically significant (p-value: 0.000).

Table 2. Oral Health Practices and Extraction

Factor	Extraction Only (N= 153)	Others(N= 247)	Odds Ratio	Chi ² value	p - Value
Had RCT	2 (1.3%)	50 (20.2%)	0.05	29.952	0.000
Regular Checkup	8 (5.2%)	41 (16.6%)	0.28	11.363	0.001
Smoking	39 (25.5%)	41 (16.6%)	1.72	4.668	0.031
Food- Veg.	105 (68.6%)	141 (57.1%)	1.65	5.316	0.021
Brushing- Finger	29 (19.0%)	14 (5.7%)	3.89	17.38	0.000
Rinse Always	69 (45.1%)	141 (57.1%)	0.62	5.444	0.020
Hygiene Aids	8 (5.2%)	33 (13.4%)	0.38	6.791	0.009

Of the 153 patients in the extraction only group, only two patients (1.3%) have done previous root canal treatment (RCT) and in the other treatments group 50 (20.2%) have done previous root canal treatment. Odds ratio is 0.05. This means that those who have not done root canal treatment previously are at more risk for

having only extraction. This difference is also statistically significant (p-value 0.000).

Within the group of extraction, only 5.2% (8) are maintaining regular check-up with the dentists, whereas 16.6% (141) go for regular check-up with the

dentists among the other treatments group. Odds ratio is 0.28. This means that those who are not maintaining regular check-up are at more risk for having only extraction. The difference is also statistically significant (p-value 0.001).

About 25.5% (39) respondents in the extraction only group are smokers, 16.6% (41) respondents in the other treatments group are smokers. Odds ratio is 1.72. This means that smokers are at 1.72 times risk for having only extraction. The difference is also statistically significant (p-value 0.031).

About 68.6% (105) patients in the extraction only category are predominantly vegetarians and 57.1% (141) patients in the other treatments category are predominantly vegetarians. Odds ratio is 1.65. It means that predominant vegetarians are at 1.65 times risk for extraction. The difference is also statistically significant (p-value 0.021).

Among the extraction only category, 19.0% (29) patients are brushing their teeth by finger and 5.7% (14) patients among the other treatments category are brushing their teeth by their fingers. Odds ratio is 3.89. This means that brushing the teeth by finger are at 3.89

times risk for having only extraction. The difference is also statistically significant. (p-value: 0.000).

45.1% (69) respondents in the extraction only group have rinsed their teeth always after every meal and 57.1% (14) respondents in the other treatments group have rinsed their teeth always every meal. Odds ratio is 0.62. This means that not rising after every meal is at more risk for having only extraction. The difference is also statistically significant (p-value 0.020).

Only 5.2% (8) respondents in the extraction only group are using oral hygiene aids and 13.4% (33) respondents in the other treatments group are using oral hygiene aids. Odds ratio is 0.38. This means that those who are not using oral hygiene aids are at more risk for only extraction. The difference is also statistically significant (p-value 0.009).

In the multi-variate analysis, the variables such as education, occupation, income, previous experience of root canal treatment and regular check up with the dentist are found statistically significant (<0.05).

The various costs involved in the treatment of extraction have been given in the table 3.

Table 3 Cost Analysis of Extraction

Area	Number	DMC(Rs)	DNMC(Rs)	IC(Rs)	TC(Rs)
Total	153	126.83	49.77	61.37	237.98
Rural	107	124.72	53.56	81.22	259.49
Urban	46	131.74	40.98	15.22	187.94
p-Value (t - test)	0.023	0.030	0.000	0.001	

The direct medical cost for extracting one tooth is Rs.124.72 for those who are in rural area and Rs.131.74 for those who are in urban area. The difference is also statistically significant (p-value-0.023). The direct non-medical cost for extracting one tooth is Rs.53.56 for rural people and Rs.40.98 for urban people. The difference is also statistically significant (p-value 0.030). The indirect cost for extracting one tooth is Rs.81.22 for rural people and Rs.15.22 for urbanites. The difference is also statistically significant (p-value 0.000).

The total cost includes all the three costs. It is Rs.259.49 for extracting one tooth for rural patients and Rs.187.94 for urban patients. The difference is also statistically significant (p-value 0.001).

DISCUSSION

Out of the 400 patients, 153 (38.3%) have extracted their teeth. A majority of the population goes for only

extraction which is also proved consistent with the systematic study performed by Sofolo et al¹² which showed that poor attitude towards oral health issues was the reason for extraction.

There is a statistically significant difference in extraction of tooth among rural and urban patients (p < 0.01). This can be explained that rural patients are not yet fully aware of the consequences of doing only extraction (i.e. poor oral health related quality of life OHRQOL) and also they are not willing to pay for further treatment.

Direct or only extraction is the simple method and requires only less money and effort. So the risk factors associated with only extraction were analyzed. Among the socio demographic factors, rural dwelling, living in non -concrete houses, education lesser than graduate, occupation- employed and income ≤ Rs.8000 per month are significantly associated with extraction.

The practices such as not having previous RCT, not having regular checkup, smoking, food- vegetarian., brushing with finger, using of powder as brushing material, not rinsing always, not using hygienic aids have the significant association with extraction.

In multivariate analysis, the variables such as education, occupation, monthly income, previous exposure to root canal treatment and regular check up with the dentist are statistically significant with treatment of only extraction.

CONCLUSION

Extraction of tooth remains the simple and common method of treatment for dental caries. This pattern is more prevalent among rural population. The decision on choice of treatment for direct extraction is significantly associated with educational status, occupation, income, previous experience of root canal treatment and regular check up with the Dentist.

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A Study of Business Impact Analysis Tools for Health Care Facilities

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ABSTRACT

Objective: To review the existing literature on Business Impact Analysis (BIA) for health care facilities and recommend tools for BIA in the health sector in India.

Method: Extensive literature review of journals, publications, research papers and conference proceedings was done by searching on the Internet and libraries.

Conclusion: The hospital safety index developed by World Health organization is a comprehensive tool that looks at most of the aspects of business impact. This can prove to be a good model with regional contextualization.

Keywords: *Business Impact Analysis (BIA), Business Continuity Management (BCM), Hospital Disaster Management (DM) Plan, Hospital Contingency Plans, Environmental Impact Analysis*

INTRODUCTION

According to the International Strategy for Disaster Reduction and the World Health Organization's 2008–2009 World Disaster Reduction Campaign, "The price we pay for the failure of hospitals or health care facilities due to disasters is too high. In comparison, the cost of making hospitals safe from disasters is tiny."¹

One of the most important aspects of an effective business continuity plan is a Business Impact Analysis (BIA) which identifies the critical and support functions which must be performed for a business to keep running. While it is important to plan for the continuity of every business, it becomes critical when the business is about saving lives. Hospitals around the world not only treat the ill and injured but also represent the stability and disaster resilience of a population.

There is a need to look at the continuity of health facilities through a different lens. The human factor makes the identification of critical functions and impact analysis highly complex in the healthcare environment. Revenue loss is a great concern for healthcare providers, but saving lives comes before everything else. This involves a very different set of protocols during and after a disaster. "Hospital

preparedness for disasters has focused historically on a narrow range of potential incidents. To increase their preparedness for mass casualties, hospitals have to expand their focus to include both internal and community level planning."²

At present there are no standard benchmarks in India for the development of business continuity plans or carrying out business impact analysis, and every business or facility has to look at their individual cases. The paper reviews the existing literature on Business Impact Analysis for health care facilities.

To carry out an impact analysis for hospitals, there is a need to identify the core business sectors within a hospital, the core information required to treat patients in each area, core systems including equipments and facilities, the core skills likely to be required to do this, and also the people responsible for back up and restoration and key decisions.

A health care organization has a significant number of critical business systems and therefore it is required to develop an all inclusive plan that addressed the risk to patient care services. This can be quite complex process and may require monetary support to implement the safety plan.³

Discussion: Need of Business Impact Analysis in Healthcare Facilities

Disasters often come unannounced and in the absence of a pre-existing and well-practiced business continuity plan any business is likely to come to a standstill with no possibility of recovery for months. The extent of loss could be so huge that organisations may have to shut down completely. In the event of any disaster there are certain critical facilities on which the overall disaster recovery depends. One such critical service is healthcare. For a health facility to continue functioning during and post disaster there are two aspects of planning. One is the safety of the structural and non-structural elements of the hospital along with its inmates and the other aspect is the ability to handle mass casualties.

Business continuity planning is done by organisations to reduce the risk of damage by potential hazards. An impact analysis is done in order to find out the losses to critical elements and functions in any organisation.

In a study commissioned by the U.S. Department of Health and Human Services and conducted by the Centre for Bio-security, the report in January 2010, identified major challenges in the current system for national response to catastrophic health events⁴:

- Many hospitals do not participate in healthcare coalitions which are necessary for a response to a catastrophic health event.
- There are inadequate systems to perform necessary triage, immediate treatment, and transport of patients.
- There is no plan that clearly outlines healthcare roles.⁵

“The Continuity of Business is vital in any setting and even more so in hospitals where the product is literally life and death. Considering the importance of the work that is carried on in hospitals all over the world and how this particular field is important and vital to almost everyone in the world, it only stands to reason that we all be interested in how the hospitals plan on continuing to care for the sick and injured in the event of a natural or man-made disaster. Continuity of Business requires thoughtful planning, setup, reaction, and follow-through to ensure everything runs according to plan even if the world around the hospital is completely out of control, it is reassuring that the

hospitals that your very life depends on have complete control of their environments.”⁶

The continuity of business in health sector is highly critical post disasters however a big challenge remains that there are limited or no financial resources available in hospitals earmarked for business impact analysis, planning and testing the plan.⁷

Tools for Business Impact Analysis in Hospitals

Hospitals the world over are associated with much more than health issues. They symbolize the social well being and stability in an environment. They also represent enormous economic investment and are an indicator of political stability in a country. There are many tools to analyze and assess the safety of a hospital.

The “Hospital Safety Index” tool was developed in 2007-2008 by a group of experts within a Disaster Mitigation Advisory Group (DIMAG) from the Pan American Health Organization / Regional Office of the World Health Organization (PAHO/WHO). The purpose of this tool was to provide an affordable model for rapid appraisal of hospitals for estimating their probability of to cope with and remain functional in the event of a potential disaster.

It consists of 145 weighted parameters, each of them corresponding to a certain aspect of hospital safety. The hospital safety Index (HSI) is a rapid diagnostic tool which can be applied by engineers, architects and health professionals after an initial orientation. It uses a mathematical model for analysis. The components analyzed by this tool are: location, structural, non-structural and functional. After entering the data in a spreadsheet using a mathematical model, it provides a score that indicates the health facility’s level of safety. This process divides the hospitals in three categories. The lowest safety scores ranging from 0 - 0.35 are categorized as Category-C and it is recommended that urgent measures should be taken immediately as the health facility’s current safety levels are not sufficient to protect patients and staff during and after a disaster event. Medium scores ranging from 0.36 – 0.65 fall in Category-B and it recommends that necessary measures are required at some point, as the health facility’s current safety levels can potentially put at risk patients and staff during and after a disaster event. The hospitals with highest safety scores ranging from 0.66 – 1.0 are put in Category-A. It is recommended that preventative measures are suggested at some

point, as the health facility's current safety levels can cause acceptable damages, which nevertheless reduce the overall safety level of the installation.⁸

The Hospital manual developed by SEEDS India and supported by the European Commission Humanitarian Aid Department in partnership with Christian Aid, Emmanuel Hospital Association (EHA) lays down the steps for hospital safety. It recommends starting with identification of a hospital; collection of baseline data; risk assessment and risk rating; stakeholders' analysis; hospital risk management planning followed by a hospital action plan. The risk assessment is developed on five key factors that would ascertain the vulnerability of the hospital and gauge the coping capacities in the event of disaster. The five factors include⁹:

- a. Percentage occupancy
- b. Structural resilience
- c. Non-structural resilience
- d. Capacity of the hospital
- e. Disaster management aspects of the hospital

These broad categories are given weightage on the basis of the level of importance that each indicator holds. To arrive at the weightage, the indicators are ranked from 1 to 3. The degree of importance is as follows:

1. least important
2. moderately important
3. most important

The manual also contains an evaluation form for hospital safety initiatives. This form begins with general information about the hospital and then further evaluates the safety of hospital under the following sections:

1. Elements related to geographic vulnerability of the hospital
2. Structural safety of the building
3. **Non structural safety:** equipment / components and systems necessary for operation
4. **Hospital safety:** organisation of the hospital Disaster Management Committee and Emergency Operation Centre

Another manual has been developed by GeoHazards International and Swiss Re titled "Reducing Earthquake Risk in Hospitals-from equipment, contents, architectural elements, and building utility systems."¹⁰ The manual contains information on how to:

- Determine a hospital's earthquake risk
- Identify items that could fall, slide, or topple and injure people or break
- Anchor and brace those items to reduce risk
- Prioritize actions to reduce risk according to the hospital's needs and budget

As the name suggests, this manual primarily refers to earthquake risk and safety from earthquakes. As it is focused on one type of hazard and also on one aspect of earthquake preparedness i.e. non structural mitigation it recommends checking the structural safety of building, forming a hospital emergency preparedness committee, developing evacuation routes, making an earthquake preparedness plan, and conducting periodic drills, in addition to carrying out the recommendations in this manual. This may prove to be an excellent model in the context of earthquake risks; however it does not address risks from other hazards adequately.

Virtual Corporation has developed a number of easy to use templates for business impact analysis for healthcare. One of them is the "Healthcare Operations Recovery"- which has over 90 unique, pre-populated departmental templates for a large number of healthcare and administrative functions in a hospital. These templates not only provide business impact analysis solutions but also provide strategies, resources and analysis for recovery of the health care facility.¹¹

The "Healthcare BIA" template for hospitals mainly focuses on IT application and process dependencies and assesses the current state of preparedness. This template looks at all the functions of hospitals which are dependent on information technology.

Another module developed by Virtual Corporation called IT disaster recovery provides an option of developing a single plan for the entire IT department. It can be used by multiple users to create disaster recovery plans for IT for different areas of operations.

The SP advantage module helps measure the preparedness by calculating the risk score at each site.

It builds on the vulnerability and capacity analysis and links it to the analysis for healthcare facilities. The Business Continuity Maturity Model (BCMM) is a tool that enables self assessment about each of the program areas in a health care facility. It consists of a score card that reflects gaps. This tool is very helpful in action planning and prioritizing of actions. This tool is also available for free download from the Virtual Corporation's website.

Results: Status of Business Impact Analyses in the Healthcare Industry

Many hospitals conduct environmental impact analysis to determine activities and events that have a potential to cause major adverse impacts on the functioning of the health facility.¹²

The environmental impact assessment of 11 hospitals in the Republic of Iraq under Basrah Children's Hospitals Project conducted by US Army Corps of Engineers, studied a number of events and their impact on hospitals. The methodology involved a desk study for detailed review of reports on general environmental conditions in the country. This was followed by development of an environmental checklist containing a list of project activities that are likely to cause adverse environmental impacts in the project site. A field study was then conducted. As the region was at risk for hydrological disasters, those risks were taken into consideration.¹³

In London, the Ealing Hospital business continuity plan looks at the following contents to ensure that in the event of any hazardous occurrence, essential services systems and business processes continue to function¹⁴:

- Specific physical requirements
- Staffing requirements
- Communication requirements
- Services for contingency
- Triggers
- Contact persons
- Suppliers; standby
- Accessing specialist equipment

When the Johns Hopkins Health Systems, Baltimore, decided to develop business continuity

plans that would achieve Johns Hopkins' mission, the first step was for the organization to conduct a formal risk analysis.¹⁵ According to the Business Continuity Institute, "Prior to creation of the [business continuity] plan itself, it is essential to consider the potential impact of disaster and to understand the underlying risks: these are the foundations upon which sound business continuity plans or disaster recovery plans should be built." There are two primary categories in which the impact is evaluated. These are patient care delivery and revenue generation. Complexities and management aspects for disaster recovery with respect to healthcare facility as well as equipment requirements are analyzed. A scenario based preparedness planning and risk analysis approach is adopted.

While conducting a non-structural assessment of hospitals in Nepal commissioned by National Society for Earthquake Technology (NSET), Ministry of Health and WHO, the critical systems assessed included electricity system, water supply system, medical gas system, communication system and fire response system. As the focus was on earthquake safety, the assessment format mainly looked at the expected structural performance of hospital buildings during different intensities and non-structural vulnerability.¹⁶

The Hospital Disaster and Emergency Operations Plan of South Florida State Hospital looks at all hazards. The plan is based on incident command system with an incident management team constitution. However the plan lacks the structural performance of the hospital and provides for functional continuity.¹⁷

According to Dr. Shakti Kumar Gupta, Head, Department of Hospital Administration & Medical Superintendent, Dr. R.P. Centre, All India Institute of Medical Sciences (AIIMS), in the event of an earthquake, the highest demand of health services occurs within 24 hours of the incident. The pattern returns to normal after three to five days. The Disaster Management Plan of AIIMS considers the following disasters:

- a. Vehicular accidents and aircraft emergencies
- b. Bullet and blast injuries
- c. Building collapse
- d. Fire
- e. **Food poisoning:** gastroenteritis

f. Any other e.g. drowning

The plan looks at various areas like first-aid and sorting - triage; wards; managing the dead; identification and handover of bodies; additional bed space; linen stores; drugs and equipment; emergency blood bank; staff; volunteers; documentation centres; hospital safety; food service; information service; engineering and maintenance service; and discharge procedures. Another very important consideration is networking - linking up for augmentation of available resources¹⁸.

CONCLUSIONS

Healthcare organizations, especially hospitals, play a critical role in disaster response. Their functionality after a disaster event is therefore critical. In order to develop an effective hospital continuity plan, there is a need to conduct business impact analysis based on various disaster scenarios for vulnerabilities most relevant to the hospital. The business impact analysis should be focused on functionality and service and also at revenues to ensure smooth, continuous functioning.

Business Impact Analysis for hospitals is practiced in many hospitals in America and a few hospitals in other countries. There are many gaps, however, in the existing tools and the success of the plans developed following the analysis. A number of agencies have developed tools, with focus varying from a particular type of hazard to a particular aspect of hospital safety. There is a need for harmonization of existing tools. The authors feel that the Hospital Safety Index (HSI) with modifications based on context and regional vulnerabilities can prove to be a good model for all hospitals and health facilities.

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Evaluation of Ongoing Indoor Residual Spray Programme in Some Malaria Endemic Districts of Andhra Pradesh, India

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ABSTRACT

A survey was conducted in four malaria endemic, tribal dominated districts of Srikakulam, Vizianagaram, Visakhapatnam and West Godavari in Andhra Pradesh, to note the quality of ongoing Indoor Residual Spray (IRS). Both concurrent and consecutive supervision was done to find out house coverage, room coverage, house and room refusal rates, technical knowledge of spray crew and condition of pumps. A very high room refusal rate varying between 74.6 to 88.8 per cent was noted in the study areas. Outer surface of the houses and cattle sheds were sprayed with the insecticide which diluted the objective of IRS. There is a need to generate mass awareness through Behavioral Change Communication (BCC) about IRS operations in order to overcome the shortcomings. IRS operations should be carried out in accordance with World Health Organization (WHO) and National Programme guide lines on the subject under strict supervision.

Keywords: Indoor Residual Spray (IRS), Behavioral Change Communication (BCC), Enhanced Malaria Control Programme (EMCP), *Plasmodium falciparum* (Pf), Annual Parasitic Incidence (API), Slide Positivity Rate (SPR)

INTRODUCTION

Malaria is one of the major public health problems in Andhra Pradesh. In 2006, out of 1785129 malaria cases reported in India, Andhra Pradesh contributed to 34081 cases of which 59.6 percent were due to *Plasmodium falciparum* (Pf) infection. Out of 23 districts, five tribal dominated districts namely Srikakulam, Vizianagaram, Visakhapatnam, East Godavari and Khammam are notorious for transmission of Pf malaria. World Bank is assisting financially Malaria control in these five districts¹.

Effective control of vector borne diseases like malaria are possible by early diagnosis and prompt treatment on one hand and effective vector control following integrated approach on the other hand. Various methods of control of malaria in this region have been adopted including integrated vector control through selective spraying of residual insecticides by reducing vector longevity and the use of insecticide treated bed nets¹.

Indoor Residual Spray (IRS) remains the most widely used malaria vector control method with the

objective to kill mosquitoes entering houses and resting on sprayed surface. Its application has been thoroughly standardized with clear specifications for suitable equipment and insecticides. Successful IRS is possible on the ability of organizers to organize the delivery of satisfactory insecticide spraying on time to all malarious areas. Supervision of spray operations is important to ensure that operations are carried out according to correct technical procedures, so that corrective action can be taken, to achieve the programme goals^{2,3}.

MATERIAL & METHOD

Districts of Srikakulam, Vizianagaram, Visakhapatnam and West Godavari were selected purposively to evaluate the ongoing IRS programme since these districts are contributing to more than 29 percent of total malaria cases in the state. Pf cases in these districts varied between 68 to 93 percent (Personal communication, State Malaria Programme Officer, Andhra Pradesh). Except West Godavari district, other three districts are under Enhanced Malaria Control Programme (EMCP) since 1997^{4,5}.

Malaria control activities in these three districts are assisted financially by the World Bank through EMCP¹.

All the districts under study are coastal districts, situated on the eastern part of the state along the coast of Bay of Bengal. The districts consist of plain agricultural land on their eastern borders and hilly, forest terrain belonging to Eastern Ghats hilly range on their western parts inhibited mainly by tribal population. Maximum number of Pf malaria cases is being reported from the tribal dominated areas of the districts. Inhabitants of these study sites are socio economically backward. Paddy cultivation, collection of forest products, handlooms, labor on daily wages are their main occupations. Some tribals in the remote villages traditionally use scanty clothes on their bodies and are reluctant to use mosquito nets. Cattle sheds are thatched and constructed adjacent to houses without permanent walls. Districts of Srikakulam, Vizianagaram, Visakhapatnam and West Godavari have 71, 56, 76 and 68 Primary Health Centres (PHC) respectively of which 26, 16, 33 and 08 are malarious with high Annual Parasitic Incidence (API) and high percentage of P.falciparum (Pf%) cases. These malarious areas of the four districts were under annual two rounds of regular DDT Spray till 2002 which was later switched over to annual three rounds with 5% malathion since 2003 (Personal Communication, Directorate of Health, Government of Andhra Pradesh). Four highly malaria affected PHCs from Srikakulam, 3 each from Vizianagaram and Visakhapatnam and 5 from West Godavari districts were selected purposively to evaluate the ongoing IRS programme. PHC selection was based on high Slide Positivity Rate (SPR), API, and Pf%. From the selected PHCs, 10 villages from Srikakulam, 15 from Vizianagaram, 9 from Visakhapatnam and 7 from West Godavari districts, reporting highest API were selected to study the quality of on-going IRS by consecutive and concurrent methodology as per Operational

manual on implementation of Malaria Action Programme, Government of India ^{1, 3, 4} and WHO manual ^{5, 6}.

Both indoor and outer walls of ten percent human dwellings and cattle sheds of the study villages were checked thoroughly during and immediately after spray following standard consecutive and concurrent methods ^{2,4}. The evidence of fresh insecticide deposits on walls, number of rooms, verandahs and outer wall surfaces of houses (outdoor) actually sprayed were noted. Number of rooms with patchy/ partial spray, number of houses/ rooms satisfactorily sprayed, number of houses/ rooms refused for IRS were recorded. This was done to calculate house and room coverage rates by dividing the number of houses / rooms actually sprayed by the number targeted and multiplying with 100 as per WHO guidelines ^{5, 6}.

Spray techniques by the spray teams during IRS programmes were also observed as part of concurrent supervision. Technicalities such as preparation of insecticide suspension, discharge rate from nozzle tips, condition of spray pumps (stirrup pump) and technical knowledge of spray crew were recorded from two teams in each district.

During concurrent study of spray operations, community response towards IRS from 100 villagers was also recorded on a pre-designed and pre-tested proforma.

RESULTS & DISCUSSION

The detail observations on IRS programme in the study districts are shown in tabular form. In district Srikakulam, satisfactory house coverage rate (HCR) and room coverage rate (RCR) were a meager 0.71 and 1.63 per cent respectively. A rather high 44.6 percent outer wall of houses (human dwellings) and 75.7 percent cattle sheds were sprayed.

Table: 1. Status of IRS in Four Malaria Endemic Districts of Andhra Pradesh.

S. No.	Item	Name of District (No. of PHC/ No. of Villages Surveyed)			
		Srikakulam (4/10)	Vizianagaram (3/15)	Visakhapatnam (3/9)	West Godavari (5/7)
1.	Total no. of houses/ Rooms searched	139/244	225/504	132/391	105/214
2.	Total no. of verandahs searched	139	225	132	70
3.	No. of houses with satisfactory IRS (HCR)	01(0.71%)	30(13.33%)	03(2.27%)	01(0.95%)
4.	No. of houses with patchy/ incomplete IRS	137(98.56%)	117(52.00%)	33(25.00%)	30(28.57%)
5.	No. of rooms with satisfactory IRS (RCR)	04(1.63%)	90(17.85%)	10(2.55%)	07(3.27%)
6.	No. of rooms with patchy/ incomplete coverage	28(11.47%)	33(6.54%)	89(22.76%)	37(17.28%)

Table: 1. Status of IRS in Four Malaria Endemic Districts of Andhra Pradesh. (Contd.)

S. No.	Item	Name of District (No. of PHC/ No. of Villages Surveyed)			
		Srikakulam (4/10)	Vizianagaram (3/15)	Visakhapatnam (3/9)	West Godavari (5/7)
7.	Verandah coverage rate	125(89.92%)	163(72.44%)	116(87.87%)	68(97.14%)
8.	Outside wall coverage rate	62(44.60%)	65(28.88%)	120(90.90%)	94(89.52%)
9.	House refusal rate (HRR)	01(0.71%)	78(34.66%)	96(72.72%)	74(70.47%)
10.	Room refusal rate (RRR)	212(86.88%)	381(75.60%)	292(74.68%)	170(79.44%)
11.	No. of cattle sheds searched/ sprayed	33/25(75.7%)	15/6(40%)	20/10(50%)	NIL

HCR – House Coverage Rate (No. of Houses covered / No. of house targeted %)

RCR – Room Coverage Rate (No. of Rooms covered /No. of Rooms targeted %)

RRR – Room Refusal Rate (No. of Rooms refused to accept spray / No. of rooms targeted %)

HRR – House Refusal Rate (No. of Houses refused to accept spray / No. of houses targeted %)

IRS – Indoor Residual Spray

It may be seen from table that room coverage rates were also poor in the districts of Vizianagaram, Visakhapatnam and West Godavari at 17.85, 2.55 and 3.27 per cent respectively. A very low house coverage rate of 13.33, 2.27 and 0.95 per cent respectively was noted in Vizianagaram, Visakhapatnam and West Godavari districts. In these districts, 6.54 to 22.76 per cent rooms were covered with patchy/ partial IRS. The basic requirement for IRS is timely coverage of at least 80-85 per cent of the walls, ceilings etc. of dwellings with insecticide ensuring that the majority of mosquitoes are exposed to it.^{3,5,6} Data emanating from our present observations is nowhere near the recommended coverage level. The findings corroborate with our past observation in East Godavari districts of A.P⁷ and observations made in Assam^{8,9}. High house refusal rates (34.66 to 72.72%) and a very high room refusal rate of 75.60% was noted in Vizianagaram, In Visakahapatnam and West Godavari Districts, house refusal rate and room refusal rates were 74.68 and 79.44 percent respectively. These findings are in agreement with some earlier studies^{7,8,9}.

It was found that the outer walls of human dwelling were sprayed with insecticide. This practice would not only dilute the objective of IRS but also cause vector resistance, environmental pollution, wastage of funds and adverse effect on beneficial insects like butterflies and moths etc.

Surprisingly, 75.7%, 40%, 50% of cattle sheds in the districts of Srikakulam, Vizianagaram and Visakhapatnam were sprayed which is against norms^{1,2,4} and may affect successful control of malaria in the districts.

It was heartening to find seven out of eight stirrup pumps checked in good working condition. However, technical knowledge such as preparation of insecticide suspension, standing position during spray operation, technique of holding spray lance, position of nozzle tips, hand movement was lacking among field workers. Therefore, there is an urgent need for repeated training on spray techniques along with motivation of spray staff.

Out of 100 villagers interviewed, 95 informed that they got advance information on IRS from health functionaries. Eighty per cent of those interviewed said that they refused spray in their living rooms and reasons given by them were a) suffocating pungent smell inside sprayed houses (73%), b) whitish marks left on the wall after spray (79%), c) problems of bed bugs (40%) after IRS d) Difficulty in removing furniture and domestic articles during IRS (75%). According to WHO⁶ use of IRS by organized malaria campaigns in many parts of the world has frequently shown a progressing development of people's fatigue and reluctance to allow intrusion in to their room. Thus our present observation agrees with the views of WHO⁶ and findings in the state of Assam⁹ India.

CONCLUSION

It may be concluded that high IRS refusal rates as seen from poor room and house coverage rates and affinity to spray on outer walls and cattle sheds of human dwellings may have an adverse impact on the ongoing malaria control programme in the districts of Srikakulam, Vizianagaram, Visakhapatnam and West Godavari districts of Andhra Pradesh. It is highly essential to implement IRS operations as per WHO and

national programme guidelines under strict supervision by technical experts. There is a need to generate mass awareness through Behavioral Change Communication (BCC) about IRS operations in order to overcome the shortcomings.

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A Study of Agreement between Husbands and Wives on Contraceptive Use

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ABSTRACT

Aim: The objective of the paper is to find out the agreement on use of contraception among Indian couples.

Method: The data was extracted from the National Family Health Survey (NFHS-3), India, conducted during 2005-06. The information on contraceptive knowledge and use were collected from wives aged 15-49 years and husbands aged 15-54 years. Kappa statistics was applied to see the agreement in reporting ever use and current use of contraceptive methods between wives and husbands.

Results: There was substantial agreement ($k=0.61$) regarding reporting current use of contraceptive methods, indicating the agreement between husbands and wives represented 61% of the potentially achievable agreement beyond chance. Moderate agreement (0.57) among urban couples and substantial agreement (0.63) among rural couples were observed in reporting on current use of contraceptive methods.

Conclusion: Couple-level research adds more information on contraceptive behaviour which may be useful for programmers and policy makers.

Keywords: *Agreement, Concordant, Discordant, Family planning method*

INTRODUCTION

The family planning program and policy is made based on the information collected from women solely. In most of the national survey, women of reproductive age are considered as the respondent because of methodological convenient. Recently, it is observed that the information on contraceptive use provided by of husband and wife significantly differ¹. Many researchers had found a gap in reporting on knowledge and practice of contraceptive methods between husbands and wives²⁻⁶. Therefore, enhancing the use of contraceptive methods among married couples, a couple analysis would add some information on

couples' contraceptive behaviour. Studies on these couple analysis are generally lacking in India, therefore, the present study hypothesised whether agreement on contraceptive knowledge and use reflect mutually recognized agreement or merely by chance.

OBJECTIVE

The objective of the paper is to find out the agreement on use of contraception among Indian couples.

MATERIAL AND METHOD

The National Family Health Survey (NFHS-3)⁷, India was conducted during 2005-06, collected information on contraceptive knowledge and use from wives aged 15-49 years and husbands aged 15-54 years. A total of 39257 couples, couple analysis was carried out considering couple as analysis unit. Information on ever used of all contraceptive methods were collected from women but from men information were collected on ever used of some selected contraceptive methods (Condom, Rhythm, Withdrawal and Vasectomy). Hence, couple analysis was carried

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out for ever use of temporary contraceptive method only.

Statistical analysis

A 2X2 table shows the concordance and discordant awareness, ever used and current use of contraceptive methods between wives and husbands. Chi-square test was carried out to see the difference in proportion. Further, Kappa statistics was applied to see the agreement in reporting ever use and current use of contraceptive methods between wives and husbands was a result of chance alone. Value of Kappa range from 0.01 to 0.20 is categorized as ‘Slight agreement’, 0.21 to 0.40 ‘Fair agreement’, 0.41 to 0.60 ‘Moderate agreement’, 0.61 to 0.80 ‘Substantial agreement’, and 0.81 to 0.99 ‘Almost perfect agreement’⁸. Higher values indicate almost perfect agreement beyond chance.

RESULTS

Table 1 presents the percent distribution on

knowledge of couples on various contraceptive methods. It was found that three-fourth couples had heard of oral contraceptive pills (OCPs) and 18.5% either of them heard of OCPs. Significantly higher percentages of wives (77.3%) were aware about IUD as compared to husbands (61.8%). Slightly more than half of the couples (53.9%) were aware about IUD. Significantly higher difference in awareness of condom was observed in husbands (93.5%) and wives (78%). Three-fourth couples had heard of condom. Significantly higher percentages of husbands (59.2%) had heard of rhythm method than their wives (47.0%). Only one-third couples (34.6%) were heard of rhythm method. Significantly higher difference in awareness of withdrawal method was observed in husbands (45.9%) and wives (35.2%). About 41.9% couples had not heard about withdrawal method. Only 5% couples had heard of emergency contraceptive pills (ECPs), and 68.4% couples had not heard about emergency contraceptive methods. Husbands (23.8%) were more aware about ECPs than wives (12.9%).

Table 1: Percent distribution of couples, by husband wife agreement on various family

Agreement	Heard of					
	OCP	IUD	Condom	Rhythm	Withdrawal	ECPs
Both	29819(76.0)	21156(53.9)	29664(75.6)	13569(34.6)	9002 (22.9)	1969(5.0)
Husband only	3231(8.2)	3080 (7.8)	7042 (17.9)	9659 (24.6)	9014 (23.0)	7362 (18.8)
Wife only	4041 (10.3)	9180 (23.4)	940 (2.4)	4866 (12.4)	4803 (12.2)	3071 (7.8)
Neither	2147(5.5)	5821 (14.8)	1608 (4.1)	11148(28.4)	16423(41.9)	26786(68.4)
Total	39238	39237	39254	39242	39242	39188
Chi-square test	P=0.0001	P=0.0001	P=0.0001	P=0.0001	P=0.0001	P=0.0001

From Table 2 present the percentage distribution of ever user among those who had head of the contraceptive methods. It was found that 19.1% couple reported ever used of condom, and more than half (58.1%) of couples had never used condom. About

22.8% discordant couples in reporting ever use of condom. There was moderate agreement (k=0.47) between husbands and wives in reporting use of condom, while fair agreement (k=0.33) was observed in ever used of rhythm method.

Table 2: Percent of couple ever used contraceptive method

Wife ever used method	Husband ever used method			Kappa statistics
	No N(%)	Yes N(%)	Total N(%)	
Condom				
No	17159 (58.1)	5598 (18.9)	22757 (77.0)	K=0.47 P=0.0001
Yes	1163 (3.9)	5637 (19.1)	6800 (23.0)	
Total	18322 (62.0)	11235 (38.0)	29557 (100.0)	
Rhythm				
No	5678 (42.0)	3361 (24.9)	9039 (66.9)	K=0.33 P=0.0001
Yes	1170 (8.7)	3297 (24.4)	4467 (33.1)	
Total	6848 (50.7)	6658 (49.3)	13506 (100.0)	
Withdrawal				
No	4532 (50.7)	1427 (16.0)	5959 (66.6)	K=0.48 P=0.0001
Yes	775 (8.7)	2209 (24.7)	2984 (33.4)	
Total	5307 (59.3)	3636 (40.7)	8943 (100.0)	

Note: analysis is based on couples who had heard of contraceptive methods

About 24.4% of couples had ever used rhythm method, discordant couple in rhythm method used were 33.6. About 24.7% couples had ever used withdrawal method and 50.7% couples never used withdrawal method. Further, 7.3 percentage points significant difference was observed in reporting ever used of withdrawal method by husbands (40.7%) and wives (33.4%). The agreement between husbands and wives regarding ever used of withdrawal method represented 48% of the potentially achievable agreement beyond chance.

Interestingly, 9.5 percentage points significant difference was observed (Table 3) in reporting current use of method by husbands (51.0%) and wives (60.5%). About 34.4% couples had reported of not using any contraceptive methods and 45.9% were using any

contraceptive methods currently. Around 14.6% wives reported that they were currently using contraceptive method but husband reported of not using any method. Concordance in reporting current use of method was 80.3%. There was substantial agreement ($k=0.61$) regarding reporting current use of contraceptive methods, indicating the agreement between husbands and wives represented 61% of the potentially achievable agreement beyond chance. Urban rural differential in reporting on current use of contraceptive method was also presented in Table 3. It was found that discordant couple was significantly higher (20.9%) in urban areas than rural areas (18.6%). Hence, among urban and rural couples moderate agreement (0.57) and substantial agreement (0.63) was observed respectively.

Table 3: Percent distribution of couples by place of residence on current use of contraceptive method

Agreement	Place of residence		Total N (%)
	Urban N (%)	Rural N (%)	
Husband only	938 (5.1)	1070 (5.1)	2008 (5.1)
Wife only	2915 (15.8)	2800 (13.5)	5715 (14.6)
Neither	5536 (30.0)	7980 (38.3)	13516 (34.4)
Total	18442	20815	39257
Chi-square test	P=0.001	P=0.001	P=0.001
Kappa statistics	K=0.57	K=0.63	K=0.61

Table 4 shows that significantly higher percent of husbands than their wives had exposed to family

planning messages on radio, TV and newspaper in one month preceding the survey.

Table 4: Percent of couples exposed to family planning messages on mass media before one month preceding the survey

Wife exposed to FP messages on mass media	Husband exposed to FP messages on mass media			Kappa statistics
	No N(%)	Yes N(%)	Total N(%)	
Radio				
No	13620 (34.7)	11763 (30.0)	25383 (64.7)	P=0.0001
Yes	4376 (11.2)	9465 (24.1)	13841 (35.3)	
Total	17996 (45.9)	21228 (54.1)	39224 (100.0)	
Television				
No	9098 (23.2)	8213 (20.9)	17311 (44.1)	P=0.0001
Yes	3946 (10.1)	17975 (45.8)	21921 (55.9)	
Total	13044 (33.2)	26188 (66.8)	39232 (100.0)	
Newspaper				
No	16724 (42.6)	12327 (31.4)	29051 (74.1)	P=0.0001
Yes	2165 (5.5)	8008 (20.4)	10173 (25.9)	
Total	18889 (48.1)	20335 (51.8)	39224 (100.0)	

DISCUSSION

The use of contraceptive methods to avoid unwanted pregnancies depends on the knowledge

attitudes, and decision to choose appropriate contraceptive methods. It was found that higher percentage of couples heard of oral contraceptive pill

followed by condom, IUD, rhythm and withdrawal methods. It was also noted that husbands were more aware of condom, rhythm, withdrawal and emergency contraception than their wives. This may be because of husbands were significantly more exposed family planning messages on mass media than their wives. Significant discrepancies were observed regarding ever used of all type of contraceptive methods by couples. Discordant responses may be due to ever use of family planning methods with other partners either before or outside of marriage³. Also recall biased may be contributed to discrepancies in reporting of ever use of methods. In addition, the information on ever used of family planning method was independent of whether they had used contraceptive method with current partner only. Significant discrepancies in reporting current use of family planning method between husbands' and wives' was observed. Significantly higher proportion of wives reported current use of method as compare to their husbands. A study conducted in Turkey also reported the similar findings³. The reason may be either of them may not be aware of that their partner is currently using any family planning method². In contrast, husbands reported higher use of contraceptives than their wives in a similar comparison of five countries; i.e. Central African Republic, Ghana, Haiti, Kenya, and Zimbabwe⁶. Discordant responses may result from measurement error, social desirability biases⁴ and wives' covert use of contraceptives⁹. Regarding the validity and reliability of either partner's sole response on contraceptive use remained an issue for discussions.

CONCLUSION

The present study adds couple-level research and provides more information on husbands wives response on contraceptive behaviour which may be useful for programmers and policy makers.

Conflict of interest: Nil

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Early Cardiovascular Risk Markers In Uremia: A New Insight

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ABSTRACT

Introduction: Cardiovascular disease is a major cause of morbidity and mortality in patients with chronic kidney disease (CKD). Endothelial dysfunction, inflammation, hyperhomocysteinemia, oxidative stress etc. have been implicated in the pathogenesis of atherosclerosis in CKD patients after dialysis. The present study was therefore undertaken to determine the significance of Nitric oxide (NO), markers of oxidative stress - malondialdehyde (MDA) and total antioxidant capacity (TAC), and hypoalbuminemia as novel uremia-related risk markers of atherosclerotic vascular disease in predialytic CKD patients.

Materials And Method: The study included 100 subjects, of which 50 were chronic kidney disease patients (with serum creatinine > 1.5 mg/dl) and 50 age and sex matched healthy controls. In both cases and controls, serum NO (modified Greiss's method), MDA (modified colorimetric method of Satoh), TAC (FRAP assay method of Benzie and Strain) and serum albumin (BCG colorimetric method) were measured. Blood sugar, lipid profile, serum creatinine, BUN, serum protein and electrolytes were estimated in both cases and controls by standard clinical chemistry methods.

Results: CKD cases had significantly lower levels of NO, TAC and albumin than in controls. MDA levels were significantly higher in CKD cases, compared to healthy controls. There was a positive correlation between serum creatinine with serum albumin.

Conclusion: Our findings of decreased nitric oxide levels, hypoalbuminemia along with oxidative stress may serve as early novel markers of atherosclerosis which progresses with renal failure. Our study helps in early detection of cardiovascular disease before the patient undergoes dialysis and helps in preventing cardiovascular complications in chronic kidney disease.

Keywords: Atherosclerosis, Oxidative Stress, Hypoalbuminemia

INTRODUCTION

The number of patients with end-stage renal disease requiring dialysis treatment or transplantation is growing all over the world at a rate of 7% per year. Cardiovascular disease (CVD) is a major cause of morbidity and mortality in patients with chronic

kidney disease (CKD) patients. Although the role of non-traditional or uremia-related risk factors like dyslipidemia, endothelial dysfunction, inflammation, hyperhomocysteinemia, oxidative stress etc have been studied in the pathogenesis of atherosclerosis in CKD patients, the clinical significance of many of these factors remains controversial in light of reported studies.^{1,2}

This study aims at determining the significance of Nitric oxide, oxidative stress and hypoalbuminemia as novel uremia-related risk markers of atherosclerotic vascular disease in CKD patients.

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Materials and Method

This study was conducted at Sri Siddhartha Medical Teaching Hospital and Research Centre, Tumkur, by including 50 cases and 50 controls. **Cases** included patients with clinically diagnosed chronic kidney disease (on conservative management before dialysis) due to chronic glomerulonephritis and other glomerular diseases, chronic pyelonephritis and obstructive uropathy with serum creatinine levels more than 1.5 mg/dl of either sex aged > 18 years. Blood samples of age and sex matched normal healthy individuals were the **controls**. Patients with diabetes mellitus, autoimmune diseases, liver diseases, systemic illnesses other than the inclusion criteria, cancer, smoking, gout, infectious diseases, and patients taking medications which might interfere with the study (eg. antioxidants) were excluded from the study. Detailed clinical history and examination findings of the patients were obtained from case sheets & Medical Records section. The study was approved by the ethical committee of Sri Siddhartha Medical College, Tumkur.

Under aseptic conditions, 5 ml of fasting blood samples were taken by antecubital venipuncture into plain vacutainer tubes from the healthy controls and patients with chronic kidney disease. Samples were centrifuged at 3000 rpm for 10 minutes within one hour of collection and separated serum were analyzed for the following parameters: Blood sugar, lipid profile,

serum creatinine, BUN, serum albumin and electrolytes were estimated by standard clinical chemistry methods.^{3,4,5} Serum nitric oxide end products (nitrates & nitrites) were determined by modified Griess assay.⁶ MDA was determined by a modified colorimetric method of Satoh.⁷ TAC was measured by FRAP (ferric reducing antioxidant power) assay according to the method of Benzie and Strain.⁸

Statistical Analysis

The statistical significance of the data were determined by Student's t-test and one way ANOVA test at 5% level of significance. Pearson's correlation coefficient was determined at 5% level of significance. Statistical analysis was done using SPSS software version 16.0.

Findings / Results

Significant increase in the levels of serum creatinine, BUN and MDA were observed in the cases compared to the controls. (table 1) Significant decrease in the levels of nitric oxide, serum albumin and total antioxidant capacity were observed in the cases compared to the controls. (table 1) Significant negative correlations were observed between serum albumin and creatinine and between serum albumin and BUN among cases. (figure 1, figure 2) Significant positive correlation was observed between MDA and serum creatinine among cases. (figure 3)

Table 1: Comparison of Biochemical Parameters between Controls & Cases

PARAMETER	CONTROLSn = 50	CASESn = 50	p Value	Significance
BUN (mg/dl)	14.1 ± 2.06	31.5 ± 11.08	<0.0001	Highly significant
S.CREATININE(mg/dl)	0.9 ± 0.14	2.6 ± 1.1	<0.0001	Highly significant
NITRIC OXIDE(ιmol/l)	31.4 ± 4.26	21.2 ± 4.58	<0.0001	Highly significant
S.ALBUMIN(mg/dl)	4.3 ± 0.54	3.1 ± 0.4	<0.0001	Highly significant
MDA(nmol/ml)	0.9 ± 0.33	1.9 ± 0.48	<0.0001	Highly significant
TAC(ιmol/l)	1261.7 ± 72.62	808 ± 94.76	<0.0001	Highly significant

Table 2: Correlation between Measured Parameters among Cases

PARAMETERS	r Value	p value	SIGNIFICANCE
Albumin & BUN	- 0.45	0.0009	Highly significant
Albumin & creatinine	- 0.43	0.0016	Highly Significant
MDA & creatinine	0.36	0.009	Significant

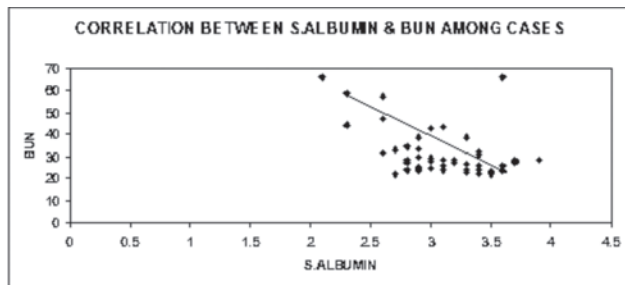


Fig. 1. Significant negative correlation was observed between Serum albumin & BUN among cases.

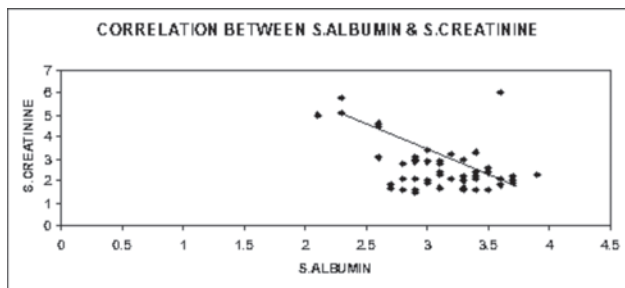


Fig. 2. Significant negative correlation was observed between Serum albumin & Serum creatinine among cases.

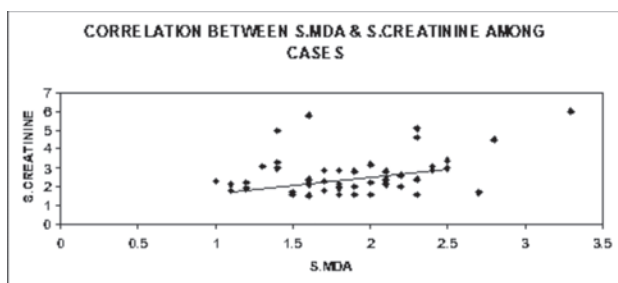


Fig. 3. Significant positive correlation was observed between MDA & serum creatinine among cases.

DISCUSSION

Patients with renal disease should be considered to be at high risk for developing cardiovascular disease and candidates for implementation of secondary prevention strategies. It is for this reason that early identification of renal failure, which remains hidden in many cases, is of prime importance. Cardiovascular disease (CVD) is a major cause of morbidity and mortality in patients with chronic kidney disease (CKD) patients. CKD presents later in the end stage with the cardiovascular risks after dialysis.⁹

In our study, nitric oxide levels were decreased in cases compared to controls & this decrease was statistically significant. Endothelial dysfunction, a condition characterized by decreased nitric oxide (NO) availability, acts as a promoter of atherosclerosis and is associated with an increased risk of cardiovascular

events, though the exact pathogenesis is unclear. There is also growing evidence to support the hypothesis that asymmetric dimethylarginine (ADMA), an endogenous inhibitor of NO-synthase, is involved in mediating CVD. ADMA is primarily cleared by the kidney *in vivo* and is found in elevated circulating levels in CKD. ADMA is also an independent predictor of endothelial dysfunction.^{10,11}

Oxidative stress results from the imbalance between oxidative and antioxidative mechanisms with increased levels of pro-oxidants and depletion of antioxidants leading to tissue damage. Malondialdehyde (MDA) is a marker of lipid peroxidation & total antioxidant capacity (TAC) represents the overall antioxidant defense mechanisms in our body. MDA & TAC which might be an effective tool to measure oxidative stress may predict cardiovascular morbidity in CKD patients.¹² In our study, MDA levels were increased in cases compared to controls & this increase was significant. Also, there was a significant correlation between MDA & serum creatinine which reflects the increasing lipid peroxidation with progressive renal failure. Also, TAC levels were decreased significantly in cases compared to controls which again show depletion of antioxidants with progressive renal failure. The increased production of oxidants by phagocytes, in the face of defective antioxidant defenses, results in chronic oxidative stress that further enhances the inflammatory state which could be an important event in the pathogenesis of atherosclerosis in uremic patients.^{13,14}

Serum albumin, a negative acute-phase reactant and marker for underlying inflammation and/or malnutrition, is an independent predictor of CVD and mortality in end-stage renal failure patients. Such an association in patients with less severe CKD is not well established.¹⁵ Among the mechanisms involved in such uremia-related immuno-inflammatory disorders, a dysregulation in the balance between proinflammatory cytokines and their inhibitors has recently been demonstrated.¹⁶ In our study, serum albumin levels were decreased significantly in cases compared to controls. Serum albumin showed significant negative correlation with BUN & serum creatinine suggesting hypoalbuminemia with progressive renal failure. hypoalbuminemia had a significant positive correlation with increasing MDA suggesting increased lipid peroxidation with hypoalbuminemia.

CONCLUSION

Overall, decreasing nitric oxide levels, hypoalbuminemia along with oxidative stress may serve as early novel markers of atherosclerosis which progresses with renal failure. Thus, identification of these markers in early uremia may predict the future cardiovascular morbidity & can help in preventing cardiovascular complications in chronic kidney disease.

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Conflict of Interests: None.

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Effect of Shoulder Flexion on Grip Strength Measurement

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ABSTRACT

Introduction: Grip strength is commonly used to evaluate the integrated performance of muscles by determining maximal grip force that can be produced in one muscular contraction.

Purpose: The purpose of the study was to determine the effect of different shoulder positions on grip strength measurement in healthy individuals. Sample: 50 healthy subjects were included (19 males 31 females).

Method: Grip strength in 5 different position of shoulder flexion with elbow extension was measure with the help of Jamar dynamometer.

Data analysis: Repeated measure ANOVA and post hoc analysis was done ($\alpha=5\%$, $p=.05$).

Results: The mean grip strength in 0o flexion (64.6 ± 2.86 lb/inch²), 45o flexion (63.82 ± 2.92 lb/inch²), 90o flexion (66.86 ± 3.06 lb/inch²), 135o flexion (66.17 ± 3.05 lb/inch²) and 180o flexion (67.82 ± 2.92 lb/inch²). Repeated measure ANOVA showed significant differences for grip strength in 5 positions ($p=.0001$). Post hoc comparison by bonferroni showed that there is significant difference between 0o versus 180o ($p=.048$), 45o versus 90o ($p=.0001$), 45o versus 180o ($p=.0001$).

Conclusion: The study concluded that shoulder has an effect on grip strength and maximum grip strength can be obtained in 180o of shoulder flexion with elbow extension.

Keywords: Grip Strength, Shoulder Position

INTRODUCTION

Grip strength is one of the components to be considered in the examination of hand function¹. Grip strength is commonly used to evaluate the integrated performance of muscles by determining maximal grip force that can be produced in one muscular contraction². Many of the items included in an upper extremity assessment are based on observation and subjective impressions, however, a grip strength measurement when properly taken can provide objective quantifiable information regarding hand function¹. Grip is one of the hand functions which should be evaluated in every hand disability. It is widely accepted that grip strength provides an

objective index of the functional integrity of the upper extremity³. Often overlooked or taken for granted, the strength of ones grip plays a key role in injury prevention and overall strength development^{4,5,6,7}. Grip strength is correlated with upper extremity function^{8,9}, overall strength¹⁰ biological growth¹¹, and the amount of protein reserves in the body¹². To obtain an objective assessment of hand function there is a need for a standardized measure of hand strength. The American Society of Hand Therapists suggested a standardized testing protocol in which subject is seated with the shoulder adducted and neutrally rotated, the elbow flexed at 90°, and the forearm and wrist in neutral position with the use of Jamar Dynamometer in second handle position¹³. The grip strength is taken as mean of three successive readings. However, in a clinical setting, there are a number of reasons why it may be impossible to follow standardized testing procedures, such as the patient's inability to tolerate an upright position or the presence of contractures in

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upper extremity joints. Various studies have discussed the effect of testing posture and joint position on grip strength. Teraoka¹⁴ examined the effect of three body positions on grip strength: standing, sitting, and supine, with the elbow joint held in full extension in each test position. He found that grip strength was strongest with the subject in the standing position. Mathiowetz et al¹⁵ founded that grip strength scores were higher with the elbow positioned in 90° of flexion as compared with when the elbow was positioned in full extension. Elizabeth et al¹ studied further to know effect of different positions of elbow on grip strength and found increasing angle of elbow producing least grip strength and thereby proving that elbow has effect on grip strength. Wrist position is another variable that affects grip strength performance. Pryce¹⁶ found no significant difference in grip strength with test angles of (1) 0° and 15° ulnar deviation, (2) 0° and 15° wrist extension, and (3) any combinations of these positions. Kraft and Detels¹⁷ found no significant differences with the wrist positioned at 0°, 15°, and 30° extension. Both studies found grip strength to be significantly less at 15° of palmar flexion. Chwen YS et al¹⁸ studied the effect of different positions of elbow and shoulder on grip strength. They advocated four hand strength tests consisted of three positions in which the the elbow positioned in 90° of flexion as compared with when the elbow was positioned in full extension. Elizabeth et al¹ studied further to know effect of different positions of elbow on grip strength and found increasing angle of elbow producing least grip strength and thereby proving that elbow has effect on grip strength. Wrist position is another variable that affects grip strength performance. Pryce¹⁶ found no significant difference in grip strength with test angles of (1) 0° and 15° ulnar deviation, (2) 0° and 15° wrist extension, and (3) any combinations of these positions. Kraft and Detels¹⁷ found no significant differences with the wrist positioned at 0°, 15°, and 30° extension. Both studies found grip strength to be significantly less at 15° of palmar flexion. Chwen YS et al¹⁸ studied the effect of different positions of elbow and shoulder on grip strength. They advocated four hand strength tests consisted of three positions in which the elbow was maintained in full extension combined with varying degree of shoulder flexion and one position in which elbow was flexed in 90° with shoulder in 0° flexion and founded that grip strength was higher when shoulder was positioned at 180° of flexion with elbow in full extension, thus proving that shoulder too has an effect on grip strength, but is still unclear that

weather different position of shoulder has effect on grip strength.

So, we undertook a study to find out the effect of different shoulder positions in flexion i.e. 0°, 45°, 90°, 135°, 180° with elbow in extension on grip strength. If grip strength measures were found to vary with different shoulder positions, interpretation of this information could affect treatment planning in the clinical settings.

METHODOLOGY

Subjects

On the basis of inclusion and exclusion criteria 50 healthy subjects including 19 males and 31 females without any history of shoulder, elbow and wrist pathology or injury were included in the study with mean age of (23.28±2 yrs) and mean weight of (57.34±8.63) Kgs.

Space and Location

All the subjects were recruited from campus of Jamia Hamdard, New Delhi, India

Inclusion Criteria

- Age: 20-29 years.
- Weight: 45-70 kg.
- Normal healthy subjects.

Exclusion Criteria

- Ambidextrous.
- De-quervain's disease.
- Rheumatoid arthritis.
- History of any fracture of upper extremities.
- Acute pain in there arms and hands.
- History of shoulder, elbow and wrist surgery.
- Neurological deficit in upper limb.
- Any upper limb deformity.
- History of any shoulder, elbow or wrist **pathology**.

Study Design

Quasi-Experimental (single group) Design.

Variables

Independent: Shoulder Position.

Dependent: Grip Strength.

Equipment

The Baseline Jamar Dynamometer is a hydraulic device used to measure peak isometric grip force.

PROCEDURE

Open invitation was given in the different departments of Jamia Hamdard. 50 subjects participated in the study on the basis of inclusion and exclusion criteria. A consent form was made to sign by each subject prior to other proceedings.

Protocol

Firstly a poster indicating all the different position in which grip strength was to be measured was made that were 0°, 45°, 90°, 135°, 180° flexion of shoulder with elbow in extension. To counter balance any effect of fatigue or order effect the subjects were randomly assigned to one of the 5 measurement sequences. Randomization for the position was done by taking out a slip from different 5 slips indicating different position. The subjects would then be seated in a standard height chair with feet flat on ground next to the poster and would be asked to maintain there dominant hand shoulder adduction and neutral rotation while holding there arm and forearm in neutral parallel to the mark indicating the test position. Jamar dynamometer in second handle position as recommended by American Society of Hand Therapists was used to measure grip strength of each subject⁶.

The measurement of grip strength was made in 5 test positions 1) shoulder 0° flexion with elbow extension 2) shoulder 45° flexion with elbow extension 3) shoulder 90° flexion with elbow extension 4) shoulder 135° flexion with elbow extension 5) shoulder 180° flexion with elbow extension.

The subjects were instructed to hold the dynamometer and squeeze it hard, harder and after a count of 3 seconds hold, subjects were asked to relax and the final reading in pounds as indicated in dynamometer were noted. The dynamometer was reset to zero, after 2-3 seconds relax period the procedure was repeated in the same position. Three successive readings in a single test positions were taken

and mean of those was taken as grip strength in that position. Verbal encouragement was given for each test. 2 minutes rest was allowed before changing to different position¹¹ and grip strength is measure in other 4 remaining position.

Data Analysis

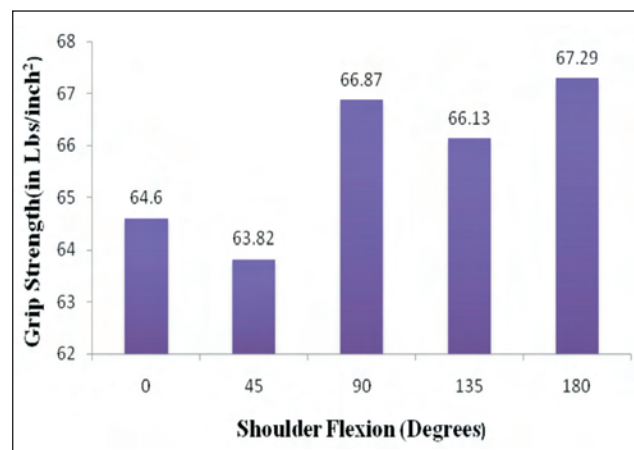
Data analysis was done using spss 12.0 version software. Repeated measure ANOVA was done to know the effect of different positions on grip strength ($\alpha=5\%$, $p=.05$). Bonferroni correction for multiple comparisons (post hoc analysis) was done to find out the differences in grip strength between each position ($\alpha=5\%$, $p=.05$). Mean for grip strength in 5 different positions.

RESULTS

Mean and standard deviation for the demographic data was performed, the result showed the mean age (23.28 ± 2.000 yrs) and weight (51.34 ± 8.67 kgs). ANOVA was performed within subjects, the result showed significant ($p=.0001$) differences in grip strength for 5 different positions. Post hoc was performed to find pair wise differences, the result showed significant differences in grip strength for 0° flexion versus 180° flexion ($p=.048$), 45° flexion versus 90° flexion ($p=.0001$) and 45° flexion versus 180° flexion ($p=.0001$).

Mean for grip strength in 5 different positions, the result showed maximum grip strength in 180° flexion position (67.29 pounds/inch²), then in 90° flexion position (66.87 pounds/inch²), then in 135° flexion (66.13 pounds/inch²), then in 0° flexion (64.6 pounds/inch²) and least in 45° flexion (63.82 pounds/inch²)

Graphical representation of grip strength in different shoulder positions



DISCUSSION

The study investigated the effect of different shoulder positions on grip strength. The repeated measure ANOVA showed significant results within subjects signifying that shoulder affect the grip strength significantly and thus it has an effect on grip strength. The results of the study proved our hypothesis that grip strength is influenced by the change in shoulder position. Sporrang et al¹⁹ who examined 4 shoulder muscles-the supraspinatus, infraspinatus, the middle portion of the deltoid and the descending part of the trapezius-with electromyography (EMG) in abducted and flexed arm positions, in 9 healthy subjects. The subjects were asked to produce a static handgrip force of 30% and 50% of maximal voluntary contraction (MVC) in 8 different arm positions. In all positions, the subjects held a dynamometer in the hand. The myoelectric activity in the shoulder muscles with only the dynamometer in the hand was compared to the EMG activity when static contractions were added. There was an association between static handgrip and shoulder muscle activity, as revealed by EMG. Findings of this study imply that high static handgrip force, particularly in elevated arm positions, increases the load on some shoulder muscles. The stabilizing muscles (the rotator cuff) were more influenced than the motor muscles (trapezius and deltoid) by hand activity. This study could indirectly signify that shoulder has an effect on grip strength.

The highest mean grip strength score was obtained when the shoulder was positioned in 180° flexion with elbow extended. It may be speculated that the synergistic muscles of the back and shoulder may be able to act to their best advantage when the shoulder is elevated to 180° flexion during grip strength measurement. Grip strength decreased when shoulder was positioned in less than 90° of flexion. Greater grip strength scores were obtained in flexion angle at and greater than 90° flexion or in overhead position. This overhead position appears to allow those proximal muscles involved to be stretched beyond their normal resting length, which would theoretically increase their efficiency for optimum exertion according to the principle of length tension relationship.

Very few studies had reported regarding the relationship between muscle strength of the back and upper extremities²⁰. Only one study had demonstrated a positive correlation between back extensors strength

and power grip. In this study of 68 healthy postmenopausal women grip strength was measured when the subjects were sitting with the dominant upper extremity in an extended position along the lateral aspect of the thorax and arm in 5° to 10° abduction. The isometric strength of the back extensors muscles were measured with a strain gauge dynamometer that converted force in pounds. The result indicated that the post menopausal women with a strong power grip also have strong back muscles. The most likely explanation of this is that for positions at and above 90° of shoulder flexion an almost equal amount of synergistic activity took place in the back and shoulder muscles. Proof of this requires further electromyography studies to investigate muscle activity of upper extremity and back with regard to the integrated function during grip in these shoulder position.

The fact that an overall significance was observed across subjects for the testing positions even though their absolute grip strength difference was relatively small, suggest that there was systematic effects and cannot be attributed to chance. . Bonferroni correction for the pairwise comparison showed significant differences for 0° flexion versus 180° of shoulder flexion. In 0° shoulder flexion only the grip muscles are acting to produce the maximal grip force but in 180° of shoulder flexion back muscles act in synergy with grip muscles to contribute to maximal isometric grip force. 45° flexion versus 90° flexion and 180° also revealed significant differences. In a position of 45° of shoulder flexion also only the grip muscles were contributing to grip force and can be due to the fact that this position was difficult to maintain and hold dynamometer and overflow of force in maintaining the position resulted in lower grip strength.

Additionally the standardized arm positioning 0° flexion position recommended by ASHT minimizes the occurrence of unwanted compensations to occur thus producing higher grip strength.

Future studies could examine the effect of shoulder abduction and rotation on grip strength. Studies could also be done with different shoulder and elbow combinations to determine which of the two joints contribute more to grip strength. The limitations of our study was that we could not effectively control the position of elbow and wrist while measuring the grip strength as there was tendency of each subject to adjust the wrist and elbow in different position.

CONCLUSION

The study concluded that grip strength is affected by shoulder positions and the position in which shoulder is flexed at 180° with elbow in extension

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A Study on Non-Adherence to Anti Tubercular Treatment in Rntcp

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ABSTRACT

Background: The directly observed treatment strategy (DOTS) under the revised national tuberculosis control programme (R.N.T.C.P) of India shifts the ultimate responsibility for patient cure from the patient to health system, there remain considerable challenges for organizations in achieving adherence to long term regimens for tuberculosis treatment. These challenges centre on structural, disease related, social and personal issues.

Aims & Objectives: To investigate how socio-demographic profile, disease status, and knowledge, attitude and motivation related issues were associated with non-adherence to anti-tubercular treatment in patients registered under revised national tuberculosis control programme in an urban setting in India

Method: This was a Matched paired case control study conducted in 20 Directly Observed Treatment/microscopy centers under R.N.T.C.P located in urban area of Bhopal district, India from November 2006 to October 2007. A simple random sample (n=193) of documented 'defaulters' (not taken anti tubercular drugs 2 months or more consecutively after starting treatment) was drawn from tuberculosis register. Suitable age and sex matched non-defaulter subjects were taken as controls from the same tuberculosis register. A pre-tested semi-structured questionnaire was administered to study subjects for data collection

Results: Factors associated with non adherence to anti-tuberculosis treatment were alcohol abuse, frequent change of residence, homelessness, lack of awareness about exact duration of treatment and consequences of terminating treatment before stipulated time; and perceived uncertainty about treatment success. Illiteracy, unemployment, status of family cohesion, smoking, and hiding disease from the family were the variables that didn't show statistically significant association with non-adherence to treatment

Conclusion: Individual characteristics, at-risk behaviors as well as structural issues, such as homelessness, determine non-adherence to anti-tubercular treatment under RNTCP. The program should take account of patient's convenience and preferences.

Keywords: Tuberculosis, DOTS, Default, Non-Adherence, Behavioral, Non-Programmatic

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INTRODUCTION

The directly observed treatment strategy (DOTS) for tuberculosis has been found to be one of the most effective of all health interventions and central to all tuberculosis control strategies¹. Studies across the world have shown that DOTS is a highly cost effective strategy producing significant savings for government

and community^{2,3,4,5}. Considering the effectiveness of anti tubercular regimens, one of the prerequisites for their success is adequate and regular drug intake. Compliance of the patient or adherence to drugs is understood to be important throughout the prescribed period of treatment^{6,7}. Deleterious consequences of non-adherence to antitubercular drug treatment include emergence of drug resistance⁸. The DOTS strategy adopted by R.N.T.C.P shifts the ultimate responsibility for patient cure from the patient to health system which necessitates understanding the predictive factors for non-adherence⁹. The purpose of this study is to investigate factors associated with non-adherence to anti tubercular treatment in an urban environment in 20 Directly Observed Treatment/microscopy centers in Bhopal.

METHODOLOGY

Present study was a matched paired case control study conducted in 20 Directly Observed Treatment/microscopy centers under R.N.T.C.P in Bhopal, from November 2006 to October 2007 for a period of 1 year. R.N.T.C.P case definition for default was followed in this study. Cases (defaulters) were selected from tuberculosis register of R.N.T.C.P maintained from 1st July 2005 to 30th June 2006 using simple random sampling. Suitable age and sex matched non-defaulter subjects were taken as controls from the same TB Register. Sample size was determined as $192.44 \sqrt{193}$ by assuming the value of type I error (α) 0.05, type II error 20% and difference between two proportions worth detecting 0.10¹⁰. Study subjects were interviewed using pre-tested semi-structured questionnaire at their home. Attempt was made to find study subjects at their place of work or any other place frequently visited if they were not available at their home. Socio-economic status was determined by modified Kuppaswamy scale¹¹ and alcoholism assessed by CAGE questionnaire¹². Data analysis was conducted with the SPSS version 14.0. The McNemar Chi square test was used to test the statistical significance of the results along with odds ratio.

RESULTS

In the present study we found that most subjects were in the age group 25 -34 years (25.30%), followed by 35 – 44 years (22.22%). Males comprised 57.40% of the study subjects. The proportion of illiterates was among 19.13% in cases and 20.37% in controls. The percentage of subjects who were either unemployed/unskilled or semi-skilled workers was 78.38% in case

& 79.91% in controls. Based on the modified Kuppaswamy classification, 59.94% of cases and 57.41% of controls were from the lower socioeconomic class. The proportion of study subjects who belonged to a nuclear family was 42.33% in cases and 41.36% in controls. In this study 49.38% cases versus 48.15% controls were married. This study found that 16.66% cases and 8.64% controls had changed their residence twice or more in previous 5 years. Smoking was reported by 30.24% cases and 24.07% controls while alcoholism was reported by 26.54% cases as opposed to 16.66% controls. Sociodemographic variables found to be associated with treatment default were frequent change of residence ($\chi^2_{\text{paired}} = 4.36, p=0.03$) while being illiterate ($\chi^2_{\text{paired}} = 0.021, p=0.885$) or unemployed ($\chi^2_{\text{paired}} = 0.8, p=0.371$) were not associated with non adherence. Alcoholism ($\chi^2_{\text{paired}} = 3.87, p=0.04$) was significantly associated with treatment default while smoking ($\chi^2_{\text{paired}} = 1.266, p=0.260$) was not associated with it. Variables related to awareness of disease and its treatment which were associated with treatment default were lack of awareness about the exact duration of treatment ($\chi^2_{\text{paired}} = 4.25, p= 0.037$) and not knowing consequences of cessation of treatment before stipulated time ($\chi^2_{\text{paired}} = 4.197, p=0.039$). Variables concerned with attitude towards disease and its treatment associated with treatment default were apprehension or perceived uncertainty about treatment success ($\chi^2_{\text{paired}} = 4.009, p= .04$) while hiding the disease from family members and ($\chi^2_{\text{paired}} = 0.446, p=0.504$) and not taking and sharing food with other family members ($\chi^2_{\text{paired}} = 10.225, p=0.268$) were not associated with it.

DISCUSSION & CONCLUSION

This study found that non adherence to anti-tuberculosis treatment was associated with factors like alcohol abuse, frequent change of residence, homelessness, lack of awareness about exact duration of treatment and consequences of terminating treatment before stipulated time; and perceived uncertainty about treatment success while being Illiterate, unemployed, status of family cohesion (broken family), smoking, and motivational support from the family were not significantly associated with non-adherence. Social issues, related to housing, have multidimensional implications and all culminate in poor health. This study finds that frequent change of residence or homelessness as a factor associated with treatment default. This finding is similar to other studies^{13,14}. This study found that alcoholism was significantly associated with treatment

default. Burman et al¹³ similarly found an association between alcohol abuse with noncompliance and emphasized the need for innovative programmes to deal with alcoholism while Janmeja et al¹⁵ & Chang et al¹⁶ reported inconsistent findings to ours. Awareness regarding tuberculosis and its treatment is a vital issue impacting upon adherence to anti-tubercular treatment. In this study lack of awareness about exact duration of treatment and adverse consequences of not taking treatment for stipulated time were associated with treatment default. Vijay S et al¹⁷ from Bangalore reported that patients having poor knowledge of Tuberculosis was a predictor of treatment default. This study found that patient perception of uncertainty

about treatment success was significantly associated with treatment default. A prospective study from Gambia by Hill P et al¹⁸ also found that treatment default was significantly associated patients perceived uncertainty regarding success of treatment. Similar fact was also noted in other studies^{19, 20}. This study highlights the fact that their should be simultaneous consideration and incorporation of behavioral or nonstructural issues related to consumer or client availing the health care services into tuberculosis control programme. A patient centered approach is of utmost importance for the successful implementation and long term sustainability of this programme.

Table I: Factors having statistically significant association with non adherence to treatment in present study

S.No.	variables	Positive Response		Odds Ratio	$\chi^2_{\text{paired value}}$	P value
		n	%			
1	Frequent change of residence or homelessness	27	16.16	2.30+.0.10(2.10to2.50; 95% CI)	4.36	0.03
2	Alcoholism	43	26.54	1.76±.18(1.40to2.12; 95% CI)	3.87	0.04
3	Not aware about the exact duration of treatment	124	76.54	1.72±.+.0.16(1.40to2.04; 95% CI)	4.25	0.037
4	Not aware of consequences of cessation of treatment before stipulated time	128	79.01	1.77±.+.0.12(1.53 to2.04; 95% CI)	4.197	0.039
5	Uncertainty about treatment success	84	51.85	1.50±.0.13(1.24 to1.76; 95% CI)	4.009	0.045

Table II: Factors not having statistically significantly association with non adherence to treatment in present study

S.No.	variables	Positive Response		$\chi^2_{\text{paired value}}$	P value
		n	%		
1	Illiteracy	31	19.13	0.942	0.331
2	Unemployment	37	22.83	0.8	0.371
3	Status of family cohesion(Broken family)	18	11.04	0.64	0.423
4	Smoking	49	30.24	1.266	0.260
5	Hiding the disease from family members	44	27.16	0.446	0.504
6	Not having/sharing food with other family members	27	16.16	1.225	0.268

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Brain CT Scan Study of Mentally Retarded Individuals with Comorbid Psychiatric Disorder

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ABSTRACT

Epidemiological surveys indicate that up to two thirds of children and adults with mental retardation has comorbid mental disorders; this rate is several times higher than that in the community samples of those not mentally retarded (1). Few studies have been employed to focus on the possible causes of the above findings. To investigate into the CT Scan brain of mentally retarded with comorbid psychiatric disorder. Patients, presenting with mental retardation with comorbid psychiatric disorder, are investigated for abnormal computed tomographic brain scan and then CT brain scan findings are analyzed. 63.33% of mentally retarded with comorbid psychiatric disorder showed abnormal CT brain scan. Among the abnormal CT brain scan, 63.15% showed lesion in the parietal region and of them left sided parietal lesion (66.66%) was more than right sided lesion (33.33%).

Keywords: Mental retardation; Psychiatric disorders; CT Scan Brain

INTRODUCTION

Brain imaging or in-vivo neuroimaging technique is a powerful tool in investigating many neuropsychiatric conditions and understanding brain-behavior relationships. Contemporary neuroimaging techniques can be categorized broadly under the following two headings: (a) structural imaging, such as computed tomography and magnetic resonance imaging (MRI); and (b) functional imaging, such as positron emission tomography (PET) and single photon emission computed tomography (SPECT). MRI has certain advantages over the computed tomography scan: MRI does not expose patients to ionizing radiation; it generates images on three planes and in

thinner slices; MRI images have better resolution for small structures and show better delineation between gray and white matters; and MRI also helps in more accurate volumetric measurements and greater differentiation between neuronal tissue and bone. However, MRI is much more expensive than computed tomography, thus, is not readily available in many centers. Magnetic resonance can cause claustrophobic reactions, particularly in patients with psychiatric illness, confusion and mental retardation⁽²⁾. A recent study indicated that cranial computed tomography (CT) is unhelpful in the investigation of children with isolated non-specific mental subnormality⁽³⁾. However one study reported that CT findings did not modify treatment and in only 8% of children was a specific abnormality shown so that the investigation added disappointingly little to improving diagnosis in this condition.⁽⁴⁾

A recent epidemiological study found that 40.7% of intellectually disabled children between 4 and 18 years of age met criteria for at least one psychiatric

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disorder. Several well constructed community based population studies suggest that 35-40% of children and adolescents with intellectual disabilities are likely to have a diagnosable psychiatric disorder^(5,6,7,8,9,10). Another study examined the anatomic brain magnetic resonance imaging (MRI) characteristics of the first 27 children and adolescents with psychotic disorder not otherwise specified in the NIMH study to determine if their symptoms resembled those of a group of 44 patients with childhood-onset schizophrenia. Previous neuroimaging studies have indicated a possible decrease in total cerebral volume, a decrease in midsagittal thalamic area and cerebellar volumes, a larger total corpus callosum area, and significantly enlarged lateral ventricular volumes in patients with childhood-onset schizophrenia that were similar to volumes noted in both adolescent⁽¹¹⁾ and adult-onset schizophrenia⁽¹²⁾. No significant diagnostic differences in temporal lobe or medial temporal lobe volumes were found on initial scans⁽¹³⁾. However few studies have been employed to focus on the possible contributory factors of the higher rates of comorbid psychiatric disorder in mentally retarded individuals.

The aim of this study were: (a) to investigate into the computed tomographic brain scan of mentally retarded with comorbid psychiatric disorder; (b) to focus into the contributory factors of higher rate of comorbid psychiatric disorder in mentally retarded individuals based on ct brain scan findings.

METHOD

Sample

The present observational study involves mentally retarded individuals presenting with comorbid psychiatric disorder against ICD-10. The psychiatric disorder include any emotional disorder, any anxiety disorder, any psychiatric disorder, any depressive disorder, hyperkinesia, any conduct disorder, autistic spectrum disorder, tic disorder, eating disorder, emotional disorder with conduct disorder, conduct disorder with ADHD, emotional disorder with ADHD, emotional disorder with conduct disorder with ADHD. Sample size of this study was thirty (n = 30). Ethical consent was taken from local ethical committee and confidentiality was maintained.

PROCEDURE

The surveys used identical procedures for the collection of information, the identification of psychiatric disorders and the collection of information on individual patient. Information was collected by face-to-face personal interview with the patient and their primary care giver. Appropriate consent was also taken from them. Information's about computerised tomography of brain of those patient were taken from the reports of CT brain scan attached with the CT plate.

MEASURES

Standard psychological test (Developmental Screening Test) to assess IQ was applied to diagnose mentally retarded individual (IQ below 70) from those presenting with main complaints of subnormal intelligence and or psychiatric disorder. The presence of psychiatric disorders among the mentally retarded individuals was identified according to ICD-10 using SCAN (Schedules for Clinical Assessment in Neuropsychiatry) questionnaire. This approach picked up thirty (n = 30) mentally retarded individuals with comorbid psychiatric disorder. Computerised tomographic brain scan of those individuals were then investigated.

RESULTS

In Table 1, out of the thirty Mentally retarded individual with comorbid psychiatric disorder, 19 were male (63.33%) and 11 were female (36.66%), of the median age 20 years (Age – 7-32 years). 18 individuals had comorbid diagnosis of Psychosis NOS (60%). In the IQ scale 17 individuals had mild MR (56.66%), 9 had moderate MR (30%) and 4 had severe MR (13.33%). In the CT Brain scan findings of those individuals, 8 showed lesion in left sided parenchyma (26.66%), 6 showed lesion in the right sided parenchyma (20%), 2 showed lesion in both sided parenchyma (6.66%) and 3 showed lesion in others region (10%) of brain. 11 individuals had no structural abnormality (36.66%) of brain in CT Brain scan findings. Out of the 19 individuals who had structural brain abnormality (63.33%), 12 had abnormality in parietal region (63.15%) in majority. 8 individual had left sided parietal (66.66%) structural lesion and 4 had right sided parietal (33.33%) structural lesion.

Table 1.

Patient No.	Age (years)	Sex	IQ	Provisional Diagnosis	CT Brain Scan Findings
1	17	F	60	MR with CP with Conduct disorder	Encephalomalacia of left deep parietal region in subcortical white matter and right paraventricular region
2	20	M	35	MR with Psychosis NOS	Well defined hypodensity is seen in right posterior parietal region with dilatation of ipsilateral ventricle- Chronic infarction.
3	17	M	50	MR with CP with Psychosis NOS	Lacunar infarction in the right middle cerebral artery territory
4	12	F	44	MR with Psychosis NOS	Mild ventricular dilatation
5	15	M	55	MR with Conduct Disorder	Within normal limit.
6	14	M	60	MR with CP with Seizure Disorder with Psychosis NOS	Within normal limit.
7	30	F	54	MR with Schizophrenia	Small rounded hypodense area in left parietal lobe.
8	10	M	56	MR with Psychosis NOS	Gliotic areas in both frontal region more on left side with prominent sylvian fissure on both side.
9	14	M	60	MR with Conduct disorder	Within normal limit
10	11	F	61	MR with Psychosis NOS	Multiple cystic lesion in high parietal areas suggestive of porencephalic cyst.
11	18	M	66	MR with Psychosis NOS	Infarction in right posterior parietal region
12	23	M	45	MR with Psychosis NOS with Seizure disorder	Within normal limit
13	32	M	55	MR with Psychosis NOS	Hypodensity in left parietal region
14	16	F	30	MR with CP with Conduct disorder	Small hypodense area in left parietal region.
15	26	M	65	MR with Conduct disorder	Within normal limit
16	20	F	40	MR with Psychosis NOS	Within normal limit
17	28	M	35	MR with Schizophrenia	Hypodense area in right temporal region
18	13	M	50	MR with Conduct disorder	Lacunar infarction in right parietal region
19	18	F	65	MR with Psychosis NOS	Mild ventricular dialation
20	32	F	44	MR with CP with Psychosis NOS	Gliotic areas in left parietal region
21	23	M	28	MR with Psychosis NOS	Within normal limit
22	12	M	34	MR with Conduct disorder	Mild ventricular dialation
23	9	F	54	MR with Psychosis NOS	Within normal limit
24	18	M	55	MR with Psychosis NOS with Seizure disorder	Hypodensity in left parietal region
25	7	M	47	MR with Conduct disorder	Gliotic areas in left parietal region
26	17	M	53	MR with Schizophrenia	Within normal limit
27	27	F	53	MR with Psychosis NOS	Within normal limit
28	31	M	47	MR with Psychosis NOS	Lacunar infarction in the right middle cerebral artery territory
29	20	M	38	MR with Conduct disorder with Seizure disorder	Within normal limit
30	12	F	33	MR with CP with Psychosis NOS	Hypodensity in left parietal region

N.B: M-male, F-female, MR- mental retardation, CP- cerebral palsy, ADHD- attention deficit hyperkinetic disorder Psychosis NOS- psychosis not otherwise specified.

Table 1: showing sex, age, IQ, provisional diagnosis, CT Bain scan findings of the respective patient.

DISCUSSION AND CONCLUSION

In an article⁽²⁾, that reviewed the literature published during the past 10 years on studies of

neuroimaging in mental retardation, it is found that despite recent developments in neuroimaging, its role in mental retardation still remains unclear. The use of functional neuroimaging is still at an experimental

stage. Both structural and functional neuroimaging techniques have been used in the investigation of idiopathic mental retardation, as well as specific syndromes such as DS, autism, fragile X syndrome, cerebral palsy, tuberous sclerosis, Turner's syndrome, phenylketonuria, Angelman syndrome and many others. Structural neuroimaging shows abnormality in brain structure in people with DS, which is consistent with autopsy findings. Functional neuroimaging in older adults with DS revealed findings that are consistent with the neuropathological changes which appear in adults with DS over 40 years of age. The neuroimaging findings in autism, however, are much more controversial. To date, the posterior fossa abnormality, particularly involving the cerebellum, is demonstrated most frequently, which is again consistent with the autopsy finding. In idiopathic mental retardation, the neuroimaging findings are nonspecific and include ventricular dilatation and cortical atrophy (hypoplasia)⁽²⁾. In other previous studies on neuroimaging of mentally retarded patients, showed subtle findings such as macro cisterna magna, hypoplasia of the corpus callosum and a wide cavum septum pellucidum are often revealed on the MRI scan of children with idiopathic mental retardation⁽¹⁵⁾. Because these findings are noted frequently, they are often interpreted as 'normal variants'; in fact, these are subtle markers of cerebral dysgenesis. Cerebral dysgenesis, which is often caused by neuronal migration disorders, is frequently associated with mental retardation and epilepsy. MRI seems to be better than computed tomography in detecting neuroimaging changes associated with neuronal migration disorders, such as macrogyria, polymicrogyria and neuronal heterotopias⁽¹⁶⁾. Computed tomography scans of the brain show significantly less total brain volume in children with mental retardation and motor disturbance compared with that of neurologically normal children or children with mental retardation without associated motor disturbance⁽¹⁷⁾. Dysgenesis of the corpus callosum detected by a computed tomography scan can be associated with both mental retardation and severe psychiatric illness⁽¹⁸⁾. The application of CT scanning in the evaluation of mental retardation syndromes is reviewed. In a representative sample of 35 institutionalized patients, the CT scan showed gross anatomic abnormality in most. However, these findings were diagnostic in only a small minority. Anatomic MRIs were obtained for 71 patients (44 with childhood-onset schizophrenia and 27 with psychotic disorder not otherwise specified) and 106 healthy

volunteers. Pediatric patients with psychotic disorder not otherwise specified showed a pattern of brain volumes similar to those found in childhood-onset schizophrenia. In 29 children with mental retardation and infantile spasms, cranial computed tomography findings were abnormal in 75 % and this finding may lead to modification of treatment or influence genetic counseling. In 41 children with mental retardation and other forms of epilepsy abnormal computed tomography findings were much less frequent and were not relevant to treatment⁽¹⁹⁾. In our study we found that 63.33% of mentally retarded with co morbid psychiatric disorder showed abnormal CT brain scan. Among the abnormal CT brain scan, 63.15% showed lesion in the parietal region and of them left sided parietal lesion (66.66%) was more than right sided lesion (33.33%). The result of the study indicated that majority of mentally retarded individuals with co morbid psychiatric disorder showed abnormal computed tomographic brain scan. Lesion in the parietal region was frequently found among the abnormal CT brain scan. Higher incidence of brain lesion among mentally retarded individual may be a contributing biological factor for higher incidence of co morbid psychiatric disorders in them.

So this is clear that despite of repeated attempts to delineate specific brain neuroimaging findings in mentally retarded patients with or without other comorbid diagnosis, like seizure disorder, psychiatric disorders, no conclusive data were obtained to reveal specific brain pathology in background of causation of mental retardation and comorbid psychiatric disorders. More and more studies are thus needed to through light in this dark but important area of neuropsychiatric field of research.

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A Cross Sectional Study of Common Complaints Present in the Middle Aged Women (40-50 Yrs.) of Kadapa Town and its Association with Certain Variables

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ABSTRACT

Material & Method: Study Design: Cross sectional study. **Setting :** Study conducted at adopted area of UHC Akayapalli , Kadapa. **Reference population:** 457 middle aged (40-50 yrs.) women in study area. **Sample size:** 416 middle aged women. **Selection of sample:** All middle aged women who responded included in study. **Data collection:** With the help of Pre-tested Questionnaire schedule. **Study period:** July 2009 - December 2009. **Variables:** Work strain, Income, Type of family, Marital status. **Statistical analysis:** Data analysed with percentages & χ^2 test applied

Results : Out of 416 study subjects 349 (83.9 %) reported one or more than one complaints. Low back pain(45.8%) , weakness(35.5%) , nervousness(24.9%) are the commonest complaints of the study subjects. Complaints are mainly of Reproductive tract (82.5%), Psychological (49.9%) & General (63%) categories

Conclusion: Overall work strain, Lower socioeconomic class & Social factors like Marital status & type of family of middle aged women seems to be equally important for their health status.

These factors must be considered whenever women seek health care services because of common complaints.

Keywords: Middle Aged Women, Common Complaints, Low Back Pain, Tiredness, Work Strain, Marital Status

INTRODUCTION

Women's health has been a global concern for many decades. ¹⁻² Women in the middle aged group (40-50 yrs.) are free from burden of child birth & they are entering in to the higher social status of ageing women³ Most of them are in the postmenopausal period⁴. Researchers and health policy planners has also shifted

their focus towards postmenopausal women since recent trends suggest an increase in their number and life expectancy ⁵⁻⁶

Current demographic trends showed that premenopausal and postmenopausal womens health has emerged as an important public health concern in India⁷

Medical opinion has always projected this period as a malady because of its association with a variety of acute and chronic conditions, both physical and psychological, ranging from mild to more severe ⁸⁻¹⁰

Various studies have been conducted all over India on women belongs to this period to evaluate

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symptomatology & its correlation with different variables .¹¹⁻¹⁵

Such type of study is still not documented from the Rayalseema zone of Andhra Pradesh. Hence, the present study first of its kind from this region was planned to evaluate commonest complaints in the middle aged women (40 -50) belonging to the Kadapa town as well as to evaluate the association of socio-economic status, Work strain and Social factors like marital status & type of family with the presenting complaints.

MATERIALS & METHOD

Cross sectional descriptive study was conducted in the Akayapalli area of Kadapa town which is adopted area of UHC of Community Medicine Dept. of RIMS medical college, Kadapa, A.P. Total 457 middle aged (40-50 yrs.) women were residing in study area as per the house to house survey conducted by the health workers. All these middle aged women were tried to approach for the conduction of the study. Those middle aged women of the area available during study period & willing to participate (416) had been included in the study.

All of them have been interviewed with the help of Pre-tested Questionnaire schedule & responses recorded. Women who have various complaints more than two consecutive days in a week are considered as their complaints. Those women who are doing straineous work & get exhausted apart from routine household work are considered as having work strain. As per the modified Kuppuswamy’s classification¹⁶ all the women belongs to either middle class or lower class no one is in the upper class. Type of family is categorized in to nuclear, Joint & Three generation.¹⁷ Marital status of women recorded as married, widow, unmarried.

Statistical analysis done with simple percentages & test of significance(X² test).

RESULTS & DISCUSSION

Out of 416 middle aged women (study subjects) 349 (83.9 %) reported one or other complaint. Remaining 67 (16.1%) study subjects didn’t report any complaint. Sudhaa Sharma et al in their study found 76.92% women reported one or other complaint¹¹

Out of 349 study subjects 133(38%),137(39%) & 79(23%) have one,two & more than two complaints respectively.

Total twelve complaints reported commonly by the study subjects, details shown in the table 1.

Table 1: Different complaints reported by the study subjects.

Sr. No.	Complaints	No. (n=349)	%
1.	Low backpain	160	45.8
2.	Weakness (Tiredness)	124	35.5
3.	Nervousness	87	24.9
4.	Muscular pain (Bodyache)	81	23.2
5.	Discharge	75	21.5
6.	Pain in lower abdomen	73	20.9
7.	Irritability	72	20.6
8.	Anxiety	67	19.1
9.	Joint Pain	57	16.3
10.	Headache	47	13.5
11.	Painful micturition	26	7.4
12.	Epigastric pain	21	6.0

Responses mutually exclusive

Low back pain(45.8%),Weakness(35.5%), Nervousness (24.9%) & Muscular pain (Bodyache)(23.2%) were most frequent complaints reported by the study subjects.

Sudhaa Sharma et al in their study found that Fatigue & lack of energy (72.93%), headache (55.9%), and weight gain(43.13%) were most frequent complaints of the women.¹¹

Shah,et al found Muscle and joint pains (37.4%), Fatigue (35.6%), Hot flushes (19.4%), Sweating (18.6%), Insomnia (20.6%), Headache (13.8%) were the main complaints in their study.¹⁴

Whereas Bagga A. found that Loss of interest (93%), Pressure/tightness in head (83%) Weight gain (67%) were the frequent complaints in their study.¹⁵

Categories of complaints among the study subjects are shown in table 2

Table 2: Categories of complaints among the middle aged women.

Sr. No.	Categories	No.(N=349)	%
1	General	220	63
2	Psychological	174	49.9
3	Reproductive Tract	288	82.5

Responses are mutually exclusive

These categorized complaints present among study subjects were analysed for association with selected variables as shown in table 3

Table 3 : Association of selected variables with categories of complaints.

Variables	Total (N=416)	General complaints		Psychological complaints		Reproductive tract complaints	
		Present	P Value	Present	P Value	Present	P Value
S.E.Status							
Middle	83	37	$X^2 = 2.47$ df = 1P>0.05#	18	$X^2 = 16.27$ df = 1P< 0.05**	83	$X^2 = 47.62$
Lower	333	183		156		333	df = 1P <0.05**
Work Strain							
Present	288	171	$X^2 = 14.99$ df = 1P<0.05**	143	$X^2 = 22.53$ df = 1p<0.05**	288	$X^2 = 2.68$
Absent	128	49		31		128	df = 1P >0.05#
Family type							
Nuclear	266	157	$X^2 = 11.35$ df = 2P<0.05**	129	$X^2 = 13.49$ df = 2P<0.05**	266	$X^2 = 5.1$
Joint	103	42		31		103	df=2P >0.05#
Three generation	47	21		14		47	
Marital status							
Married	361	195	$X^2 = 1.49$ df = 2P>0.05#	127	$X^2 = 50.27$ df = 2P <0.05**	361	$X^2 = 10.81$
Widow	43	20		38		43	df=2P <0.05**
Unmarried	12	05		09		12	

Not Significant ** Significant

Psychological complaints were significantly more in the study subjects exposed to work strain & Lower socioeconomic class as well as in widow & living in nuclear family.

Reproductive tract related complaints were significantly more in married & Lower socioeconomic class study subjects.

General complaints were significantly more in study subjects having work strain & living in nuclear family.

Gunilla Krantz et al found in their study that middle aged women with Lower income, Lower social support & Job strain had significantly more common complaints.¹⁸

CONCLUSION

- Almost 4/5th of middle aged women have one or other complaint
- Majority of the women reported multiple complaints.
- Low back pain is the complaint reported by majority of the subjects.

Overall work strain, Lower socioeconomic class & Social factors like Marital status & type of family of middle aged women seems to be equally important for their health status.

These factors must be considered whenever women seek health care services because of commonest complaints.

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Nutritional Profile of College Going Girls Residing in Urban Udaipur City

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ABSTRACT

Introduction: Young adult females are the productive citizen of the country. Their productivity depends on good nutritional and health status which is necessary for continuous development of the nation. Therefore the present study was undertaken to assess the nutritional profile of young college going girls.

Methodology: A baseline survey was conducted on 300 college going adult girls aged 18 to 25 years of Udaipur. A group of 18 to 25 years girls were selected by accidental sampling method. An interview schedule was developed to collect information about the subject and their family. The nutritional status was assessed by anthropometric measurements (weight, height, waist hip circumference and skin fold thickness at bicep, triceps, sub scapular and suprailiac sites), clinical and biochemical examinations using standardized techniques. Body mass index, weight for height, waist hip ratio and body composition were also calculated to assess the nutritional status.

Results: Nutritional status assessed by different body measurements and indices gave varied prevalence of malnutrition among the females studied. Mean BMI and weight for height (%) revealed that the study group had normal weight for height. Clinical signs of anaemia were not common among these females indicating that sub clinical stage of anaemia was present.

Conclusion: It can be concluded that anaemia was the most common problem of this group. Thus government should not only focus National Anaemia Prophylaxis Programme strictly but also action plans should be introduced at community and individual level to overcome the same.

Keywords: Nutritional Status, Body Mass Index, Malnutrition, Anthropometric Measurements

INTRODUCTION

Nutritional status is defined as the health of an individual which is affected by the intake and utilization of the nutrients. Deficiency, excess and imbalance of nutrients resulting in impairment of health known as malnutrition. Malnutrition is the primary cause for wastage of human resources and a subsequent degradation of the society.

Women occupy an important position in any effort for controlling malnutrition as they are entirely responsible for the nutritional status of the family and hence the nation. It is thus imperative that she maintains good health. In recent years, there is increasing concern regarding the nutritional status of

young women who are at the threshold of adulthood and constitute an important segment of vulnerable group. The problem of under-nutrition in developing countries encompasses a spectrum of deficiency of one or more of the three micronutrients iron, vitamin A and iodine and macronutrients especially energy and protein. Anaemia is one of the glaring deficiency in women, which they acquire from childhood and increase in extent and magnitude during the reproductive age.

The under nutrition among young women is likely to limit the nations labour productivity. Thus the optimum nutritional status of young women can be considered as an indicator of development. Therefore

present study was undertaken to assess the nutritional status of college girls for development of a scientifically sound and economically feasible nutrition strategy.

METHODOLOGY

In order to study the nutritional status of college girls of Udaipur, 300 girls with age range of 18-25 years were selected by accidental sampling method. For this purpose, a list of girls college situated in different parts of Udaipur was prepared. Number of girls were selected from these colleges in proportion to their total strength. Detailed information of socio-economic background of the subjects and their medical history was collected by using pretested interview schedule. The nutritional status of these girls was assessed using standardized techniques of anthropometric, clinical and biochemical parameters. Anthropometric measurements included height, weight, skin fold thickness at bicep, triceps, sub scapular and suprailiac sites and waist hip circumference. Body mass index, waist hip ratio and body composition i.e. body fat, fat free mass and body water were also calculated for each of the girl. The weight and height observed were then compared with NCHS (1977)¹ 50th percentile value for girls. Prevalence of malnutrition by weight for age, height for age, weight for height and triceps skin fold was assessed as per the classification suggested by McLaren (1976)². BMI values were interpreted as per the 7 classes of BMI suggested by Games *et al.* (1988)³ and recommended by NIN (1991)⁴. By adding four sites skin folds body density was calculated. Per cent body fat was calculated from body density using Siri's equation⁵ [% Body Fat = (495 / Body Density) - 450]. Further fat free mass and body water was calculated assuming 73.2% fat free mass is water. Clinical examination was conducted to assess the signs of anaemia. Haemoglobin level was estimated by cyanmethaemoglobin method as described by Dacie and Lewis (1975)⁶. Those having the values less than 12g/dl were considered as anaemic.

RESULTS AND DISCUSSION

Background Information:

A total of 300 girls doing graduation and post graduation were studied. Majority of girls i.e. 74 per cent were Hindu. Eighty five per cent were vegetarian and about sixty per cent of families were nuclear. The data on family composition showed that family size is

neither very small nor very big and female proportion was more than the male in the families. The mean per capita income of the families was Rs. 2515.90 and all were from middle socio-economic status. Health problems were not present among girls at the time of study except two girls had high blood pressure. Only 17 per cent of girls were performing exercise to keep their body fit or to reduce their body weight. Symptoms of anaemia such as fatigue, weakness, headache, dyspepsia were common among the study group.

Anthropometric Measurements and Body Composition

Nutritional Status as percentage to standard

The mean values of different body measurements are given in Table I. Mean body weight of girls were 45.56 kg which was 80.48% of the weight suggested by NCHS 50th percentile value for 18 year old girls and 91.11% of the weight suggested by ICMR for a reference Indian women.

Mean height of girls were 94.86 per

cent of the weight suggested by NCHS 50th percentile value given for 18 year old girls, revealing that mean height of the girls studied were normal. These values (mean height and weight) were more or less paralleled with the other reported studies (Rathna, 1994⁷; Harshala and Premkumari 2000⁸; Venkata Lakshmi and Peramma 2000⁹). Bains and Mann (2000)¹⁰ reported slightly higher values for height and weight of women in the age groups of 18 to 23 years, which may be attributed to the dietary pattern in Punjab. It was also observed that the girls in the present study were taller than the reference height of Indian women (151 cm) but they were lighter than the reference weight of Indian women (50kg). Mean BMI and percent weight for height of these adult females were 18.86kg/m² and 103.66 respectively, which revealed that these adult females were normal by weight for height but as per BMI categories they were low weight normal. Skin fold thickness at bicep, triceps, sub scapular and suprailiac sites were 6.77, 11.21, 13.72 and 15.52mm respectively. The values of skin folds were highest at suprailiac sites indicating this is a major site of fat deposition among the college girls. Mean triceps percent as standard was 67.95. Mean waist and hip circumference were 70.94 and 88.53cm respectively with the mean waist hip ratio of 0.80.

Table I: Mean \pm SD values of anthropometric measurements and indices of adult females

S. No.	Body measurements/ Indices	Mean \pm SD values
1	Age	19.10 \pm 1.41
2	Weight (kg)	45.56 \pm 5.70
3	Height (cm)	155.31 \pm 5.45
4	Weight/ age (%)	80.48 \pm 10.41
5	Height/ age (%)	94.86 \pm 3.33
6	Weight/ height (%)	103.66 \pm 11.82
7	BMI (kg/m ²)	18.86 \pm 2.05
8	Biceps (mm)	6.77 \pm 1.67
9	Triceps (mm)	11.21 \pm 2.98
10	Sub scapular (mm)	13.72 \pm 3.66
11	Suprailiac (mm)	15.52 \pm 3.78
12	Total of four skin folds (mm)	47.22 \pm 3.02
13	Triceps (%)	67.95 \pm 18.05
14	Waist circumference	70.94 \pm 5.78
15	Hip circumference	88.53 \pm 5.29
16	Waist hip ratio	0.80 \pm 0.04

Prevalence of Malnutrition

Nutritional status assessed by different body measurements and indices gave varied prevalence of malnutrition among the girls studied. It can be seen from table II that only 16 per cent subjects were normal by NCHS weight for 18 year old girls while 91.67 per cent of subjects by height, 66 per cent by weight for height, 21.67 per cent by BMI, 13.33 per cent by triceps skin fold and 89 per cent by waist hip ratio were found in normal categories. One per cent subject by weight, BMI and triceps skin fold, 22 per cent by weight for height and 11.7 per cent by waist hip ratio were found over nourished. Remaining were suffering from different grades of under nutrition indicating that chronic form of malnutrition was prevalent among the college girls of the present investigation.

Table II: Percentage distribution of adult females by grades of malnutrition using various body measurements and indices.

S. No.	Body measurements/ indices	Types of malnutrition	Percentage
1	Weight/age percentage		
	a) <60	Severe	-
	b) 60-80	Moderate	58.67
	c) 80-90	Mild	24
	d) 90-110	Normal	16.33
	e) 110-120	Over weight	1
2	Height/age percentage		
	a) <80	Dwarf	-
	b) 80-90	Short	8.33
	c) 90-105	Normal	91.67
3	Weight/height percentage		
	d) >105	Giant	-
	a) <75	Severe	0.33
	b) 75-85	Moderate	3.33
	c) 85-90	Mild	8.34
	d) 90-110	Normal	66
4	Body Mass Index (BMI)		
	e) 110-120	Overweight	13
	f) >120	Obese	9
	a) <16.0	Severe	7
	b) 16.0-17.0	Moderate	11
	c) 17.0-18.5	Mild	26.33
	d) 18.5-20.0	Low weight normal	33
	e) 20.0-25.0	Normal	21.67
5	Triceps skin fold as percentage of standard		
	f) 25.0-30.0	Obese grade I	1
	g) >30.0	Obese grade II	-
	a) <60		
	b) 60-80	Severe	36.33
	c) 80-90	Moderate	37.76
	d) 90-110	Mild	11.67
6	Waist-Hip ratio		
	e) 110-120	Normal	13.33
	f) >120	Over nutrition	0.67
	Obese	0.33	
	a) \geq 0.85	Normal	89
	b) >0.85	Increase risk of chronic diseases	11

Body composition

Body composition calculated by skin fold thickness showed that body fat of the college girls was 11.41 kg (24.83%). Fat free mass and body water were 34.14kg (75.17%) and 24.99kg (54.85%) respectively (Table III), which was near to normal body composition of individual at maturity.

Table III: Mean ± SD values of body composition of adult females

S. No.	Details	Mean ± SD values
1.	Body fat (%)	24.83±3.47
2.	Body fat (Kg)	11.41±2.67
3.	Fat free mass (kg)	34.14±3.56
4.	Fat free mass (%)	75.17±3.47
5.	Total body weight (kg)	24.99±2.61
6.	FFM without water (kg)	9.15±0.96

Biochemical Examination (Haemoglobin level)

It can be seen from table IV that the mean haemoglobin level observed was 10.4 g/dl. Similar results were also observed by Harshala and Premakumari (2000)⁷ and Upadhyay and Kumar (2001)¹¹. On the contrary, Vijaylakshmi and Selvasundari (1983)¹², Vijaylakshmi and Jayanthi (1986)¹³ and Vijaylakshmi *et al.* (1987)¹⁴ reported low haemoglobin in the women of their studies, which were 9.7, 8.8, 9.4 g/dl respectively, in comparison to present study. This may be due to the reason that the haemoglobin is governed by dietary intake of the individual.

Table IV: Percentage prevalence of anaemia in adult females

S. No.	Haemoglobin level (g/dl)	Type of anaemia	Percentage
1	<7.0	Severe	1
2	7.0-9.9	Moderate	43.33
3	10.0-11.9	Mild	28
4	≥ 12.0	Normal	27.67
	Mean haemoglobin (g/dl)	-	Mean ± SD values
			10.40 ± 1.66

Iron deficiency anaemia was observed among 72.33 per cent college girls in present study. Similar results were also observed in other studies. A study conducted in Mumbai, India reported that 82.2 per cent of child bearing age women fall below recommended level (Brabin *et al.* 2000)¹⁵. Rathna (1994)⁷ and Upadhyay and Kumar (2001)¹² reported that only 11.5 and 14.47 per cent women were normal respectively. On the contrary, Harshala and Premakumari (1995)⁸ and Baghel (2001)¹⁶

reported that all subjects under study exhibited lower haemoglobin range than of standard.

Clinical Examination

Clinical signs of anaemia observed among college girls of Udaipur were pale tongue (0.66%), pallor skin (0.66%), koilonychias (0.33%) and oedema of ankle (1.00%). These results depicted that clinical signs of anaemia were not much prevalent among college girls under the study. The results of the present study are parallel with the results of Bains and Mann (2000)¹⁰ who recorded that only few number of subjects i.e. only 2 per cent had the signs of pale conjunctiva whereas, a higher percentage of clinical signs were reported by Harshala and Premakumari (2000)⁸ and most common clinical signs among women aged 24 to 39 years were pallor of face, thinness of hair, xerosis of skin, chelosis, bleeding gums and muscular cramps. This may be due to the fact that appearance of clinical signs depends on the severity of anaemia and in present investigation prevalence of severe form of anaemia was only one per cent. This emphasize that the subclinical iron deficiency is more prevalent in college girls of middle socio-economic status of Udaipur.

CONCLUSION

The present study concluded that college girls were suffering from different grades of malnutrition and were in negative iron balance. If their nutritional status could be improved, the health and economic status of the country can be changed. This study thus suggest that a strategic plan to be introduced at government and community level to overcome the anaemia and under-nutrition among adult females of child bearing age.

Conflict of Interest: Nil

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High Sero-Prevalence of Dengue IgG Antibodies among Healthy Individuals in Andhra Pradesh, India

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ABSTRACT

Dengue fever (DF), dengue hemorrhagic fever (DHF), and dengue shock syndrome (DSS) are increasing in India and Andhra Pradesh. Most cases of DHF and DSS occur at the time of secondary dengue virus infection. It is critical to know, the proportion of population exposed to dengue virus infection; therefore at risk of developing DHF or DSS. We assessed the approximate extent of exposure to Dengue virus infection in Hyderabad, Andhra Pradesh.

A convenience sera sample from 200 apparently healthy individuals attending routine health checkup at a medium-sized urban reference laboratory was collected. The samples were assayed for anti-dengue IgG; in first phase using Dengue IgG Capture ELISA and IgG Indirect ELISA; and in Confirmatory phase using Plaque Reduction Neutralisation Test (PRNT).

Sero-positivity of 10.5 % (21 of 200) with IgG Capture ELISA and 89.5 % (179 of 200) with IgG Indirect ELISA was seen in first phase. 100% sero-positivity was seen in the samples of age > 40 years by Indirect ELISA. In the confirmatory phase, 75% of Indirect ELISA positive samples tested positive with PRNT. Of the 12 randomized blinded samples, all Indirect ELISA negative samples were negative and 5 of the 6 Indirect ELISA positive samples were positive with PRNT. There was a positive correlation between the two assays.

The high sero-positivity dengue IgG of 89.5% indicates that the study population has been exposed to Dengue virus infection. This study warrants the need for further large scale population based studies and identification of circulating serotypes.

Keywords: *Dengue, Seroprevalance, Dengue Indirect ELISA IgG, PRNT, Plaque Reduction Neutralisation Test, Dengue India*

INTRODUCTION

Dengue fever (DF) is a self-limited illness characterized clinically by fever, frontal headache, retro-ocular pain, muscle and joint pain, and rash, and can be caused by any one of four related but antigenically distinct serotypes of the dengue virus.

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While the primary infection with dengue fever is not life-threatening, a subsequent or secondary infection with a different serotype can result in dengue hemorrhagic fever (DHF), or dengue shock syndrome (DSS), either of which can be fatal. ⁴ Cases of DF, DHF and DSS are increasing in India¹⁰. It is documented that cases of DF, DHF and DSS are steadily increasing in Andhra Pradesh³, from 1 case and no deaths in 2001, to 587 reported cases and 2 deaths in 2007. A report from the World Health Organization in 2006 noted that "current gaps in epidemiological data and surveillance mean that the burden of dengue in India is uncertain."⁷ Before 1998 dengue fever had not been reported in

Tamil Nadu, in that year, 20 febrile patients were tested for anti-dengue antibodies.⁶ Seventeen of 20 patients had IgM antibodies to dengue, the remaining 3 patients were IgG positive with thrombocytopenia and pleural effusions. A serosurvey of healthy contacts of the patients found that 95 of 107 (89%) had anti-dengue IgG. It seems likely that a serosurvey of patients' contacts would yield a higher percentage of positive antibodies than a serosurvey of the general population, but the high percentage is still notable. It was also observed that the hospitalized dengue cases and IgG-positive healthy contacts were not geographically clustered but instead were widely scattered, and this could be an indication that dengue fever had spread silently in that area before it was recognized. Active surveillance in Chennai detected a 2.2% prevalence of anti-dengue antibody in 229 schoolchildren (aged 6 to 10, mean 8.02, standard deviation 1.52) in high-risk districts in April of 2001.² A second serosurvey of the same children in September 2001, just before the seasonal dengue outbreak of that year, showed that 9.93% of subjects had anti-dengue IgM or IgG. Tuntaprasart also noted a pre-outbreak rise in school children's anti-dengue antibodies, and suggested that the change in schoolchildren's antibody status could serve as a warning system of an epidemic.⁹ Experience in Brazil and Thailand has shown that most dengue fever infections are silent or have nonspecific symptoms. Teixeira et al estimated 560,000 new cases of dengue infection (DEN-1, DEN-2, or both) in

Salvador, Brazil, over a 12 month period in 1998 and 1999, while only 360 cases were officially reported and dengue transmission was believed to be minimal.⁸ Another prospective study from Bangkok¹ compared the incidence of dengue infection in 4 to 16 year old students to their school absences, and found that 87% of newly infected students were asymptomatic or were absent from school for only 1 day, indicating that most cases of primary dengue fever remain unrecognized.

The prevalence of dengue in the general population of Andhra Pradesh has not been assessed. As most cases of DHF and DSS occur at the time of secondary dengue virus infection, it is critical to know what proportion of the population already has been infected with dengue virus and is therefore at risk of developing DHF or DSS. We assessed an approximate extent of exposure to dengue virus by conducting a serosurvey among apparently healthy individuals in Hyderabad, Andhra Pradesh.

MATERIALS AND METHOD

A convenient sample of 200 apparently healthy individuals presenting to an urban reference laboratory on an outpatient basis for routine health checkup in Hyderabad, Andhra Pradesh, was collected. The following table shows the margins of error for a range of proportions of seropositivity for a sample of 200 subjects:

Table 1: 200 samples, margin of error for a range of seropositivity proportion

Estimate of true proportion	1%	5%	10%	20%	30%	40%	50%
Margin of error	1.4%	3%	4.2%	5.5%	6.3%	6.8%	6.9%

The subjects after consent underwent phlebotomy and were assayed for Dengue IgG antibodies. Only individuals between 19 and 70 years of age were included and to optimize immune-competence, history of HIV/AIDS, malignancies, cirrhosis of the liver and renal disease were excluded. Approximately 5 ml blood was collected in a 10 ml Gel / Plain Vacutainer for routine health checkup needs, no additional needle stick was done for the purposes of this study, and no subject underwent phlebotomy solely for the purpose of this study. The subject's sera was tested in two phases, (i) in the first phase samples were tested using Dengue IgG Capture ELISA (PanBio Australia) and Dengue IgG Indirect ELISA (PanBio Australia). Samples were tested according to the manufacturer's instructions. Results were categorised as negative, equivocal or positive. Equivocal samples were retested

and reported as positive or negative as per the test protocol. For IgG Indirect ELISA kit, Panbio Units of > 11 were considered positive and values < 9 as negative. For Dengue IgG Capture ELISA Kit, Panbio Units of >22 were considered positive and values < 18 as negative. (ii) in the second phase or confirmatory phase, the ELISA results were confirmed using Plaque Reduction Neutralisation Test (PRNT). Initially 40 IgG Indirect ELISA positive samples with highest Panbio units were chosen and sent to National Institute of Virology (NIV), Pune, India for confirmation using PRNT. The samples were coded with a separate serial number without revealing the Panbio Units. After this, a second set of 12 samples (6 positives and 6 negative) were chosen randomly, blinded, coded and sent for testing by PRNT. The PRNT assay was carried out in Porcine Stable kidney (PS) cells against DENV-2 (an

Indian isolate 803347), and were tested at three dilutions 1:50, 1:250 and 1:1250 with the titres calculation by Probit analysis.

RESULTS

Of the 200 individuals who participated in the study, 136 were males and 64 were females. Mean age of the participants was 29 years. 131 (66%) participants were from Hyderabad region and 69 (34%) from other districts of Andhra Pradesh. 21 of 200 (10.5 %) (CI - 6.9, 15.5) were tested positive with Dengue IgG Capture ELISA and 179 of 200 (89.5 %) (CI- 84.4, 93.0) were tested positive with IgG Indirect ELISA. 20 of the 21 IgG capture ELISA positive were positive for indirect ELISA and 20 of the 21 Indirect ELISA negative were tested negative with Capture ELISA. Indirect ELISA seropositivity increased with age and all

subjects aged 40 years and above had positive result. No difference was found in seropositivity based on geographical location and gender.

Of the 40 Indirect ELISA positive samples tested using PRNT, 30 were positive (titres >50), 9 were negative and one sample could not be tested (insufficient sample). There was no correlation between Panbio Units and PRNT titres. In the next set of 12 blinded samples, all 6 ELISA negative samples were tested negative with PRNT, but among the 6 ELISA positive samples, 5 tested positive with PRNT. There was a significant correlation between the PRNT and Ig G Indirect ELISA assays (p-value 0.015) (Table 2). Univariate and multivariate analysis for factors gender, region and age group with seropositivity with no significant association between them. (Table 3)

Table 2: Comparison of Results of Indirect ELISA and PRNT of the blinded samples.

		IgG Indirect ELISA Result		Total
		Negative	Positive	
PRNT Result	Negative	6	1	7
	Positive	0	5	5
Total		6	6	12

Table 3: Univariate analysis of factors associated with seropositivity.

Covariates	n tested (%)	n positive(%)	Odds ratio (crude)	95% Confidence	P-value
Males	136 (68%)	121 (89%)	1		
Females	64 (32%)	58 (91%)	1.2	(0.4-3.2)	0.722
Hyderabad	131 (66%)	116 (89%)	1		
Other districts	69 (34%)	63 (91%)	1.4	(0.5-3.6)	0.547
<25years	82 (41%)	68 (83%)	1		
26-35 years	87 (43%)	81 (93%)	2.8	(1.0-7.6)	0.047
36-45 years	18 (9%)	17 (94%)	3.5	(0.4-28.5)	0.242
>45 years	13 (7%)	13 (100%)	N.A		

CONCLUSION & DISCUSSION

Based on the findings it could be concluded that the local population is largely exposed to the Dengue virus. The study warrants the need for further large scale population based studies and identification of circulating serotypes.

During the past 50 years, several outbreaks were reported in different parts of the country. However there have been no reports to our knowledge describing the magnitude of exposure to virus in healthy population of the region. Although the data from National Vector Borne Disease Control Program (NVBDCP) shows that the number of dengue cases and deaths in the state is low, we feel that the actual

number of dengue cases are grossly underestimated. The NVBDCP activities mainly serve the rural areas, with little coverage of the urban areas. Cases from private hospitals and nursing homes are not included in the surveillance as there is no strict mandate for private hospitals to report dengue cases in India. According to HMRI (Health management and research institute) monograph 12,528 dengue positive cases were recorded from all the 23 districts of Andhra Pradesh from April 2008 till January 2011 using rapid tests and ELISA tests, based on data from 2700 registered labs from the state.¹³ Unpublished data from a tertiary hospital in Hyderabad, recorded had more than 400 admissions from August 2009 and November 2009.

To the best of our knowledge, this is one of the first studies in the Hyderabad region for dengue seroprevalance. High seropositivity noted in this study indicates that this population has been largely exposed to Dengue virus infection. Our results correlated well with the previous studies from Delhi and Tamil Nadu showing a seropositivity of 89%^[14] and 77.6%^[15] respectively. Studies from around the world reported a percentage seropositivity of 100%, 98% and 91% in Jamaica, Dominican Republic and Brazil respectively.^[16,17&18] The increase in percentage seropositivity with age and having almost equal percentage of seropositivity among males and females is in agreement with the study from Dominican Republic.^[17] Studies have shown that Dengue outbreaks are associated with a switch in circulating Dengue serotype.^[19] Therefore identification of circulating serotypes and monitoring their switching patterns can serve as an early warning system for a possible Dengue outbreak enabling health system to respond effectively. This study emphasises the need for large population based studies to estimate the seroprevalance of dengue in conjunction with serotype identification.

For Sero-epidemiological purposes, IgG Indirect ELISA kits should be used to identify past primary infections and correlates well with the previously used Hemagglutination Inhibition assay (HI) and has largely replaced it.^[20] Commercial ELISA kits can detect all four serotypes of Dengue and can also detect cross-reacting antibodies to other Flaviviruses like Japanese Encephalitis (JE) and Yellow Fever (YF) virus. Andhra Pradesh has low incidence of JE^[21] and YF is nonexistent. So the possibility of detecting false positives in our study from cross-reacting antibodies is less.

Limitations of the study

As the study was not randomised and population based, recruitment bias is possible. However, this serosurvey provides preliminary estimates of Dengue IgG antibodies among the population. As the PRNT was performed against only DENV 2, there is a possibility of getting a higher number of PRNT positivity if other serotypes were included in the testing.

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Ethical consideration: The research was approved by the Ethics Committee of Mediciti Institute of Medical Sciences.

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Colonization with Methicillin Resistant Staphylococcus Aureus among Health Care Personnel in a Tertiary Care Hospital, Andhrapradesh

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ABSTRACT

Objective: This study was carried out to assess the prevalence of Staphylococcus aureus carriage among healthcare workers and their antibiogram with special emphasis on methicillin resistance.

Materials and Method: A total of 123 healthcare workers (HCW) were selected by random sequential sampling, from various specialties like surgical wards, medical wards, high risk areas like ICU, NICU and postoperative wards of Gandhi medical college and hospital. Specimens included swabs from anterior nares, skin surface over the dorsum of the hand, nailbeds, and scalp hair of HCWs. Samples were collected using sterile cotton swabs and inoculated on to the relevant media. Isolates were identified by standard methods up to species level. Antimicrobial susceptibility test was performed according to standardized disc diffusion Kirby-bauer method. Each of the isolate was screened for methicillin resistance using oxacillin disc on mullerhinton agar plate followed by MIC for methicillin and cefoxitin susceptibility test by disc diffusion method.

Results: 34.14% of the HCW were found to be colonized with Staphylococcus aureus and 3.17% of them with methicillin resistant staphylococcus aureus (MRSA). Colonization was predominant among female HCW (52%), nursing staff (37%) and those above the age group of 45 years (54%).

Conclusio: HCW colonized with MRSA strains may act as carriers and can serve as a focus of nosocomial spread of multidrug resistant staphylococci in tertiary level hospitals and cause problem to hospital infection control programme.

Keywords: MRSA, HCW, Colonization

INTRODUCTION

Staphylococcus aureus is the most frequently isolated gram positive pathogen and increasingly implicated as a cause of nosocomial infections worldwide.¹ Recent increase of methicillin resistant and multiple resistant strains at large hospitals started to pose great difficulty in selecting antimicrobial agents for the management of the infections they cause.

Cephalosporins and other beta-lactum antibiotics have been shown to be clinically ineffective even though certain invitro tests such as the standard disc diffusion test would suggest that the strains are susceptible.²

Heterogenous resistance to the beta-lactum antibiotics and cephalosporins is also responsible for the problems encountered in detecting MRSA. In recent years, nosocomial outbreaks of MRSA have become a major infection control problem. Although, MRSA strains have not been shown to become more virulent than S.aureus, very high mortality rates have been reported from several countries.³ Our inability to treat these infections at an early stage with first choice of antibiotics and delay in appropriate chemotherapy pose serious therapeutic problems.

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MRSA strains may spread readily in hospitals from colonized or infected persons. Colonized employees are generally asymptomatic, although they are a potential reservoir of infections acquired by patients.⁴ colonized or infected hospital personnel may serve as reservoir and disseminator of MRSA in hospitals.

With this background, this study was undertaken to assess the prevalence of MRSA colonization among health care personnel in a tertiary care teaching and research hospital.

MATERIALS & METHOD

This study was conducted over a 6 months period, from June to December 2009, in the department of microbiology, Gandhi medical college, Secunderabad, A.P.

A total of 123 HCWs working in various departments of the hospital were screened for colonization with MRSA. They include doctors, nurses, paramedical staff etc, who were healthy and not received any antibiotics in the preceding 15 days were selected by random sequential sampling. The sample size was calculated statistically by the formula = $4PQ/L^2$ [P=prevalence Q=100-P, and L=20% allowable error].The specimens included swabs from hospital staff's anterior nares, fingernails, skin surface and scalp hair.

Sterile cotton swabs, moistened with sterile normal saline were used to collect the specimen. They were inoculated into brain heart infusion broth (BHI) immediately. Subcultures were done from BHI broth on to blood agar, mannitol salt agar and macconkey agar. S.aureus was identified by gram stain, catalase, Mannitol fermentation and Coagulase test.⁵

The antimicrobial susceptibility test was performed according to standardized disc diffusion Kirby-bauer method.⁶ Each of the isolates was screened for methicillin resistance by disc diffusion method. Four or five colonies picked from overnight growth were inoculated into 4-5 ml of peptone water which was incubated at 35 c until turbid to 0.5 Mcfarland standard. Methicillin susceptibility was tested using 1µg oxacillin discs (Himedia, Mumbai, India), the diameter around the disc was measured and the results were interpreted as susceptible or resistant. Drug free plates were also inoculated for growth control. methicillin sensitivity was further confirmed by minimum inhibitory concentration at 0.2µg/ml to 0.8µg/ml and susceptibility to ceftazidime was tested by disc diffusion

method .The zone sizes of 24mm or less for ceftazidime was considered as resistant. Growth of even a single colony was taken as an indicator of MRSA. Colonization was defined as MRSA positive culture from any site.

RESULTS

Out of 123 HCW screened 34.14% were found to be colonized with staphylococcus aureus. (Fig-1) Among them 96.82% were colonized with methicillin sensitive S.aureus (MSSA) and 3.17% were colonized with Methicillin resistant S. aureus (MRSA). (Fig-2)

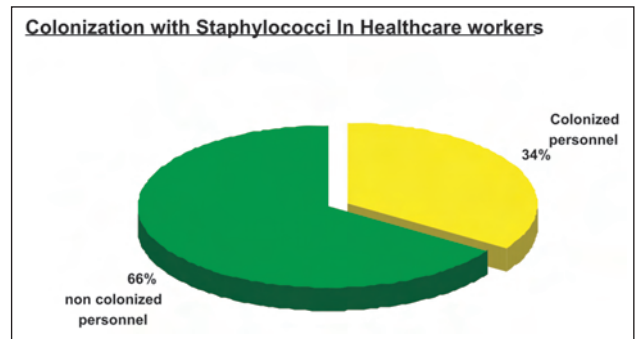


Fig. 1.

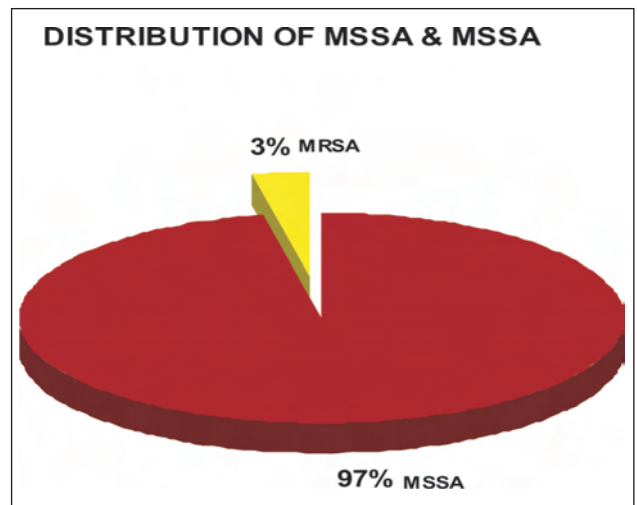


Fig. 2.

Among HCW colonized with S.aureus nurses constituted 37% followed by paramedical staff (33%) and doctors (30%). (Fig-3). Colonization was more among female (52%) HCW (Fig-4) and those above the age group of 45 years (54%) (Fig-5)

Anterior nares (51%) found to be the predominant site of colonization, followed by nail beds (30%), skin surface(17%),and scalp hair (2%).(Fig-6). In our study colonization with S.aureus was more among HCW from surgical wards and high-risk areas.Table-1

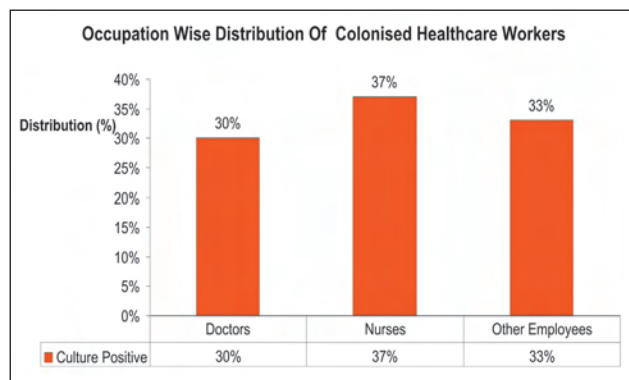


Fig. 3.

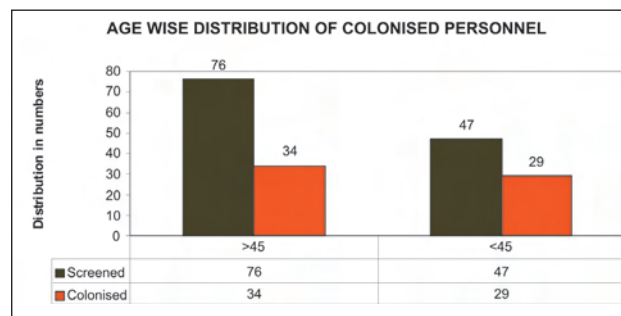


Fig. 5.

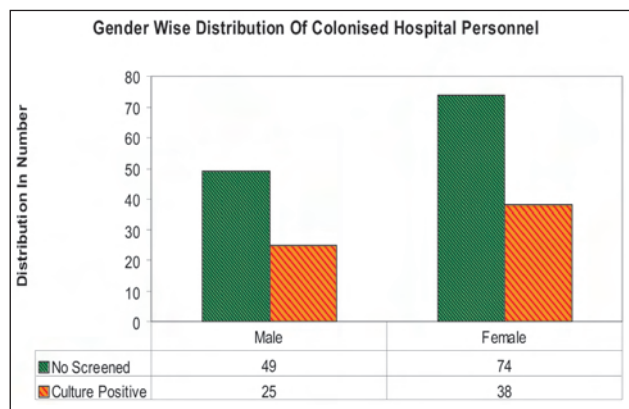


Fig. 4.

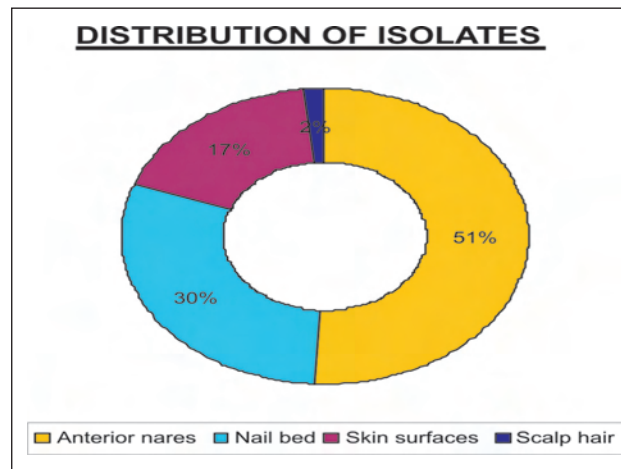


Fig. 6.

TABLE 1 Antibiotic sensitivity pattern of the isolates showed 100% sensitivity to vancomycin. Resistance to

ampicillin was 57.2%, Amoxy-clavulanic acid 3.2% and to methicillin was 3.2%. (Table-1)

Table 1. Wards Wise Distribution of Colonised Personnel

	Personnel Screened	Carriers	Isolates
Medical Wards	27	6(22.2%)	10
Surgical Wards	31	11(35.5%)	8
OB&G Wards	11	4(36.3%)	5
Labour Room	6	2(33.3%)	4
High Risk Areas	12	5(41.6%)	7
Other Areas	36	14(38.8%)	29

Antibiogram of Staphylococcus Aureus Isolates from Colonised Personnel

	Medical Wards		Surgical Wards		OB&G Wards		Labour Room		High Risk Areas	
	S(%)	R(%)	S(%)	R(%)	S(%)	R(%)	S(%)	R(%)	S(%)	R(%)
Ampicillin	40	60	50	50	40	60	50	50	42.8	57.2
AmoxyClav	100	0	88.8	11.2	100	0	100	0	100	0
Amikacin	30	70	22.2	77.8	20	80	50	50	28.5	71.5
Co-trimoxazole	50	50	50	50	60	40	25	75	57.1	52.9
Cefotaxime	100	0	88.8	11.2	100	0	100	0	85.7	14.3
Ciprofloxacin	60	40	61.1	38.9	40	60	75	25	28.6	71.4
Oxacillin	100	0	88.8	11.2	100	0	100	0	100	0

DISCUSSION

In our study the rate of colonization of *Staphylococcus aureus* among HCWs was 34.14% (42/123), and colonization with MRSA as 3.17%, which was in concordance with the study conducted by Renu Goyal et al (2002) who reported the colonization rate with *Staphylococcus aureus* as 37.3% and MRSA as 6.6%.⁷

Multi drug resistance is a common feature of MRSA. Among the isolates obtained in this study, 28% of the isolates were showing multidrug resistance, which correlated with the study of Majumder D et al, who reported, multi drug resistance of MRSA as 23.2%.⁸

The present study reveals, that occupation wise, the nursing staff are being colonized predominantly (37%) than other employees. Our study showed female preponderance (30.9%), which was correlated with the study by Mathew J keuhnert (2006), and Erica S Pan et al who reported colonization in females as 30.4%.^{9,10} The study shows colonization in the age group of e" 45 years (54%) which was correlated with the study by Mathew J keuhnert (2006), who reported age group involved as e" 60 years and Erica S Pan et al who reported as e"50 years.^{9,10}

Colonization was predominant in the anterior nares (51%), which correlated with the study of Majumder D et al (2001) who reported nasal carriage of *staphylococcus aureus* among health care workers as 52.46%.⁸ Colonization of nail beds with *staphylococcus aureus* was 30%. Colonization of skin surface on the dorsum of the hands was 17%, which correlated well with the study of Renu Goyal et al (2002) who, reported colonization of 20%.⁷ Colonization on the scalp hair was 2%.

Antibiogram of the colonized personnel with *Staphylococcus aureus* showed multidrug resistance. Isolates were resistant to Amikacin (70%), Ampicillin (57.7%), Ciprofloxacin (46%), and Co-trimoxazole (48%).

Among the Isolates from the colonized personnel 96.8% were Methicillin sensitive & 3.17% isolates were Methicillin resistant. None of the methicillin resistant *staphylococcus aureus* isolates were found to be sensitive to ampicillin, where as 52.3% of the methicillin sensitive strains were sensitive. This correlated well with the study of Hanumanthappa et al (2003) who reported sensitivity of methicillin sensitive

staphylococcus aureus strains to ampicillin as 36.8%.¹¹

Our study shows, prevalence of colonized personnel were more among those working in high risk areas (41.6%), followed by other areas (38.8%), OBG wards (36.6%), surgical wards (35.4%), labour room (33.3%), and medical wards (22.22%). Methicillin resistant strains isolated were from the personnel from surgical wards.

A retrospective study was conducted with the clinical samples such as pus, urine from these surgical wards, culture of these clinical samples also yielded MRSA strains and the Antibiogram was the same. All the HCW colonized with MRSA were treated with mupirocin ointment twice daily for two weeks, repeat samples from carriers did not yield any organism.

CONCLUSION

The above study brings to light the importance of identifying the carriers with MRSA. Rapid identification of nasal carriers harboring virulent strain types may indicate those at the highest risk for the development of disease, thus allowing targeted implementation of currently available and future interventions, like washing hands before examining a patient and applying barriers like surgical masks.

Conflict of Interests: Nil

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Study of the Epidemiological Aspects of Cleft Lip and Cleft Palate

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ABSTRACT

Research Questions:

1. what are the epidemiological aspects of cleft lip/ cleft palate patients?
2. What is the association between the disabilities & maternal factors?

Settings: The Operation Smile camp conducted at Dr.Pinnamaneni Siddhartha General Hospital, Chinoutpalli, Vijayawada.

Study Design: Hospital based analytical study.

Participants: 100 patients attending the Operation Smile camp conducted at Dr. Pinnamaneni Siddhartha General Hospital.

Methodology: The data was collected from all the screened patients attending the Operation Smile camp using a pre tested and structure questionnaire by interview technique. The respondent is the adult patient or the mother of the child.

Results: The cleft lip and cleft palate were more in children less than five years of age. Unilateral lesion and isolated lesions are common. The cleft lesions are more in consanguineous marriages, with maternal age of less than 20 years; with birth order one, in families with below poverty line and with less antenatal care.

Conclusions: The community should be made aware of consanguineous marriages and such marriages to be discouraged. The adolescents to be educated about the right age at marriage and ensure provision and utilization of Reproductive & Child Health services. Psychological counseling sessions to be organized and motivate them for the surgical corrections at the early age.

Keywords: Cleft Lip, Cleft Palate, Consanguineous Marriage, Maternal Age, and Antenatal Care

INTRODUCTION

Cleft lip and Cleft palate which can also occur together are variations of a type of clefting congenital deformity caused by abnormal facial development during gestation.

A cleft is a fissure or opening-a gap. It is the non fusion of the body's natural structures that form before birth. If the cleft does not affect the palate structure of the mouth, it is referred to as cleft lip.¹

Cleft lip is formed in the top of the lip as either a small gap or an indentation in the lip (partial or incomplete cleft) or it continues into the nose (complete cleft). Cleft lip can also occur as one sided (unilateral) or two sided (bilateral). It is due to failure of fusion of the maxillary and medial nasal processes.²

Cleft palate is a condition in which two plates of the skull that form the hard palate are not completely joined. Palate is developed around 6-8 weeks of life

from 3 components. Imperfect fusion or developmental anomalies results in cleft palate.³

In 80% of cases, cleft lip is unilateral and in about 60% of the cases, it is associated with cleft palate. In many cases, nostril is widened. Mal development of teeth in relation to the cleft is common.⁴

The development of the face is coordinated by complex morphogenic events and rapid proliferative expansion and is thus highly susceptible to environmental and genetic factors rationalizing the high incidence of facial malformations. During first 6-8 weeks of pregnancy, the shape of the embryo's head is formed.⁵

Overall incidence of clefts in general population was reported as 1 in 655 live births for cleft lip and 1 in 762 for cleft palate, placing it only second to club foot amongst the congenital malformations. The incidence is more in Asians indicating a geographical pattern.⁶

Many clefts run in families, even though in some cases there does not seem to be an identifiable syndrome present, possibly because of the current incomplete genetic understanding of midfacial development.⁷

Environmental influences may also cause or interact with genetics to produce orofacial clefting. Cleft lip have also been linked to maternal hypoxia as caused by maternal smoking, natural alcohol abuse or some forms of maternal hypertensive treatment. Other factors include maternal diet and vitamins intake, anti convulsant and illegal drugs.⁶

In various studies, apart from teratogenic factors, consanguineous marriages among the first cousins was statistically shown to increase the incidence of anomaly like any other congenital abnormality.⁸

Most children who have their clefts repaired early enough are able to have a happy youth and a healthy social life. Adolescents are at an elevated risk for developing psychosocial problems especially those relating to self concept, peer relationships and appearance. Self concept may be adversely affected by the presence of cleft among girls. Children with clefts report feelings of anger, sadness, fear and alienation from the peers.⁹

Presence of cleft lip interferes with swallowing to some extent (difficulty in sucking, swallowing, difficulty in speech, hearing, smelling). There may be some difficulty in bottle feeding. Some degree of

difficulty in speech (disarticulation) is present. Unable to make consonal sounds like B, D, K, P, T. Individuals with cleft also face many middle ear infections which can eventually lead to hearing loss.⁴

Multidisciplinary approach involving plastic surgery, orthodontics, speech pathology, ENT, prosthodontics, pediatrics department is needed to rehabilitate the cleft cases. This approach results in aesthetically acceptable end result without much functional deficiencies.⁴

MATERIALS & METHOD

Study area: Operation Smile camps conducted at Dr.Pinnamaneni Siddhartha institute of Medical Sciences and Research Foundation, Chinaoutpalli, Vijayawada annually. Operation Smile is an American based, multinational voluntary organization conducting camps and performing surgical corrections all over the world and adding smiles to the individuals and families. In India, they are conducting camps every year at two places, one in Kolkata and the second one in South India, at our institution.

Study period: 2008 —2009.

Study population: 100 patients who were drawn from Krishna, Khammam and neighboring districts and screened for surgical correction in the Operation Smile camp .

Study design: The data has been collected through a well designed hospital based analytical study.

Sample size: All the 100 patients who have been screened and selected for surgical correction in the camp.

Sample survey methods: The data was collected by a well structured, pre tested questionnaire through interview technique. Respondent was the head of the family or parent or close relative of the children in the house.

Quality assurance of the data: Daily checking of the 10% of the filled questionnaire by the senior colleague in the department. Results were discussed with senior colleagues and summarized.

Statistical analysis and interpretation of data: Data collected has been presented through frequency distribution tables, cross tables and graphs for percentages. Interpretation of the results was done using percentages, proportions and test of significance – Chi square test, and one way Anova test.

OBSERVATIONS

Table I : Distribution of patients with cleft lip & cleft palate as per age groups & type of deformity.

Age groups	Unilateralcl/cp	Bilateralcl / cp	Isolated cl	Isolatedcp	Total
<5 yrs	23	8	4	4	39(39%)
6-10 yrs	4	3	6	6	19(19%)
11-15 yrs	5	3	3	3	14(14%)
16-20 yrs	5	3	7	7	22(22%)
21-25 yrs	2	0	1	1	4(4%)
>25 yrs	2	0	0	0	2(2%)
Total	41(41%)	17(17%)	21(21%)	21(21%)	100(100%)

Table 2. Distribution of patients with cleft lip and cleft palate by consanguinity and its degree.

Age groups	First degree Consanguinity	Second degree Consanguinity	Third degree Consanguinity	Non Consanguineous	Total
<5 yrs	18	11	0	9	38(38%)
6-10 yrs	8	2	1	9	20(20%)
11-15 yrs	5	5	3	1	14(14%)
16-20 yrs	11	6	5	1	23(23%)
21-25 yrs	0	0	3	0	3(3%)
>25 yrs	1	0	1	0	2(2%)
Total	43(43%)	24(24%)	13(13%)	20(10%)	100(100%)

Chi-square = 10.51, df = 1, P = 0.0012, statistically significant? (alpha<0.05)= Yes.

Table 3. Distribution of patients with the cleft lip & cleft palate by maternal age at child birth.

Age groups	≤20yrs	21-25yrs	26-30yrs	>30yrs	Total
<5 yrs	25	11	3	0	39(39%)
6-10 yrs	13	4	2	0	19(19%)
11-15 yrs	9	3	3	1	14(14%)
16-20 yrs	16	4	2	0	22(22%)
21-25 yrs	2	1	1	0	4(4%)
>25 yrs	2	0	0	0	2(2%)
Total	67(67%)	23(23%)	9(9%)	1(1%)	100(100%)

Anova: Single Factor, P = 0.003978, F crit = 3.098391, statistically significant =yes.

Table 4. Distribution of patients with cleft lip & cleft palate by birth order.

Age groups	Birth Order1	Birth Order2	Birth Order3 &above	Total
<5 yrs	21	18	0	39(39%)
6-10 yrs	10	6	3	19(19%)
11-15 yrs	4	7	3	14(14%)
16-20 yrs	10	6	6	22(22%)
21-25 yrs	0	0	4	4(4%)
>25 yrs	1	0	1	2(2%)
Total	46(46%)	37(37%)	17(17%)	100(100%)

Chi-square = 26.40, d.f = 4, P < 0.0001, statistically significant? (alpha<0.05) = Yes.

Table 5. Distribution of patients with cleft lip and cleft palate by Nutritional status

Age Groups	Nutritional Status					Total
	Normal	Grade I	Grade II	Grade III	Grade IV	
<5 yrs	26	6	3	3	1	39(39%)
6-10 yrs	12	3	2	1	1	19(19%)
11-15 yrs	8	3	2	1	0	14(14%)
16-20 yrs	18	2	2	0	0	22(22%)
21-25 yrs	2	1	1	0	0	4(4%)
>25 yrs	1	0	1	0	0	2(2%)
Total	67(67%)	15(15%)	11(11%)	5(5%)	2(2%)	100(100%)

Anova: Single Factor, P = 0.001585, F crit = 2.75871, statistically significant = Yes

Table 6. Distribution of patients with cleft lip and cleft palate by Socio-economic status.

Age groups	Below Poverty Line	Above Poverty Line	Total
<5 yrs	32	7	39(39%)
6-10 yrs	16	3	19(19%)
11-15 yrs	11	3	14(14%)
16-20 yrs	19	3	22(22%)
21-25 yrs	3	1	4(4%)
>25 yrs	2	0	2(2%)
Total	83(83%)	17(17%)	100(100%)

Anova: Single Factor, P = 0.040437, F crit = 4.964603, statistically significant = Yes

Table 7. Distribution of Patients with cleft lip and cleft palate by Ante natal care.

Age Groups	Registered	IFA-100	Exposure to drugs	Exposure to X-rays
<5 yrs	26	21	14	4
6-10 yrs	12	10	7	2
11-15 yrs	9	7	4	0
16-20 yrs	10	8	3	1
21-25 yrs	1	0	0	1
>25 yrs	0	0	0	0
Total	58(58%)	46(46%)	28(28%)	8(8%)

RESULTS & DISCUSSION

The cleft lip and cleft palate are more in children less than five years and less above twenty years of age. Unilateral cleft lip/ cleft palate is more than bilateral cleft lip/ cleft palate, isolated cleft lip and cleft palate. The cleft lesion is more associated with consanguineous marriages (80%) than non-consanguineous marriage. Among the consanguinity, the lesion is more with the first degree and less with the third degree consanguinity. The deformity is directly proportional to the degree of consanguinity, statistically significant and the same has been observed by Prem Dhanraj, 2006.

Majority of the cleft lip and cleft palate patients (67%) were born when their mother's age was less than 20 years of age followed by 20 to 30 years and very less after the maternal age of above 30 years. The cleft lesions were more (46%) in the first child followed by second child and less with birth order of 3 and above and the same has been observed by Ahmad A Hai, 2003.

The nutritional status is normal in two thirds of the patients with cleft lesions, followed by grade-II malnutrition and severe degrees of malnutrition were

observed only in few cases. Most of the cleft lesions (83%) were in the below poverty line families. Only 7% of the lesions were in above poverty line families. The cleft lesion is directly proportional to poverty.

Ante natal registration was done only in 58% of the patients, 100 tablets of Iron and Folic Acid were given in only 46% of the lesions, 28% of the patients were exposed to drugs during pregnancy and 8% were exposed to X-rays during pregnancy.

CONCLUSION

The community should be made aware of consanguineous marriages and its association with birth defects like Cleft lip/ Cleft palate and such marriages to be discouraged. The adolescents to be educated about the right age at marriage as too early pregnancy and too late pregnancy increases the disability risks.

Ensure provision and utilization of Reproductive & Child Health services; especially ante natal registration, antenatal check ups, and distribution of Iron and Folic acid tablets, nutritional education and other ante natal advices.

Psychological counseling sessions to be organized for the patients and the families to remove the psychological stress and to motivate them for the surgical corrections at the early age and to make an effort to make cleft free globe, thereby adding smiles to the individuals and families.

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Use of Anthropometric Variables, Lipid Profile and Serum Insulin as Predictors of Insulin Resistance in Metabolic Syndrome Subjects

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ABSTRACT

Background: Metabolic syndrome is a combination of medical disorders that increase the risk of developing cardiovascular disease and diabetes. It affects one in five people, and prevalence increases with age.

Method: A total of 120 subjects were studied, comprising of 60 healthy controls and 60 metabolic syndrome subjects. Anthropometric measurements (waist circumference, waist-hip ratio, BMI Prime), fasting glucose, triglycerides, total cholesterol, HDLc, LDLc were estimated by enzymatic method and fasting insulin by ELISA. HOMA-2 indices (updated homeostasis model assessment) were calculated using Microsoft Excel based HOMA-2 calculator.

Results: The optimal cut-off values for identification of insulin resistance in overweight individuals were: 144 mg/dL for triglycerides (sensitivity-66%; specificity-83%), 3.4 for TG/HDLc ratio (sensitivity-68%; specificity-90%), and 17 μ U/mL for fasting insulin (sensitivity-74%; specificity-100%). Linear regression analysis showed a significant linear relationship between HOMA2-IR and waist circumference, serum triglycerides, TG:HDL ratio and fasting insulin ($p < 0.001$).

Conclusions: Waist circumference and BMI can be used as screening tools in the diagnosis of insulin resistance with minimal cost and manpower requirement. Fasting triglyceride levels, TG/HDLc ratio and insulin levels are practical methods for quantifying insulin resistance among metabolic syndrome subjects. In the absence of a standardized insulin assay, the most practical approach to identify insulin resistance is to use the cut-off values for either triglyceride concentration or the TG/HDLc ratio.

Keywords: Insulin Resistance, BMI, Waist Circumference, Metabolic Syndrome, HOMA, Fasting Insulin, TG/HDL ratio

INTRODUCTION

Diabetes mellitus and metabolic syndrome have reached global pandemic proportions with India being

designated 'diabetes capital' of the world. Epidemiological studies over the last three decades have shown fivefold increase in the prevalence of diabetes in India, while prevalence rates of >30% have been reported recently for metabolic syndrome¹.

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Given the current epidemic of obesity and the fact that the features of metabolic syndrome may be present for up to ten years before detection of glycemic disorders; there is an urgent need for a reliable yet simple method for detection of insulin resistance in patients with the metabolic syndrome².

Worldwide, cardiovascular disease continues to be the major cause of mortality and morbidity, with its incidence increasing alarmingly in the developing world. Simultaneously the incidence of type-2 Diabetes is also rising due to increase in the prevalence of obesity and decreased physical activity and further fuelling the increase in CVD. Anything which can lead to better knowledge of the causes, earlier detection and possible prevention of these twin epidemics is to be welcomed, hence there is widespread interest in the metabolic syndrome over recent years³.

The term 'Metabolic syndrome' denotes a clustering of traditional and emerging risk factors for type-2 diabetes and cardiovascular disease (CVD). The major components of the metabolic syndrome include: abdominal or central obesity, insulin resistance, glucose intolerance, atherogenic dyslipidemia (elevated TG and lower HDL-C), raised blood pressure, pro-inflammatory and pro-thrombotic state⁴.

The prevalence of metabolic syndrome in India is estimated to be around 25.8%. Furthermore, insulin resistance was reported to be present in nearly 30 per cent of children and adolescents in India, more so in girls. Obesity and metabolic syndrome are increasing in India due to marked shift in lifestyle caused by economic growth, affluence, urbanization and dietary westernization⁵.

The present study is carried out with the aim to investigate the correlation of anthropometric measurements, lipid profile and fasting insulin with surrogate measures of insulin resistance (HOMA-2), and evaluate their ability to predict insulin resistance in the metabolic syndrome subjects.

SUBJECTS AND METHOD

Study subjects

A cross sectional study of serum insulin and lipid profile in metabolic syndrome subjects was carried out from June 2010 to June 2011. The study was carried out in metabolic syndrome subjects and healthy controls selected from District Government Hospital, Tumkur, Karnataka and from the general population. Each gave an informed consent and this study was approved by the ethical and research committee of the District Hospital Tumkur to use human subjects in the research study.

A total number of 120 subjects participated in the study. Out of 120 subjects, 60 were subjects who met

the criteria proposed for clinically diagnosis of metabolic syndrome by International Diabetic Federation (IDF)⁶.

According to the IDF definition, a person is said to be having the metabolic syndrome if they have central obesity (defined as waist circumference ≥ 90 cm for men and ≥ 80 cm for women) plus any two or more following risk factors:

- i. Raised triglycerides ≥ 150 mg/dL.
- ii. Reduced HDL cholesterol: ≤ 40 mg/dL in males & ≤ 50 mg/dL in females.
- iii. Raised blood pressure: Systolic BP ≥ 130 or Diastolic BP ≥ 85 mm Hg.
- iv. Raised plasma glucose: ≥ 100 mg/dL⁶.

Controls were healthy individuals, age and sex matched without any major illness.

Pregnant women, patients with hypothyroidism, secondary obesity, ascities, malignancies, hepatic, renal, cardiac diseases and subjects who were receiving oral hypo-glycemics or insulin were also excluded from the study.

Anthropometric measurements

In all the participants, the following anthropometric variables were measured: Height, weight, waist circumference (WC), hip circumference, waist-to-hip circumference ratio (WHR). Body mass index (BMI) was calculated using the formula: BMI = weight in kgs / (height in meters)². Blood pressure was measured at an upper arm using a sphygmomanometer.

Metabolic parameters

Glucose and Lipid profile were analyzed by enzymatic methods using commercially available kits from Merck Company in Merck Selectra Junior Autoanalyzer (MERCK Company). Serum insulin levels were determined using a commercially available ELISA kit (Millipore, USA) as described previously. The intra-assay and inter-assay percentage coefficient variables were 2.6 and 3%, respectively.

Homeostasis Model Assessment (HOMA)

The homeostatic model assessment was first described by Matthews et al. in 1985. It is a method used to quantify insulin resistance and beta-cell function from basal (fasting) glucose and insulin

concentrations. It has been reported in more than 500 publications. The HOMA model has proved to be a robust clinical and epidemiological tool for assessment of insulin resistance⁷.

HOMA-2: the updated HOMA model (The computer model) the correctly solved computer model, has nonlinear solutions. HOMA-2 analysis allows assessment of inherent β -cell function and insulin sensitivity and can characterize the patho-physiology in those with abnormal glucose tolerance⁷. HOMA2 indices were calculated using HOMA2 Microsoft Excel based calculator. HOMA2-% B (β cell function) Index; HOMA2-% S (Insulin Sensitivity) Index and HOMA2-IR (Insulin Resistance) Index. The HOMA-2 model calculator software was downloaded from www.OCDEM.ox.ac.uk. The subjects will be considered insulin resistant if HOMA2-IR $\geq 1.8^6$.

Statistical analysis:

Descriptive data are presented as mean \pm SD and range values. Multiple group comparisons were done by one way ANOVA. Student's t-test was used for comparing the means of two groups. Relationship between measurements was assessed by Pearson's correlation coefficient. Diagnostic validity test were performed for selected variables. For all the tests, a p-value of 0.05 or less was considered for statistical significance.

RESULTS

Table 1 shows baseline characteristics of controls and metabolic syndrome subjects. The mean age was 45.02 ± 8.89 years in controls and 46.25 ± 9.23 years in metabolic syndrome subjects. Statistical analysis by student's t-test shows that the mean levels of WC, WHR, BMI, fasting plasma glucose, triglycerides, total cholesterol, fasting serum insulin, TG/HDL-C, HOMA2-IR and HOMA2-%S were significantly increased in metabolic syndrome subjects when compared to healthy controls and are statistically highly significant ($p < 0.001$). HDL cholesterol was decreased in metabolic syndrome subjects when compared to controls and was statistically highly significant ($p < 0.001$).

The ratio of TG/HDL-C was in the range of 2.64 ± 0.54 and 5.05 ± 1.87 in healthy controls and metabolic syndrome subjects respectively. HOMA2-%B (β cell function) was found to be similar in controls and

healthy control subjects and therefore statistically was not significant ($p < 0.968$).

Table 3 shows relationship between waist circumference, BMI, fasting plasma glucose, triglycerides, TG/HDL-C ratio and insulin with HOMA2-IR. Linear regression analysis showed a significant linear relationship between HOMA2-IR and waist circumference, serum triglycerides, TG/HDL-C ratio and fasting insulin ($p < 0.001$).

Table 4 shows diagnostic validity of TG, TG/HDL-C ratio and fasting serum insulin for discrimination of insulin resistance (HOMA2 - IR) in metabolic syndrome subjects. The optimal cut-off values for identification of insulin resistance in metabolic syndrome individuals were: 144 mg/dL for triglycerides (sensitivity-66%; specificity-83%), 3.4 for TG/HDL-C ratio (sensitivity-68%; specificity-90%), and $17\mu\text{U/mL}$ for fasting insulin (sensitivity-74%; specificity-100%). It was evident that serum triglyceride, TG/HDL-C ratio and fasting serum insulin were good discriminators of insulin resistance in metabolic syndrome subjects even though fasting serum insulin was a slightly better discriminator.

DISCUSSION

The metabolic syndrome is a cluster of interrelated risk factors that indicate individuals at increased risk for type-2 diabetes mellitus and coronary artery disease. In the last two decades, a striking increase in the number of people with the metabolic syndrome all over the world has taken place. This increase is associated with the global epidemic of obesity & diabetes. Sedentary lifestyle and easy availability of energy dense food are the driving force for this epidemic of obesity⁷.

Abdominal obesity is the form of obesity most strongly associated with the metabolic syndrome. It presents clinically as increased waist circumference. The distribution of body fat in Indians differs from that seen in the Western population. Indians have higher body fat or abdominal obesity even at normal range of body mass index (BMI). Thus waist circumference and BMI can be used as good adjuncts in the screening of insulin resistance in the metabolic syndrome subjects with minimal cost and manpower requirement. They are especially suited in identifying high risk individuals in large populations before biochemical investigations are undertaken^{7,8}.

Insulin resistance has been recognized as the basic patho-physiological process underlying the cardiovascular risk factors in metabolic syndrome. Insulin resistance is the decreased ability of target tissues, such as liver, adipose, and muscle, to respond properly to normal circulating concentrations of insulin. The onset of insulin resistance is heralded by postprandial hyperinsulinemia, followed by fasting hyperinsulinemia⁹. Similarly, dyslipidemia is the hallmark of the metabolic syndrome and is characterized by elevated triglycerides (TG) and low levels of HDL-C.

Several studies showed a high incidence of various features of metabolic syndrome in Indians compared to the Western population. The exact cause for this is not known. It is generally believed that a high incidence of abdominal obesity and insulin resistance in Indians could be responsible for the higher prevalence of metabolic syndrome seen in them. Although genetics could play an important role in the higher prevalence of metabolic syndrome in Indians, it is not yet clear how the genetic factors interact with environmental and dietary factors lead to the onset of the metabolic syndrome. If a reasonable cause and/or the etiological factors responsible for abdominal obesity and insulin resistance are identified, it is expected to lead to both preventive and curative measures.

Environmental and genetic factors and their interactions contribute to the pathogenesis of the metabolic syndrome. Overweight, especially in the presence of other risk factors, leads to abdominal obesity especially visceral fat deposition with consequent insulin resistance. Other core components of the metabolic syndrome like dyslipidemia, glucose intolerance and hypertension contribute to the development of the metabolic syndrome.

Various conditions or processes like inflammatory markers (c-reactive protein), endothelial dysfunction, hypercoagulability and hyperuricemia are related to the metabolic syndrome and further research is going on to ascertain their role in the development of the syndrome. Finally type-2 diabetes and CVD develop as end-stage consequences of the metabolic syndrome^{11, 12}.

To summarize major challenges remain for the integration of the key metabolic syndrome features into

clinical practice in identifying high-risk populations and individuals. These include: (1) developing an optimal definition of the metabolic syndrome that better identifies insulin resistance and integrates markers of systemic inflammation, (2) defining the utility of these metabolic syndrome criteria in providing incremental information regarding the risk of diabetes and cardiovascular events independent of the individual components, and (3) identifying subgroups within the metabolic syndrome that are associated with the greatest risk and therefore warrant the most aggressive interventions^{13,14}.

CONCLUSIONS

The following conclusions were drawn from the present study

- Waist circumference and BMI can be used as screening tools in the diagnosis of insulin resistance with minimal cost and manpower requirement.
- Fasting serum insulin levels can be used as a diagnostic test for insulin resistance as it had a significant correlation with HOMA2-IR.
- In the absence of a standardized insulin assay, we suggest that the most practical approach to identify metabolic syndrome subjects who are insulin resistant is to use the cut-off values for either triglyceride concentration or the TG/HDL-C ratio.

The ability to identify insulin resistance among metabolic syndrome subjects could help health care professionals in bringing about lifestyle interventions (viz. weight loss) and thus reduce the risk for the development of type-2 diabetes and cardiovascular diseases.

The modern epidemics of type 2 DM and metabolic syndrome will increase premature death and disability, directly impacting and impeding the economic progress of the country. Control of these will need judicious use of scarce resources through primary and secondary preventive measures. Though the evidence for most of these interventions is clear from research studies, translation of this to community-based intervention is the next challenge for healthcare professionals and public-health experts¹.

Table 1: Baseline characteristics of controls and metabolic syndrome subjects

Variables	Controls(n=60)	Cases(n=60)	Cases vs controls	
			t*	p
Age (years)	45.02 (8.89)	46.25 (9.23)	-	-
Waist circumference (cms)	88.15 (3.71)	101.77 (7.32)	12.85	< 0.001
Waist hip ratio	0.89 (0.03)	1.00 (0.07)	10.69	< 0.001
BMI	23.85 (0.98)	28.29 (1.59)	18.46	< 0.001
FPG (mg/dL)	88.8 (7.31)	116.65 (15.28)	12.73	< 0.001
TG (mg/dL)	125.07 (15.64)	198.9 (63.52)	8.74	< 0.001
TC (mg/dL)	146.45 (20.01)	165.27 (24.19)	4.64	< 0.001
HDL-C (mg/dL)	48.15 (7.11)	40.23 (3.77)	-7.62	< 0.001
LDL-C (mg/dL)	98.63 (14.76)	108.38 (21.28)	2.92	< 0.001
TG / HDL-C ratio	2.64 (0.54)	5.05 (1.87)	9.58	< 0.001
INSULIN(μ U/mL)	12.09 (2.63)	25.44 (5.68)	16.53	< 0.001
HOMA2-IR	1.55 (0.34)	3.39 (0.75)	17.316	< 0.001
HOMA2-%B	134.27 (26.53)	134.47 (28.18)	0.04	NS
HOMA2-%S	67.77 (15.59)	31.16 (8.91)	-15.8	< 0.001

BMI, body mass index; FPG, fasting plasma glucose; TG, triglyceride; TC, total cholesterol; HDL-C, high-density lipoprotein cholesterol; LDL-C, low-density lipoprotein cholesterol; HOMA2, The updated Homeostasis Model Assessment model; HOMA2-IR (Insulin Resistance) Index; HOMA2-% B (β cell function) Index; HOMA2-% S (Insulin Sensitivity) Index; Data are presented as the mean (SD). * unpaired t - test; p < 0.001, HS (Highly significant)

Table 2: Relationship between Waist Circumference, BMI, Fasting Plasma Glucose, Triglycerides, TG/HDL-C ratio and Insulin with HOMA2-IR

Correlation between	HOMA2 - IR	
	r*	p-value
Waist circumference	+0.67	< 0.01 S
BMI	+0.738	< 0.01 S
FPG	+0.73	< 0.01 S
TG	+0.68	< 0.01 S
Insulin	+0.998	< 0.01 S
TG/HDL-C	+0.69	< 0.01 S

BMI, body mass index; FPG, fasting plasma glucose; TG, triglyceride;

S – Statistically highly significant

* Pearsons correlation coefficient

Table 3: Diagnostic Validity of TG, TG/HDL-C ratio and fasting serum insulin for discrimination of insulin resistance (HOMA2 – IR) in metabolic syndrome subjects

Diagnostic test result	Triglycerides	TG/HDL-C	Insulin
Cut-off value	≥ 144 mg/dL	≥ 3.4	≥ 17.0 μ U/mL
Sensitivity	66%	68%	74%
Specificity	83%	90%	100%
Positive predictive value	88%	93%	100%
Negative predictive value	55%	58%	66%
Diagnostic Accuracy	72%	75%	83%

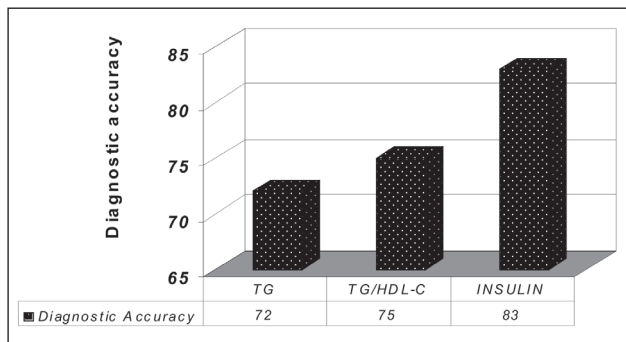


Fig. 1. Diagnostic accuracy of TG, TG/HDL-C ratio and fasting serum insulin for discrimination of insulin resistance (HOMA2 – IR) in metabolic syndrome subjects.

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A Community Based Cross Sectional Study on Life Style & Morbidity Status of Elderly in Urban Slums of Meerut

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ABSTRACT

Background: Ageing is a biological process and not a disease or curse, and during the biological process significant changes occur in human body.

Objectives: To study the socio-lifestyle characteristics and morbidity profile of elderly (>60 years) in the community.

Material & Method: A cross-sectional house to house survey was conducted by interviewing 196 elderly belonging to two urban slums of Meerut by using a pre tested and pre designed interview schedule.

Results: All elderly with age > 60 years were included in this study. Among all, 50% were males. 77.55% of the elderly belonged to the age group 60-65 years. All (100%) were Muslims. 58.17% of the elderly were married. 77.04% were illiterate, 60.2% belonged to lower socioeconomic status and 58.17% lived in joint families. Most (64.80%) of the respondents were vegetarians. Among the males, the major addiction was smoking (63.27%) and among females, the major addiction was tobacco chewing (36.73%). Major morbidities included respiratory illness (32.65%) followed by arthralgia (28.57%), hypertension (27.55%) and gastro-intestinal tract problems (26.53%), mental illnesses (24.49%), skin problems (9.18%), cataract (7.14%), diabetes (6.12%), and deafness (3.06%) respectively. Nearly 2/3rd (64%) of respondents preferred only allopathic treatment for their illness.

Conclusion: Elderly were mainly suffering from respiratory illnesses followed by arthralgia, hypertension, GI diseases and mental disorders. There is a need to change the life style for healthy ageing by increasing awareness and utilization of geriatric welfare schemes.

Keywords: *Elderly, Lifestyle, Morbidity, Diseases*

INTRODUCTION

Ageing is a natural process. In the words of Seneca; "Old age in an incurable disease", but more recently,

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Sir James Sterling Ross commented "You do not heal old age. You protect it; you promote it; you extend it".¹ Demographic changes in India have resulted in change in structure of population, the population of 60 years and above which was 7.4% in the year 2001 will rise to 9% by the year 2016. In absolute number, the population of persons above 60 years was around 76.62 million in 2001, will rise to nearly 179 million by 2031 and 324 million by 2050.²

Demographic transition has been accompanied by changes in society and economy. Instead of strong family ties in India, the position of a large number of

elderly has become vulnerable due to which they cannot take for granted that their children will be able to look after them.¹

Urbanization, nuclearisation of families, migration and dual career families are making care of the elderly more and more of a personal and social problems.³

The contribution of elderly populations to demographic figures is increasing day by day. Industrialization, urbanization and socialization are bringing changes in social values and life style in all religion and castes. Changing role and expectations of women, their concepts of privacy and space, desire not to be encumbered by caring responsibilities of old age people for long periods. The change in socio-economic status adversely affects the individual's way of life after retirement or loss of job. The economic loss is due to a change from salary to pension or unemployment leading to economic dependency on children or relatives. A feeling of low self worth may be felt due to the loss of earning power and social recognition.

Elderly are vulnerable to long term diseases of insidious onset such as respiratory, cardiovascular illness, musculoskeletal, cancer, diabetes, and mental illness etc. They have multiple symptoms due to decline in the functioning of various body functions. The physiological decline in ageing refers to the physical changes an individual experiences because of the decline in the normal functioning of the body resulting in poor mobility, vision, hearing, inability to eat and digest food properly, a decline in memory, the inability to control certain physiological functions and various chronic conditions.

Keeping the above points in mind, the present study was planned to study the socio-life style and morbidity profile of elderly in urban slums of Meerut.

MATERIAL & METHOD

A community based cross sectional study of socio-lifestyle and morbidity profile of elderly was carried by house to house survey over a period of 10 month from March 2010 to December 2010. Clearance from ethical committee was first obtained.

All the elderly with age ≥ 60 years (n=196) were considered in the study. Based on feasibility, it was decided to study two Muslim dominated urban slums of Meerut. A pre-designed, pre-tested interview schedule was used in the survey. Verbal consent was

taken from all the participants before interview. Proper care was also taken to ensure privacy and confidentiality of the interview. In order to avoid the interference and influence of other family members and neighbours, each elderly was called and interviewed privately where he or she could feel comfortable.

A detailed history was taken regarding social & life style and living conditions along with the history of present and last one year illness. The terms vegetarian, non-vegetarian, smoking, alcohol were defined prior to the start of study. For assessment of income, per capita monthly income was calculated followed by classifying into socio-economic group according to Prasad's socio-economic classification.⁴

Blood pressure measurements were taken according to JNC-VII criteria⁵.

Data was entered and analyzed using SPSS 11.5 version statistical software and the results were expressed in proportions.

RESULTS

Bio-social demographic characteristics

Among the total 196 respondents, males were 50% and females were 50% (Table 1). Out of 196 elderly a maximum proportion 126 (64.29%) were in the age group of 60-69 years, while one third 70 (35.71%) were in the age group of ≥ 70 years. Majority (74.49%) of the elderly belonged to other backward class (OBC) and the remaining were general caste (25.51%). All the respondents were Muslim by religion. Majority (58.17%) were married and 82 (41.83%) were living widowhood life. Out of them 42.86% of men were widowers and 57.14% of women were widows.

Literacy rate among elderly was found to be very low in present study. Majority i.e. 151 (77.04%) of elderly were illiterate and only 45 (22.96%) were literate. It was observed that illiteracy was higher among females (84.70%) than males (59.38%). All the elderly belonged to lower socio-economic status. Out of them (3.58%) elderly belonged to class III, (36.22%) belonged to class IV and (60.20%) belonged to class V of socio-economic status according to modified Prasad's classification. A joint family system was seen to be the most common in the community. 114 (58.17%) elderly were living in the joint families and 82 (41.83%) elderly were living in nuclear families. 166 (84.64%) elderly were living with their children, 16 (8.16%) were

living with their spouse, 12 (06.12%) were living with their relatives and 02 (01.08%) elderly were living alone. 58 (29.60%) elderly felt neglected by their family members, while 138 (70.40%) were being respected by

their family members. 183 (93.37%) elderly were being respected by the society and remaining 13 (06.63%) elderly were unhappy and unsatisfied by the behaviour of society.

Table 1: Biosocial characteristics of elderly respondents:

Biosocial Characteristic	Males (%) n=98	Females (%) n=98	Total (%) n=196
Age (years)			
60-69	62 (63.26%)	64 (65.31%)	126 (64.29%)
> 70	36 (36.73%)	34 (34.69%)	70 (35.71%)
Religion			
Muslim	98 (100%)	98 (100%)	196 (100%)
Caste			
General	27 (27.55%)	23 (23.47%)	50 (25.51%)
OBC	71(72.45%)	75(76.53%)	146 (74.49%)
Marital status			
Married	56 (57.14%)	42 (42.86%)	114 (58.17%)
Widow/widower	42 (42.86%)	56 (57.14%)	82 (41.83%)
Type of family			
Nuclear	38 (38.78%)	44 (44.90%)	82 (41.83%)
Joint	60 (61.22%)	54 (55.10%)	114 (58.17%)
Living arrangement			
Living with relatives	08 (08.16%)	4 (04.08%)	12 (06.12%)
Living with spouse	06 (06.12%)	10 (10.20%)	16 (08.16%)
Living with children	84 (85.72%)	82 (83.68%)	166 (84.64%)
Living alone	00 (00.00%)	2 (02.04%)	02 (01.08%)
Socioeconomic status(Prasad Scale)			
Class III	05 (05.10%)	02 (02.04%)	07 (03.58%)
Class IV	55 (56.12%)	16 (16.32%)	71 (36.22%)
Class V	38 (78.78%)	80 (81.64%)	118 (60.20%)

Table 2: Lifestyle characteristics of elderly

Lifestyle characteristics	Males (%)	Females (%)	Total (%) n = 196
Diet			
Vegetarian (Mainly)	24 (24.49%)	43 (43.88%)	67 (34.18%)
Non Vegetarian (Mainly)	74 (75.51%)	55 (56.12%)	129 (65.82%)
Both Veg & Non veg	98 (100%)	98 (100%)	196 (100%)
Addiction			
Smoking	62 (63.27%)	02 (002.04%)	64 (32.65%)
Alcoholism	04 (04.88%)	00 (00.00%)	04 (02.04%)
Tobacco chewing	16 (16.33%)	36 (36.73%)	52 (26.53%)
Leisure time activity			
Religious	04 (04.08%)	26 (26.53%)	30 (15.31%)
Social	26 (26.53%)	12 (12.24%)	38 (19.39%)
TV watching	20 (20.41%)	04 (04.08%)	24 (12.24%)
Gup-shup/chatting	20 (20.41%)	02 (2.04%)	22 (11.22%)
Satisfied with family			
Yes	70 (71.42%)	68 (69.39%)	138 (70.40%)
No	28 (28.58%)	30 (30.61%)	58 (29.60%)
Satisfied with society			
Yes	85 (86.73%)	98 (100.00%)	183 (93.37%)
No	13 (13.27%)	00 (00.00%)	13 (06.63%)

Life style characteristics of the elderly

Table 2 shows that the life style characteristics are important in determining the quality of life. Majority (65.82%) of elderly were non-vegetarian while 34.18% of elderly were vegetarian. None of the study subjects were purely vegetarian.

26 (26.53%) of elderly men spent their leisure time in socializing and 26 (26.53%) of women spent their leisure time in religious activities.

Among men, the major addiction was smoking 62 (63.27%) and among women, the major addiction was tobacco chewing 36 (36.73%).

Morbidity profile of the elderly

Figure 1 shows that elderly had multiple health problems, the most common being respiratory illness (32.65%), followed by arthralgia (28.57%), gastrointestinal tract problems (26.53%), hypertension (27.55%), mental illness (24.49%), skin problem (09.18%), cataract (07.14%), diabetes (6.12%), and deafness (03.06%) respectively. Most of the elderly had more than one health problem.

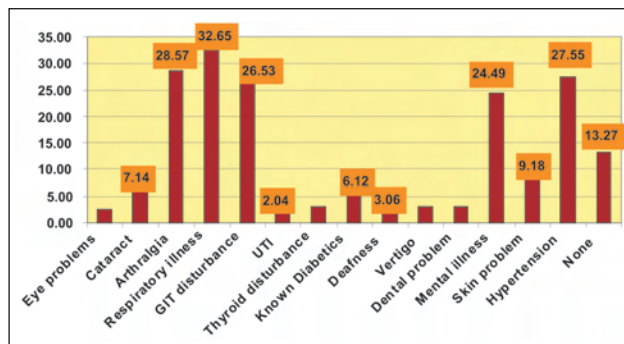


Fig. 1. Morbidity profile of the elderly respondents

DISCUSSION

The results of the study have given insight into the health and the living conditions of the elderly people of urban slums in Meerut.

In present study, male were 98 (50%) and females were 98 (50%). Age group 60-69 years (64.29%) constituted the major proportion followed by ≥70 years (35.71%) in contrast to a study by Goel PK et al⁶ in Meerut where age group 60-69 years constituted 47.2% of elderly and ≥ 70 years of age constituted 52.8% respectively. In a study by Lena A et al⁷ showed that 72.3% of the elderly were from 60-69 age group and 27.7% were ≥ 70 years age group.

Only 25.51% elderly belonged to General caste and majority (74.49%) of them belonged to Other Backward Class. It is indeed true that it is the marital status that determines one’s position within the family as well as the status in society. Majority (58.17%) of elderly were married and 41.83% of elderly were living in widowhood life. Out of them 42.86% of male elderly were widowers and 57.14% of elderly women were widows. In a study by Clausen F et al⁷ showed that the majority of the men were still married (87%) while the majority of the women were widowed (71%). A study conducted by Lena A et al⁷ revealed that 12.1% were male widowers and 67.1% were female widows.

In this study nearly three fourth (77.04%) of elderly were illiterate and 22.96% were literate. Similar findings were observed in a study by Elango et al⁹ in Tamilnadu where 78% of the elderly were illiterates. Padda et al¹⁰ reported 38.6% illiteracy at Amritsar, while it was 63% in a study by Gupta et al¹¹ and Singh et al¹² reported 80.2%. The disparity in literacy status may be attributed to the area being Muslim slum.

Socio-economic status of all respondents showed that 03.58% elderly belonged to class III, 36.22% belonged to class IV and 60.20% belonged to class V socio-economic status according to modified Prasad’s classification.⁴

Almost more than half of the respondents who were interviewed were from joint families (58.17%) while 41.83% were from nuclear family. Various studies by Lena A et al⁷, Padda et al¹⁰, Singh et al¹² and Sivamurthy et al¹³ have shown the similar findings.

Majority (84.64%) of the elderly were living with their children, 8.16% were living with their spouse, 6.12% were living with their relatives and 1.08% elderly were living alone.

In present study only 6.63 % elderly felt neglected by the society as compared with 8.09% reported by Singh et al¹². In this regard some elderly thought that people don’t respect them because they were aged and could not contribute to the family and society.

In this study 29.60% elderly were felt neglected by their family members. A study done by Singh et al¹² reported that 26.01% felt neglected by family members, while Prakash R et al¹⁴ reported 17.3% having felt neglected.

Most (64.80%) elderly were vegetarian while 69 (35.20%) elderly were non-vegetarian. 26.53% of

elderly men spent their leisure time in socializing and 26.53% of elderly women spent their leisure time in religious activities.

The major addiction of male elderly was smoking 62 (63.27%) and among elderly female, the major addiction was tobacco chewing 36 (36.73%). A study conducted by Singh C et al¹² suggested that in all 71.07% of the aged males were addicted to different types of addictions compared to 32.7% among female elderly. Another study conducted by Garg BS et al¹⁵ reported that 30.09% males and 04.05% females in urban Meerut were addicted to one or other addiction.

Regarding morbidities, a study conducted by Lena A et al⁷ showed that the most common morbidities were hypertension (59.01%) followed by osteoarthritis (41.03%), diabetes (10.03%) and bronchial asthma (10.07%). In another study conducted by Prakash R et al¹⁴ suggested that 70% elderly were suffering from eye problems followed by hypertension (48%) and psychiatric problems (42%).

Most (64%) of elderly preferred allopathic treatment for their illness from quacks, registered practitioners or charitable clinics which were established in the community. No proper government medical facilities were available to the elderly in this area.

One limitation of this study is that the results of this study can not be generalized to the whole community as the subjects included in the study were residents of two Muslim dominated urban slums of Meerut.

Conclusion & Recommendation

Elderly were associated with many physical, mental and social problems. The elderly were mainly suffering from respiratory illnesses followed by arthralgia, hypertension, GI diseases and mental disorders. There is a need to change life style practices for healthy ageing by increasing awareness and utilization of geriatric welfare schemes as well as accessibility to government health services for the elderly. There is a need for geriatric counselling centres that can take care of their physical and psychological needs. There is also a growing need for interventions to ensure the health of the vulnerable group and to create a policy to meet the care and needs of the elderly.

Further research, especially qualitative research, is needed to explore the depth of the problems of the elderly.

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To Study the efficacy of Gastrografin in Diagnosis of Adhesive Small Bowel Obstruction

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ABSTRACT

Background: Small bowel obstruction(SBO) is a common condition in surgical wards and have prolonged hospital stay due to inappropriate diagnosis. Many studies have shown gastrografin to be highly effective in diagnosing bowel obstruction and differentiate between mechanical and functional obstruction, hence take proper early decision regarding further management. Gastrografin has both diagnostic and therapeutic value.

Methodology: Patients with subacute SBO presenting to M.S.Ramaiah Medical College Teaching Hospital Bangalore, will be taken for study. This is a comparative study between a group of 25 patients who presented with SBO previously and did not receive gastrografin and other group of 25 patients, who present now and receive gastrografin and serial abdominal X-rays taken between 4 to 24 hrs.

Results: Out of the 25 patients in group A (cases), 7 patients (28.0%) required surgery at the end of 24 hours after admission; while 18 patients (72.0%) tolerated the oral feeds. Out of 25 patients in group B (control), 11 patients (44.0%) improved with conservative treatment within 48 hours of admission. However, 14 patients (56.0%) from group B were operated within 48 hours of admission because of increasing signs of obstruction. There were 25 patients in group A. The radiographic contrast reached the caecum within 24 hours in 18 out of these 25 patients and oral feeds were started. All of these 18 patients tolerated the feeds well and were subsequently discharged. The 7 patients in whom the radiographic contrast did not reach the caecum within 24 hours were operated. Therefore Gastrografin had a Sensitivity value of 72% and Specificity value of 56%.

Conclusion: The uses Gastrografin in adhesive SBO are it is efficacious in diagnosing partial and total small bowel obstruction, avoids surgery, probable therapeutic action, accurate and early diagnosis.

Keywords: Adhesive SBO, Gastrografin, Diagnosis, Therapy

INTRODUCTION

Small bowel obstruction is defined as partial or complete interference with the passage of stool distally in the small intestine¹. A better understanding of the pathophysiology of bowel obstruction and the use of

isotonic fluid resuscitation, intestinal tube decompression and antibiotics have greatly reduced the mortality rate in patients with mechanical small bowel obstruction². There need to be an emphasis to diagnose the condition accurately. Many studies have shown gastrografin to be highly effective in diagnosing bowel obstruction and differentiate between mechanical and functional obstruction³, hence take proper early decision regarding further management⁴. It has also been shown to decrease the duration of hospital stay^{5,6} and need for surgery⁷. Gastrografin has both diagnostic and therapeutic value^{8,9}.

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Most adhesive SBOs resolve after a trial of conservative treatment however, there is no current consensus as to when conservative treatment should be considered unsuccessful and the patient should undergo surgery. Studies have stated that patients who are likely to respond to conservative treatment do so within 48 hours after admission¹⁰.

Adhesions are the leading cause of SBO. Studies have shown that failure of an oral water-soluble contrast to reach the colon after a designated time indicates complete intestinal obstruction that is unlikely to resolve with conservative treatment. Other studies have suggested that the administration of water-soluble contrast is therapeutic in resolving the obstruction. More than two-thirds of all SBOs were due to peritoneal adhesions¹¹. At least 3% of patients after laparotomy developed adhesive small bowel obstruction. Adhesive obstruction may occur at any time after surgery, about 20% of the obstructions appeared more than 10 years after the initial abdominal operation¹².

METHODOLOGY

Source of Data : Patients with post-operative adhesive SBO presenting to M.S. Ramaiah Hospital Bangalore were included in the study.

Methods of Collection: This is a comparative study between group of 25 patients who presented with post-operative adhesive SBO previously and did not receive gastrografin and other group of 25 patients, who present now and receive gastrografin.

Group 1: A group of 25 subjects who presented with acute post-operative adhesive small bowel obstruction in previous 5 years and did not receive gastrografin.

Group 2: A group of 25 subjects who presented with sub acute adhesive SBO between May 2005 to April 2007 and received gastrografin.

Patients with a SBO and without any indication for immediate surgical intervention are suitable for further evaluation with a 100 ml of water-soluble contrast given via nasogastric tube or orally and an abdominal X-ray taken between 4-24 hours. If the contrast has reached the caecum it is considered a partial SBO and there is a high probability it will settle on conservative treatment. On the other hand, if the contrast does not reach the caecum, the bowel obstruction is considered

to be complete and it is unlikely to settle without surgical intervention.

Patients over 18 years of age admitted through the casualty with clinical and radiological evidence of SBO were included in this study. Patients with early postoperative obstruction, documented intra abdominal malignancy, inflammatory bowel disease, or history of abdominal irradiation were excluded. A nasogastric tube was inserted for decompression, with strict measurement of output. Intravenous fluid replacement was given and electrolyte imbalances were corrected as required. Supine and erect abdominal radiographs were taken. Emergency laparotomy was performed for patients with suspicion of or clinically impending bowel strangulation. Those without fear of bowel strangulation were treated conservatively. Patients with obstruction that improved clinically or radiologically in the initial 48 h continued to receive conservative treatment. Clinical improvement was defined as the presence of decreased abdominal pain, decreased distension, decreased tenderness or decreased nasogastric tube output, or bowel opening if the patient had constipation on admission. Radiological improvement was defined as a decrease in number of dilated bowel loops or in the diameter of dilated small bowel. The gastrografin study was performed after an informed consent was obtained. One hundred milliliters gastrografin were administered through nasogastric tube, and the transit of contrast followed by fluoroscopy or serial abdominal radiographs. Patients in whom the contrast appeared in large bowel within 24 h were regarded as having partial obstruction. Conservative treatment was continued for these patients. If the contrast failed to reach the large bowel within 24 h, the patient was regarded as having complete obstruction; these patients were treated with laparotomy. Patients that showed no progressive clinical and radiological improvement after 48 h, either in the group of patients who had partial obstruction demonstrated by gastrografin study or in the group solely managed by conservative treatment, also underwent surgery. Complete resolution of bowel obstruction was established when the symptoms and signs of obstruction subsided and abdominal radiographs did not show the small bowel dilated. Complications, death rates, and hospital stays were recorded for data analysis.

Study design: Non randomised trial.

Statistical analysis

1. Student T test : This parametric test will be used to compare time taken to diagnose the obstruction and duration of hospital stay between group 1 and group 2.\
2. Chi Square test : This non parametric test will be used to compare need for the surgery between group 1 and group 2.(P <0.010 was considered as highly significant.)

RESULTS

The age of patients varied from 28 to 80 years with a fair distribution among all age groups. Mean age was 52 years and Median age was 54 years. 33out of the50 patients were males (M:F = 1.9:1).

Appendicectomy was the most common preceding surgery (30%) followed by gynaecological surgery (29%) and others combined (41%).

Table 1: Efficacy of Gastrografin in Diagnosing SBO

Outcome		No	Yes	Total
Conservative Rx.	Count	14	11	25
	Expected Count	10.5	14.5	25.0
	% within dye	56.0%	44.0%	100.0%
	% within outcome	66.7%	37.9%	50.0%
	% of Total	28.0%	22.0%	50.0%
Gastrografin given	Count	7	18	25
	Expected Count	10.5	14.5	25.0
	% within dye	28.0%	72.0%	100.0%
	% within outcome	33.3%	62.1%	50.0%
	% of Total	14.0%	36.0%	50.0%
Total Count		21	29	50
	% of Total	42.0%	58.0%	100.0%

Table 2: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.023(b)	1	0.045	0.085	0.042
Continuity Correction(a)	2.956	1	0.086		
Likelihood Ratio	4.085	1	0.043	0.085	0.042
Fisher's Exact Test				0.085	0.042
N of Valid Cases	50				

Table 3: Group Statistics

Mean Duration of Stay				
	N	Mean	SD	Std. Error Mean
Cases	25	7.1200	2.96254	.59251
Control	25	10.5600	3.09677	.61935
Group Statistics				
Mean time for Resolution				
	N	Mean	SD	Std. Error Mean
cases	25	3.2800	1.92614	0.38523
control	25	5.2800	1.79165	0.35833
Group Statistics; Time Between Admission to Surgery				
Case or Control	N	Mean	SD	Std. Error Mean
Cases	25	.8000	1.35401	0.27080
Control	25	2.6400	2.01825	0.40365

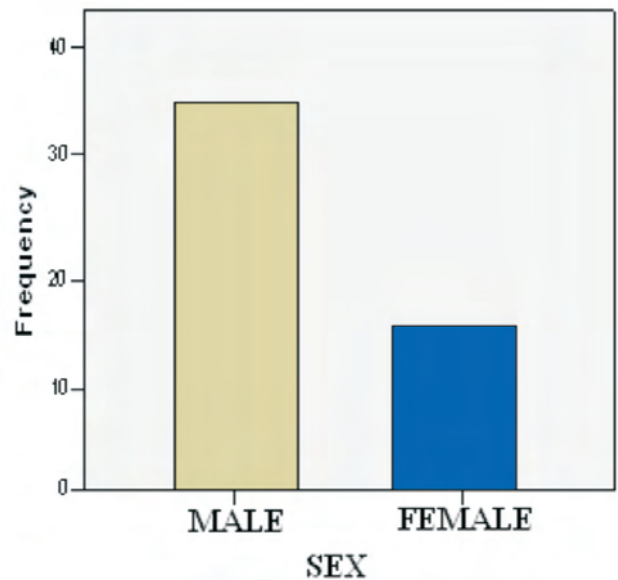
Table 4: Age and sex of patients

Age in years					
N		Valid	50		
		Missing	0		
Mean		52.3800			
Median		54.0000			
Mode		35.00			
SD		14.86386			
Range		52.00			
Minimum		28.00			
Maximum		80.00			
Sex of Patient					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	33	66.0	66.0	66.0
	Female	17	34.0	34.0	100.0
Total		50	100.0	100.0	

DISCUSSION

Adhesive small bowel obstruction is a common surgical problem, yet there has been no standard protocol for its management. In the absence of bowel strangulation, adhesive obstruction can be treated conservatively. However, the optimal duration of this trial conservative treatment is controversial. Considerable controversy exists regarding the ideal therapeutic strategy for adhesive small bowel obstruction. Advocates of non operative treatment insist that nasogastric tube decompression and fluid resuscitation for a “reasonable period” is justified based on resolution that is observed in up to 75% of partial and 16-36% of complete small bowel obstruction¹³. The importance of nasogastric tube output and size of dilated small bowel have seldom been evaluated in the literature. We found that nasogastric tube output was significantly greater in patients who failed to respond to conservative treatment versus those successfully treated with conservative treatment. This could be explained by the difference in the severity of obstruction. An alternative explanation is that the nasogastric tube drainage of patients who responded to conservative treatment decreased with time; therefore, the lower average output. The degree of bowel distention was similar between the two groups, although one might think that patients with grossly distended bowel would be more likely to need surgical treatment. Patients who responded to conservative treatment in the first 48 hours had a 99% chance of successful nonoperative treatment¹⁴.

Water-soluble contrast medium has been evaluated recently in an attempt to predict the need for surgery in adhesive small bowel obstruction. Studies have also been performed to evaluate its possible therapeutic effect. The results of our study showed that patients with contrast observed in the colon within 24 hours were all treated successfully without surgery. Surgery was required in most of patients in whom contrast failed to reach the colon within 24 hours. The benefits of decreased lengths of hospital stay and negligible morbidity in this subgroup must be weighed against the increased risk assumed by delay in surgery in the remainder. Such delay may lead to an increased mortality rate from 3-5% when the obstruction is simple to almost 30% when it is complicated by strangulation, necrosis or perforation of the bowel. This is important as it is difficult to find a strong correlation between one or more classical signs of strangulation, i.e., fever, tachycardia, leucocytosis, local tenderness and presence of irreversible damage to the gut^{13,14}.



In our study, it was found that the contrast medium reaching the colon within 24 hours had a sensitivity of 72%, a specificity of 56%. On comparing these values with the control group, the P value obtained was 0.042 which is significant. It was concluded that Gastrografin study can better predict the need for early surgery than a combination of clinical criteria and radiography. Therefore, for the absolute diagnosis of successful resolution, the following additional criteria must be met: the abdominal pain should disappear, the abdomen should appear flat and soft, the nasogastric aspirate should become scanty and the patient should

have at least one spontaneous bowel action.

In cases of small intestinal obstruction, oral Gastrografin can differentiate partial from complete intestinal obstruction. Operative intervention is required if Gastrografin fails to reach the caecum within 24 hours of being administered orally. Orally administered Gastrografin is a safe and reliable water-soluble contrast agent which can safely be used in patients with small bowel obstruction. Several authors have suggested that Gastrografin has a therapeutic effect in adhesive small bowel obstruction^{15,16}.

In our study after comparing the two groups, it can be concluded that though the patients who received Gastrografin had a shorter hospital stay than those who did not. It leads to a shorter hospital stay and good tolerance to an early oral diet. Our study had slightly prolonged duration of stay in patients who responded to gastrografin as compared to western studies because most patients in this study were from rural and semi urban places who knew less about the cause and treatment aspect, more apprehensive, refuse early discharge after resolution of obstruction. They insisted discharge only after tolerating solid food, passed stools and were symptom free.

CONCLUSION

The use of Gastrografin in adhesive small bowel obstruction are; diagnosing partial and total small bowel obstruction, avoids unnecessary surgery and probable therapeutic action.

Ethical Clearance: Taken.

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Conflict of Interest: Nil

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A Study of Dynamic Lung Function Tests in Saw Mill Workers of Bijapur City

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ABSTRACT

Background: The Sawmill workers have increased prevalence of both obstructive and restrictive lung functions compared to controls. Wood dust being another organic dust like grain and cotton dust can cause severe respiratory impairment and exacerbation of respiratory symptoms, allergy and carcinoma.

Aims and Objectives: To determine dynamic lung function parameters in Saw Mill workers and compared with controls (age and socioeconomic status matched). Parameters recorded are FEV1% and PEFr using Benedicts Roth recording Spirometer and Wright's Peak flow meter respectively. Smokers are excluded from the study. Only healthy male adults are included in the study. Statistical analysis was done using the Student t test, Z test and Chi square test. The results: It has been observed that parameters recorded were significantly reduced in the study group as compared to control groups. This reduction was in proportion to the duration of exposure to the wood dust.

Conclusion: Lung functions will be impaired in Saw Mill workers as occupational hazard due to Continuous prolonged exposure to the wood dust.

Keywords: FEV1 %, PEFr, Wood Dust, Saw Mill Workers

INTRODUCTION

The pulmonary function test is one of the measures to assess respiratory efficiency. These tests are important for clinical, diagnostic, prognostic values and for research purpose too. Up till now plenty of work has been done to assess the pulmonary function test in health as well as in diseases like Asthma, Tuberculosis, Ascites etc. The work is performed to study the effects of smoke, dust, cotton particles, vegetable dust etc. On respiratory function¹.

In recent years many studies in concern with respiratory effects of wood dust toxicity in the exposed

workers have been conducted. The dust of various woods including organic dusts have been studied. Research efforts are also extended with respect to their effects on health. Cotton and grain dusts are examples of organic dusts on which a substantial health research effort has been extended. Wood dust is the other variety of organic dust, exposure to which is known to cause substantial health impacts^{2,3}.

Early recognition of altered lung functions will be of great clinical, social and preventive significance in the Industrial workers, who are constantly exposed to various airborne pollutants. Reduction in lung function is reported in cotton mill workers, coal miners, grain and flour mill workers, workers exposed to tobacco, barley and talc dusts.^{4,5,6}.

The pulmonary function tests are age old but time tested parameters for assessing the respiratory health of a person. With increased urbanization, increased population, indiscriminate industrialization and increased use of automobiles as a mode of transport,

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the level of pollution is increasing day by day. All these factors affect the respiratory health of the population.^{7,8,9}

This study was undertaken to determine dynamic lung function tests in saw mill workers, its relation to the duration of exposure to wood dust.

Dynamic Lung Function Tests¹⁰

Forced Expiratory Volume (Timed Vital Capacity)

It is the fraction of Vital Capacity that is exhaled at the end of the first (FEV1), second (FEV2) or third (FEV3) second.

$$\text{FEV1 \%} = \frac{\text{Volume of air exhaled in the first second} \times 100}{\text{Vital Capacity}}$$

Normal values

FEV1 = 85% (85% of air comes out of the lungs in the first second)

FEV2 = 96%

FEV3 = 100%

FEV1 is limited by the speed with which gas can be forced through the airways. It is reduced in Obstructive Lung Diseases. As the magnitude of FEV1 is always reduced in parallel with the reduction in Forced Vital Capacity (FVC), even in the absence of obstruction, diagnostically FEV1/FVC is useful.

Normally, it is more than 75% (0.75) in healthy people and below 50% (0.5) is encountered in increased airway resistance as seen in case of Asthma.

Peak Expiratory Flow Rate (PEFR)¹¹

It is the amount of air that can be blown out of fully inflated lungs as rapidly as possible.

Peak Expiratory Flow rate achieved is recorded with a Peak Flow Meter. PEFR is the measurement that measures the efficiency of lungs by recording maximum flow of air.

Peak Expiratory Flow Rate is dependent upon Age, Sex, Build etc.^{12,13}

It is about 10 L/Sec (6 to 15 L/Sec)

In a young adult, it is about 400 L/min

It falls dramatically in cases of Chronic Obstructive Lung Diseases (COPD).

OBJECTIVES

1. To determine and observe dynamic lung function tests in saw mill workers, compare them with age and socioeconomic state matched control group.
2. To correlate the values of dynamic lung function tests in saw mill workers to duration of exposure.

MATERIALS AND METHOD

Source of Data

The study is conducted on the Sawmill workers of the Bijapur city in North Karnataka. The subjects of control group are selected from among the workers of BLDE'S Sri. B. M. Patil Medical College (Same socioeconomic group).

Sample size: - About 50 subjects are included in the study from each group. The age and sex of the subjects of the control group are selected so as to match the study group.

Inclusion Criteria

Only healthy male subjects are included in the study. The health status of the subjects is determined through thorough clinical examination and history taking.

Exclusion Criteria

The subjects with the following disorders are excluded from the study

1. Subjects with any known cardiopulmonary disorders.
2. Subjects with any known endocrine disorders.
3. Subjects with any known congenital defects.
4. Smokers.

The following parameters are recorded in the subjects

I. Physical Anthropometry

- a. Height in cms. (Nearest to 0.5 cm)
- b. Weight in kgs (nearest to 0.5 kg)
- c. Chest circumference in cms. (Nearest to 0.1 cm)

II. Physiological parameters^{14,15,16,17}

- a. Respiratory Rate -It is recorded by inspection and

palpation of the chest and abdomen & expressed as cycles per minute.

- b. Pulse rate –It is expressed as beats per minute. Right radial pulse is examined by compressing the radial artery in the semi pronated forearm and slightly flexed wrist of the subject.
- c. Blood pressure [SBP and DBP, mm.Hg].It is recorded by using mercurial sphygmomanometer, (Diamond make) by palpatory and auscultatory methods

III. Dynamic Lung function test parameters

- 1. FEV1% (Percentage of Forced Expiratory Volume in one second)

FEV1% is calculated mathematically and is as follows

$$FEV1\% = (FEV1 / FVC) \times 100$$

2. PEFR

PEFR (Peak Expiratory Flow Rate) is recorded by using mini Wright’s Peak flow Meter. The subject is asked to take deep inspiration and exhale forcefully as fast as possible into the apparatus with nasal clip applied. The three readings are taken at intervals of one minute. Highest reading is taken for calculating.

Statistical Analysis

All the data are presented as Mean + SD {SEM}. The significance of difference in parameters between groups are ascertained by Student’s ‘t’ test, ‘Z’ test & chi-square test.^{18,19}.

OBSERVATIONS /RESULTS

Table 1. Anthropometric and Physiological Parameters

Study Group	Anthropometric Parameters			Physiological Parameters			
	Mean Age (in yrs)	Mean Weight (in Kgs)	Mean Height (in cms)	Mean SBP (in mm.Hg)	Mean DBP (in mm.Hg)	Mean Pulse Rate (bpm)	Mean Chest Expansion (In cm)
	31.94+9.69	61.18+6.11	164.18+7.62	125.12+13.49	80.8+7.4	79.94+8.5	2.44+1.11
Control Group	34.24+8.0	65.14+5.41	159.84+5.29	124.48+5.99	78.12+7.98	77.36+5.92	3.78+0.62

Table 2. Dynamic Lung function test parameters

Sl. No	Parameters	Mean + S.D.		Test Value ‘Z’ test	‘P’ Value
		Subjects	Controls		
1	FEV1%	67.1+14.6	93.2+ 5.8	11.76	0.001Highly significant
2	PEFR (Ltr/min)	336 +94.6	669 +52.4	21.77	0.001Highly significant
3	Chest Expansion (cms)	2.44+1.11	3.78+0.616	7.47	0.001Highly significant

Table 3. Dynamic Lung function test parameters with p values

Parameter	Test + Value	P value	Conclusion
Age Vs Chest expansion	Y ² = 30.997	0.001	Association presents
Duration of exposure Vs FEV1%	Y ² = 58.455	0.001	Association presents
Duration of exposure Vs PEFR	Y ² = 88.25	0.001	Association presents

Fig. 1: Comparison of FEV1 % with duration of exposure (in years)

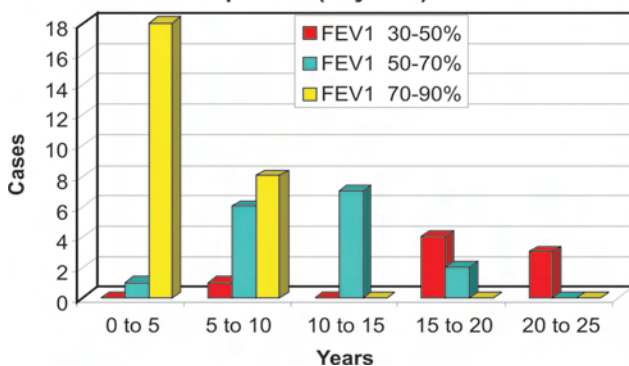


Fig. 2: Comparison of PEFR (L/min) with Duration of exposure (in years)

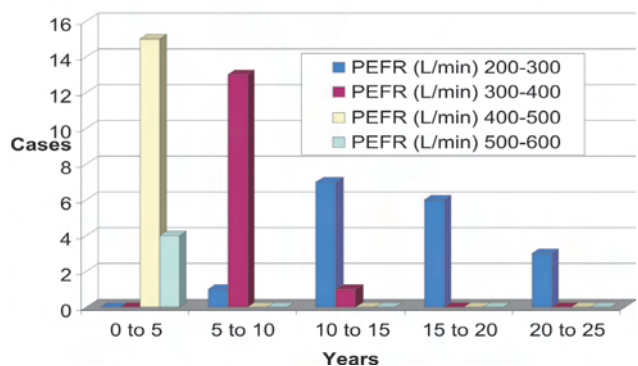
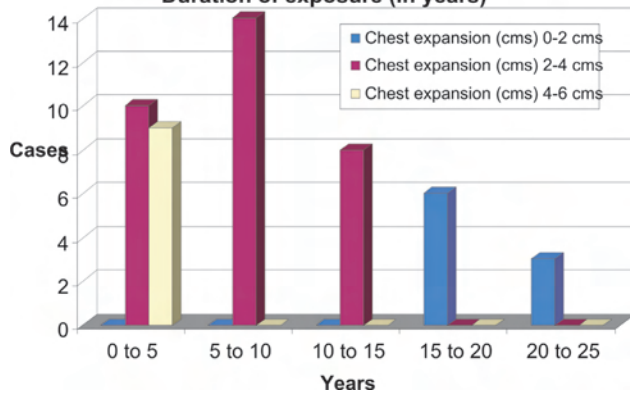


Fig. 3: Comparison of chest expansion (in cms) with Duration of exposure (in years)



DISCUSSION

The present study was undertaken on the sample containing 50 saw mill workers applying necessary inclusion and exclusion criteria as mentioned earlier. The subjects of the study group (saw mill workers) were screened with proper taking of history with special reference to history of occupation (questionnaire²⁰). They were subjected to clinical examination in detail.

The experimental group was compared with 50 subjects in the control group from non-teaching staff of Shri. B. M. Patil Medical College (Age and socioeconomic status were matched).

The anthropometric parameters like age (yrs), weight (in kgs), height (in cms) and chest expansion (in cms) were recorded in both the groups.

Physiological parameters like pulse rate (bpm) and blood pressure (SBP & DBP in mm.Hg) were recorded in both the groups.

Physiological parameters i.e. FEV1 (%) & PEFr (ltr/min) were recorded in both the groups.

In our study significant difference was seen among subjects of control group & experimental group exposed to saw dust. The subjects exposed to saw dust showed decrease in FEV1 (%), PEFr (ltr/min) & chest expansion (cms).

A study conducted by Carosse A et.al, showed a decrease in FEV1, FEV1% & MEF-50 in workers exposed to wood dust. The observations made in our study are also in agreement with these findings. Thus indicating that exposure to wood dust or bronchoactive substances related to wood causing chronic obstructive lung diseases²¹.

Linn Holness D et.al, had done a survey of lung function tests on wood workers & observed significant low values of FVC, FEV1%, FEV 50% & FEV 75%. Such observations are also made by us in our study, thus indicating an increase in exposure with deterioration in lung function of an obstructive nature²².

Rastogi et.al, 1989 conducted a study of lung functions of 109 male workers exposed to sawdust in saw mill. They observed that there was a prevalence of respiratory impairment in Sawmill workers & abnormality was of restrictive type²³.

In another study by Hessel P.A et.al, found significantly lower values for FEV1 & FEV1% in sawmill workers exposed to woods like pine & spruce. Our observations are also in agreement with these findings. The cause of low lung function may be due to substance aerolised during the cutting process of wood²⁴.

V. U. Johard et.al, 1992 studied the signs of alveolar inflammation in non smoking Swedish wood trimmers. They studied the values of TLC, FEV1 & RV in wood trimmers & control. They did not find any significant difference in the values between control & wood trimmers, might be due to intermittent discontinuation from exposure²⁵.

In our study, it is observed that FEV1% shows a decreasing trend in proportion to the duration of exposure. It has been noticed that PEFr also showed a decreasing trend in proportion to the duration of exposure. Bhat M.R. & Ramaswamy C. 1991 studied lung function tests in rice mill workers & saw mill workers & compared with the controls. They showed that reduction in FVC, FEV1 & PEFr depending upon duration of exposure. In one year FVC & FEV1 were reduced & only FEV1 continued to be lower at 5 year, indicating that saw dust can result in a restrictive type of lung impairment suggesting a linear relation to duration of exposure. Reduction in PEFr was attributed to decrease in endurance of respiratory muscles⁶.

In another study by V.B Dudhamal et.al, studied pulmonary function tests in 30 saw mill workers. They were grouped into 3 groups depending upon duration of exposure i.e. 0-2 year, 2-4 years & 4-6 years. These readings were compared with controls of same age & socio economic status. They observed that the decrease in values of FVC, FEV1 & PEFr in proportion to duration of exposure²⁶.

In a study conducted by Liou S H et.al, mean value of MMF, PEF, FEV₁ were lower in saw mill workers & showed a decreasing trend with duration of wood dust exposure²⁷.

It has been also observed the decrease in magnitude of chest expansion in relation to age & duration of exposure. In a study conducted by Arora N.S, he observed that exercise & regular physical activity could increase the strength of the skeletal muscles including respiratory muscles²⁸. Decrease in chest expansion could be due to age & duration of exposure suggestive of chronic obstructive lung diseases.

Preventive Aspects^{29, 30}

1. The workers should wear masks during processing & cutting of wood.
2. Suppression of dust by technical control measures such as pre wetting & water sprinkling.
3. Pre employment medical examination & yearly medical checkup of workers by medical officer is desirable.
4. Pulmonary function tests & X-ray chest should be done once in a year after one year of exposure.
5. All workers should be investigated by X-ray chest who have worked in the wood industry for more than 15 years.
6. Sputum examination should be done from time to time to make certain about other lung infections.

Following methods quoted by Philip Herber³¹ are generally performed for the prevention of any occupational lung disease.

- | | |
|-------------------|--------------------------------|
| 1. Elimination | 5. Ventilation |
| 2. Substitution | 6. Dust control |
| 3. Automation | 7. Education |
| 4. Process change | 8. Periodic health examination |

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articles, journals and books from where the literature for this article has been reviewed and discussed.

Conflict of Interest

The authors wish to state that they have no conflict of interest that might improperly influence this work. This study was unfunded

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Assessment of Immunization Coverage among Infants and Pregnant Women in Narela Using Lot Quality Assurance Technique

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ABSTRACT

Background: Immunization is probably one of the most cost effective interventions to reduce burden of childhood morbidity and mortality, provided used optimally and judiciously. Lot quality sampling method requires only a small sample size and is easier for health staff to use; it is feasible for routine monitoring.

Objectives: To assess the immunization coverage among infants and pregnant women in an urban area and to identify the various reasons for incomplete or no immunization.

Method: The study was carried out in Narela. AWC was considered as one LOT. Total fifteen LOT was assessed. For sample size calculation, taking accuracy level $\pm 5\%$ and with 95% confidence level, the sample size required was 384; here high threshold was taken 60% and low threshold was taken 40%. In Lot Quality data collection WHO proforma was used as a tool.

Results: total infant were 417 and pregnant women were 409. Out of this fully immunized was 64.7% and 6.5% was unimmunized. The most common reasons were either unaware need for immunization or unaware of need to return for next dose. The coverage of various vaccinations like BCG, DPT 3, OPV3, HEPB 3, Measles and TT was 87.5%, 82.7%, 84.7%, 68.3%, 76% and 85.8% respectively. Out of fifteen LOT, only one Lot need to be reviewed as it was yet to meet the prescribed criteria. While enquired about place of delivery, 36.2% was reported home delivery

Conclusions: still there is need for health education to step the vaccination coverage to achieve the target of 100%.

Keywords: Immunization, Coverage, Infants, Pregnant Women, LQAS

INTRODUCTION

Immunization is probably one of the most cost effective interventions to reduce burden of childhood morbidity and mortality, provided used optimally and judiciously. It has the potential to drastically improve public health outpacing the reforms needed to achieve similar goals through socio-economic development and other preventive measures like safe drinking water and improved sanitation. Current scenario of Immunization Program in India needs an overhaul to achieve the desired goals.¹

Infectious diseases are major cause of morbidity and mortality in children. EPI, launched in India in

January 1978 was re-designated as Universal Immunization Programme (UIP) in 1985. UIP has been able to avert many deaths caused by the six childhood diseases.² The success of the programme primarily depends on the administration of a full course of the potent vaccines at the right age.³

A major priority for the Global Alliance for Vaccines and Immunization (GAVI), which is a global health partnership to increase access to vaccines especially in poor countries, is to see that all countries of the world achieve at least 80% immunization coverage.⁴ The extremely low rates of routine immunization in large parts of the country remain a matter of serious

concern. Sporadic outbreaks of diphtheria and measles have been observed in different parts in the Northern States. We need to examine various issues and impediments involved and consider taking more proactive and persuasive measures.⁵

According to the GoI reports, EPI has achieved very high coverage; but according to NFHS-3, nearly half of all infants missed DPT-3 and measles vaccine, a quarter missed BCG and one-third missed OPV-3. Again according to WHO/UNICEF (2005) the BCG coverage was 75% where DPT 1, DPT 2 and Measles were 81%, 59% and 58% respectively.⁶

To evaluate the immunization coverage, the 30-cluster sampling technique devised by W.H.O has been the most commonly used technique.⁷ But of late, lot quality sampling technique which was commonly used in the industrial set-up to assess the quality of the lots of their products is now being used in the health services such as in evaluation of immunization coverage. Since lot quality sampling method requires only a small sample size and is easier for health staff to use, it is feasible for routine monitoring of vaccination coverage. ⁸LQAS helps to make judgements about individual health service units (i.e., lots). This allows investigators to direct supervision and other resources to the units that need it most. Interpretation of data is possible as soon as they are collected from a health service unit. Data do not have to be collected from all units before action can be taken.⁹

OBJECTIVES

1. To assess the primary immunization coverage of infants in an urban area of Delhi.
2. To measure the tetanus Immunization coverage among pregnant women.
3. To identify the various reasons for incomplete or no immunization.

MATERIALS AND METHOD

The study was carried out in area covered under the Narela ICDS Project located in North West district of Delhi in 2010-11. This area is being developed as a Rural Health Training Centre of a Medical college, Delhi. Around one lakh ten thousand population is covered by this ICDS project and there are 100 Anganwadi Centres (AWC), under this project through which various services including immunization are provided to the community. There were 3 ICDS

supervisors looking after the work of around 30 Anganwadis each.

In the present study one AWC was considered as one LOT. We were tried to assess immunization coverage from at least fifteen LOTS. Therefore out of total 100 AWCs, fifteen was selected. For equal representation of area under the 3 supervisors, 5 AWCs was selected from the area served by each of them. The selection of Anganwadis for the purpose of survey was random using computer generated random number table.

For the study, children of age between 12 and 23 months as on the date of survey was considered as the study subjects for immunization coverage of infants. The age was confirmed by the immunization cards or the local events calendar. Mothers of these children was simultaneously be interviewed to determine their knowledge about immunization and in case of children not fully immunized, to determine reasons for the same. For Tetanus Toxoid immunization, the mothers of children less than 1 year on the day of the survey of interview were included in the study. Evidence of vaccination was based on the dates present on immunization cards. In case immunization cards were not available, the mother or any other responsible person in the family was interviewed thoroughly and the information provided was also be corroborated with other evidences like presence of scar in case of BCG vaccine and records of AWW in case of other vaccines. A fully immunized child was one who had received one dose of BCG, 3 doses of DPT, OPV each and Hepatitis B vaccine and Measles vaccine. If one or more vaccines had not been given, the child was considered partially immunized and if no vaccine had been given, he was considered unimmunized.

The inclusion criteria for study subjects were those with availability of either an immunization card or a responsible person for key information regarding immunization. The houses found locked was excluded from the study.

For sample size calculation, taking accuracy level $\pm 5\%$ and with 95% confidence level, the sample size required was 384. As we have already decided the number of Lots as 15, therefore 26 children in the age group of 1-2 years from each lot was included in the study for evaluation of immunization coverage in infants. Similar procedure was adopted for evaluation of vaccination coverage in pregnant females and accordingly mothers of 26 children in the age group of

<1 year was interviewed. A list of households residing in the area covered by the selected Anganwadi was obtained from the survey register of the AWW and 26 families were randomly selected from the above mentioned list. The individuals to be interviewed for the survey were found in these, or neighboring, households. In our study we had decided low threshold value will be 30% and high threshold value will be 70%, so decision value was 6 (LOT No.15).

In Lot Quality data collection WHO proforma was used as a tool. There were total three forms and the questions to be asked in each household and provide space to record information about the individuals interviewed.

The three forms are

1. Infant Immunization
2. Reasons for Immunization Failure. This form was used to record the principle reason why a child had not received an immunization for which he or she was eligible.
3. Tetanus Toxoid Immunization of Women.

Statistical analysis of the data was done on the SPSS software by using cross tabulation. Here the expected outcome variables was immunization coverage among infants and various reasons affecting the immunization coverage. Again prevalence of tetanus toxoid vaccination among pregnant women was found out.

RESULTS

A total of 417 children in the age group of 12 -23 months and 409 women with children less than one year were included in this study. Out of this 66.7% children and 30.1% women had immunization card, rest of children and mother they don't had any immunization card.

When the study population was asked about the source of vaccination received, maximum of them received from some Govt. organization, either from Govt. hospital (42.7%) or from Govt. dispensaries (36.5%). Rest source of immunization was from private hospital or nursing home (7.7%), AWC (5.5%) and maternity centre (5.5%).

Out of total study children 64.7% were fully immunized. Around 28.8% children were partially immunized and 6.5% was unimmunized. Among all the fully immunized children, 95.1% was immunized

before one year of age. The vaccination coverage of the children was showing in the table 1.

Table 1: showing the various vaccination coverage among the children in the 12-24 months of age

Vaccination	Percentage
BCG	87.5%
DPT1	87.5%
DPT2	85.9%
DPT3	82.7%
OPV1	89.4%
OPV2	87.3%
OPV3	84.7%
HEPB1	72.2%
HEPB2	70.3%
HEPB3	68.3%
MEASLES	76%
FULLY IMMUNISED	64.4%

The various reasons for unimmunized and partially immunized children were also asked in this study. All the reasons were tabulated in the table 2. The most common reasons were found either unaware of need for immunization (23.02 %) or unaware of need to return for next dose (23.02 %).

Table 2: Showing reasons for unimmunized and partially immunized children.

Reasons	Number	Percentage
Unaware of need for immunisation	35	23.02% %
Unaware of need to return for next dose	35	23.02%
Vaccine not available	19	12.5%
Place and /time of immunization unknown	14	9.21%
Vaccinator absent	13	8.55%
Parent too busy	10	6.57%
Place of immunization too far away	9	5.92%
Time of immunization inconvenient	5	3.28%
others	12	7.89%

In case of tetanus immunization coverage it was found that out of total 409 women who were included in the study around 81.9% were registered during antenatal period either some Govt. hospitals , dispensaries or private nursing home.

Out of total women, 85.8% women had received two doses of tetanus toxoid, whereas 4.6% of total women had received three doses of tetanus toxoid. In this study around 63.6% deliveries occurred at home and rest of the deliveries (36.4%) was in institutions.

In the table 3 it was shown that out of 15 Lot, there were only one Lot was unacceptable, which did not fulfill the low threshold criteria.

Table 3: Showing Aggregation of LOT data

Lot number	Lot name	Lot popn	Weight-age	Sample size	Number immunised	Proportion immunized (%)	Estimated coverage
1	Borhgarh	5562	0.123	28	16	.57	0.070
2	Halambi	2705	0.060	28	7	.25	0.015
3	Rajeev col	2474	0.055	28	21	.75	0.041
4	Vijay nagar	1930	0.042	28	24	.85	0.036
5	Gautam col	2745	0.061	28	18	.64	0.039
6	Shingola	1878	0.041	28	19	.67	0.028
7	Sanjay col	1606	0.035	28	23	.82	0.029
8	Udhayan panna	1538	0.034	28	23	.82	0.028
9	Tikri khurd	8637	0.192	26	12	.46	0.088
10	Singhu	2822	0.062	27	21	.77	0.048
11	Khampur	2183	0.048	28	25	.89	0.043
12	Kureni	2586	0.057	28	23	.82	0.047
13	Bankaula	4555	0.101	28	12	.42	0.042
14	Shahpur	959	0.021	28	13	.46	0.009
15	Lampur	2753	0.061	28	16	.57	0.034
		44933		417	270		0.597

Again in the table 4 the various vaccination coverage percentages was explained, except one lot,

rest all the lot was showing coverage almost up to the high threshold level.

Table 4: Showing Immunization coverage of various LOT

Lot number	Lot name	BCG(%)	DPT-3(%)	OPV-3(%)	HEP B-3(%)	Measles(%)
1	Borhgarh	85.7	60.7	60.7	42.9	60.7
2	Halambi	50	39.3	60.7	28.6	35.7
3	Rajeev col	100	92.9	96.4	75	96.4
4	Vijay nagar	92.9	92.9	92.9	85.7	89.3
5	Gautam col	96.4	100	100	64.3	89.3
6	Shingola	89.3	96.4	96.4	64.3	92.9
7	Sanjay col	96.4	92.9	92.9	89.3	82.1
8	Udhayan panna	96.4	100	100	85.7	92.9
9	Tikri khurd	96.2	73.1	73.1	50	76.9
10	Singhu	100	100	100	88.9	85.2
11	Khampur	100	96.4	96.4	96.4	92.9
12	Kureni	96.4	89.3	89.3	85.7	85.7
13	Bankaula	71.4	57.1	57.1	46.4	50
14	Shahpur	75	71.4	67.9	57.1	46.4
15	Lampur	67.9	78.6	85.7	64.3	64.3

DISCUSSIONS

Narela located in North West District of Delhi and has four Municipal Wards over an area of 335 sq. km. Of all the twelve Municipal zones in Delhi, Narela zone displays a unique mix of rural and urban characteristics. The zone is undergoing a rapid process of urbanization and industrialization. Municipal Corporation of Delhi and Delhi Government are responsible for the provision of health care services. It provides health care in the form of preventive,

promotive and curative services, medical education. In addition, there are large numbers of private health-care service providers. In Narela Zone, there are a total of 30 first tier services providing health care services related to RCH if we include the facilities of both GNCTD and MCD for an estimated population of 13 lakhs ¹⁰. In this study also the maximum number of children had received vaccinations from some Govt. organization, either from Govt. hospital (42.7%) or from Govt. dispensaries (36.5%).

Out of total, 66.7% children and 30.1% women had immunization card. The absence of immunization card either because of they had never received any vaccination or they had lost the card or had left the card in their village.

In our study, out of total study children 64.7% were fully immunized. Around 28.8% children were partially immunized and 6.5% was unimmunized. According to NFHS 3, 63 percent of children age 12-23 months in Delhi is fully vaccinated against six major Childhood illnesses: tuberculosis, diphtheria, pertussis, tetanus, polio, and measles. However, most children are at least partially vaccinated; only 9 percent have received no vaccinations at all.¹¹ So it had been seen the results of our study is mostly showing similar picture of Delhi.

When the study population were asked about various individual vaccination, it was observed 87.5% of the children had received BCG vaccination, where as 82.7 % and 84.7% respectively had received three doses of DPT and Polio vaccine. Again it was mentioned in NFHS 3 report that eighty-seven percent of children have received a BCG vaccination and 72 and 79 percent, respectively, have received at least the recommended three doses of the DPT and polio vaccines. Seventy-eight percent have been vaccinated against measles. In this study 76% of children were also received measles vaccination. So this result is also very similar to NFHS 3 report.

In this study around 63.6% deliveries occurred at home and rest of the deliveries (36.4%) was in institutions. But it was reported in NFHS 3, that 59% of deliveries in Delhi take place in a health facility. This result is quite difference, may be because of our study population mostly were migrants and unaware of benefits of institutional delivery.

CONCLUSIONS

So, Vaccination coverage against vaccine-preventable diseases has been improving for all recommended vaccinations. Drop-outs between the first and third doses of DPT and polio vaccine are a substantial problem. Though it is encouraging that 86% women were protected against tetanus still to achieve the 100% target of TT coverage, both short-term and long-term interventions are needed.

RECOMMENDATIONS

Use a mass media campaign to create awareness

about vaccinations and also have to create incentives for outreach workers to boost their morale. Training of health care providers in interpersonal communication is very essential. Another most important recommendation is to improve the monitoring and supervision of vaccination activities.

Conflict of Interest: Nil

Source of Funding: Self

Ethical clearance: The protocol of this research were presented in the Institutional Ethical Committee meeting in GTB Hospital and got permission to proceed for the research work.

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A Study of Combined Surgery in Control of Atonic PPH During Caesarian Section and its Outcome

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ABSTRACT

Source: Department of Obstetrics & Gynecology, JJM Medical College Davanagere & Hassan Institute of Medical Sciences, Hassan, Karnataka, India.

Objective: Atonic postpartum haemorrhage during caesarian delivery which was not controlled with oxytocics were managed with conservative procedures like Bilateral uterine artery ligation & modified B-lynch brace suture application. Outcome of the procedure in terms of control of PPH, post operative complications & subsequent reproductive health outcome were studied.

Method: The paper explains the combined approach of uterine artery ligation along with modified B-lynch brace suture application in atonic uterus during caesarian section when medical measures failed. Since uterine atony is the main reason for excessive & uncontrollable haemorrhage after child birth, need to perform such surgery is rather common. Combined approach is more effective in controlling atonic PPH.

Results: Out of 25 cases in the study group, which were managed by conservative surgical procedure like Bilateral uterine artery ligation & modified B-lynch brace suture application for atonic PPH following caesarian delivery, 24(96%) had control of PPH, 1(4%) case had failure of the procedure & ended with hysterectomy due to cardiovascular instability. Postoperatively there were no complications & there was normal involution of the uterus. Out of 25 cases, 12(48%) cases attempted conception, 4(33%) of them conceived. 2 of them had repeat LSCS during which no uterine cavity abnormality was found. Other 2 had vaginal birth after caesarian section. 5 cases underwent tubal ligation along with caesarian section. 8 patients were lost for follow up. Out of 17 cases followed up, none of them had menstrual abnormality.

Conclusion: Atonic PPH not responding to medical line of treatment can be effectively controlled with judicious & timely application of conservative combined approach like bilateral uterine artery ligation & modified B-lynch brace suture application. This procedure is easy to perform, which can avoid peripartum hysterectomy & retain the uterus for future fertility & menstrual function.

Keywords: PPH Conservative Management, B-Lynch Technique

INTRODUCTION

Postpartum haemorrhage is an unpredictable and a sudden life-threatening event. The definition of PPH

depends on the delivery type. Traditionally, it is defined as " a blood loss of more than 500ml following vaginal delivery and more than 1000ml during a caesarian section or blood loss which causes cardiovascular instability". Major haemorrhage is defined as a blood loss greater than 2500 ml or transfusion of 5 or more units of blood or dilutional coagulopathy. It has been estimated that worldwide, over 1, 25,000 women die of PPH each year ¹. PPH remains one among the 5 main causes of maternal death in developing and developed countries. Uterine atony is the most common cause of primary

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postpartum haemorrhage. Though atonic PPH has various predisposing factors, it can occur without any cause. Unplanned caesarian delivery may end in atonic PPH, putting the surgeon in dilemma in management of atonic PPH regarding conservation of uterus or peripartal hysterectomy.

In young and primiparas women peripartal hysterectomy may be avoided by resorting to conservative surgical management with uterine artery ligation, stepwise uterine devascularisation, B-lynch suture application, Gunasheelas global stitch, Cho’s stitches, internal iliac artery ligation, uterine artery embolisation etc. Some of these procedures require special technique, skills and instruments, which may be an economical burden. Hence at low resource settings simple conservative surgery such as uterine artery ligation combined with modified B- lynch brace suture application may be attempted in conservative management of atonic PPH with failed medical management. The results of the technique, complications and reproductive health outcome were studied.

MATERIALS AND METHOD

The study was conducted over a period of 5 years from January 2006 to December 2010 at JJM Medical College and Hassan Institute of Medical Sciences. 25 cases of primary atonic PPH during caesarian section were managed with conservative combined method of uterine artery ligation and modified B-lynch brace suture application after all the medical measures were failed.

Selection criteria: All women who underwent caesarian section, who had atonic PPH on table, which was not controlled by medical measures, were enrolled in the study.

All these 25 cases were in the age range of 19-32 years, out of these 16 cases were primigravidae and 9 cases were multigravidae.

Table 1. Indications for LSCS (N-25)

Indications	Number of cases	Percentage (%)
Abruptio placenta	4	16
Placenta previa	3	12
Fetal distress	8	32
Failure to progress due to malposition	3	12
Prolonged prom	2	8
Pprom with precious pregnancy with twins	1	4
Obstructed labour	1	4
Contracted pelvis	1	4
Cephalopelvic disproportion	2	8

PROCEDURE

During caesarian section once the baby and placenta were delivered, uterus was found to be atonic, then uterotonic drugs like oxytocin 10 units IM, 20 units IV infusion, Inj.methyl ergometrine 0.2mg IM, Inj. Carboprost tromethamine IM & intramyometrial, Tab. Misoprostol 800igm per rectal & uterine massage were tried, meantime uterine wound was closed. In spite of all these measures uterus continued to be flabby & bleeding continued as evidenced by inspecting the vulva by putting the patient in frog leg position, hence decision was taken to put bilateral uterine artery ligation, even after this procedure uterus was flabby & bleeding continued.As uterine compression with both hands stopped bleeding, decision was taken to put the modified B-lynch brace suture application.

Exteriorized uterus was made to compress both anteroposteriorly & superoinferiorly by the assistant, number 2 chromic catgut with round body needle was taken, suture was made to pass from ventral to dorsal aspect of the uterus at the point about 2cm below the uterine wound & about 3-4 cm medial to lateral border of the uterus. Two such bracing sutures were applied on either side & tied tightly at the fundus of the uterus about 5cm medial to uterine cornu, in order to avoid injury to fallopian tube insersion site as shown in figure 1 & 2. After applying the sutures patient was put in frog leg position. Success of the procedure in controlling PPH was assessed by cleaning the vagina with sponge, before closing the abdomen. Absence of fresh clots and continued bleeding from the vagina was considered as successful conservative surgical management.

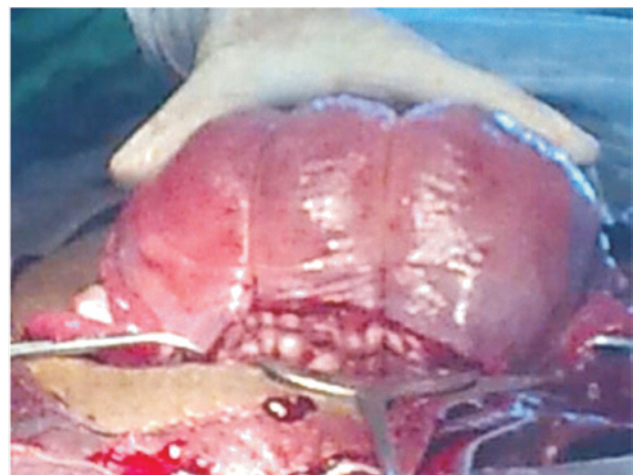


Fig. 1. Anterior view of B-lynch brace suture application

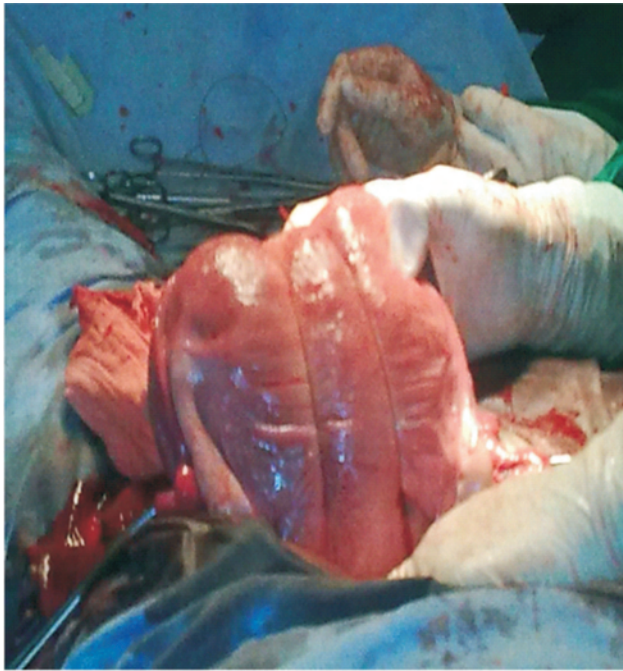


Fig. 2. Posterior view of B-lynch brace suture application

RESULTS

Bilateral uterine artery ligation along with modified B-lynch brace suture application was sufficient to stop bleeding immediately in 24 cases, success rate of the procedure being 96%. In one case procedure failed and ended with hysterectomy due to cardiovascular instability. About 17 patients required blood transfusion, 1 to 3 bottles of blood was given. Post operative period was uneventful. None of them in the study group required massive blood transfusion, ICU admission. No other complications such as renal failure or sepsis were noted. Mean hospital stay was 5 to 8 days.

Table 2. Results of the study

Observations	Number of cases	Percentage(%)
Success rate	24	96
Failure rate	1	4
Blood transfusion: Whole blood Packed cell & FFP	107	4028
Massive blood transfusion	nil	-
ICU admissions	nil	-
Renal failure	nil	-
Sepsis	nil	-

Long-term follow up: In all cases medical examination after 6 weeks was normal. Subsequently out of 25 cases 12(48%) cases attempted conception, 4(33%) of them conceived. 2 of them had repeat LSCS during which no uterine cavity abnormality was

found. Other 2 had vaginal birth after caesarian section. 5 cases underwent tubal ligation along with caesarian section. 8 patients were lost for follow up. Out of 17 cases followed up none of them had menstrual abnormality. We could get HSG done in three cases which showed no anatomical defects. Ultrasonography was normal in 14 cases.

DISCUSSION

Post partum haemorrhage is a common obstetrics emergency and a leading cause of maternal mortality and morbidity¹. Uterine atony has been identified as its primary cause. Usual management such as uterine massage, perfusion of uterotonics generally stops hemorrhaging but is sometimes insufficient. Angiographic embolisation may be an effective solution, but cannot always be carried out because only few hospitals have an interventional radiologists².

In these cases of life threatening bleeding haemostatic surgery is inevitable. Various conservative compression suturing techniques have been described in the literature. The basic principle of all uterine compression procedures is that bleeding can be controlled by surgical tamponade of uterus. In 1997 a surgical technique for compression and opposition between the anterior and posterior walls of the uterus was described by B-lynch^{3,4}. Modification of this original B-lynch technique was described by some Authors, Hayman et al⁵, Surabaya et al⁶, etc. Some Authors said that they succeeded to stop bleeding in atonic uterus only by suturing uterine artery⁹. But in this study we performed bilateral uterine artery ligation combined with modified B-lynch suture application, which can be performed in less than 10 minutes time, unlike internal iliac artery ligation which requires experience & surgical skills⁷. We based our study on modification of B-lynch by Hayman et al⁵. Combined approach of bilateral uterine artery ligation with modified B-lynch compression suture application worked out well in all atonic PPH cases & in placenta previa bleeding⁸, success rate being 96%. Many authors point out that atony occurs during caesarian section⁹⁻¹¹, that happened with our patients. Although caesarian section rate is increasing lately, it is not the caesarian section itself that leads to atony, but the indications that lead to C-section has predisposed to uterine atony.

There have been isolated reports of adverse consequences after B-lynch suture application like erosion through uterine wall¹², partial ischaemic necrosis of the uterus^{13,14}, & risk of uterine synechiae

developing later¹⁵. But none of these complications have developed in our study. On follow up of these cases menstrual function was not affected, 4 women had conceived. This life saving therapeutic option appears to be a safe procedure that does not impair subsequent fertility & pregnancy outcome^{16,17}.

CONCLUSION

In this series of atonic PPH during caesarian section, combined approach was found to be effective in controlling primary PPH, which did not have any major complications following the procedure. Hence bilateral uterine artery ligation along with modified B-lynch brace suture application appears to be the simple and safe, has the capability of preserving the uterus for reproductive & menstrual function. Therefore it may be considered as the first line surgical treatment for uterine atony before considering hysterectomy.

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Prosthodontic Management of Fibrous Ridges-A Twin Case Report

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ABSTRACT

Fibrous' or 'flabby' alveolar ridges pose significant problems for the provision of stable and retentive dental prosthesis for affected patients. In particular, problems arise during the act of impression making, when forces cause the mobile denture bearing tissues to become distorted. Many approaches have been reported, to manage hyperplastic and movable tissues. This twin case report depicts application of various approaches to manage the flabby ridges in treatment of complete denture.

Keywords: *Flabby Region, Impression, Complete Denture, Mucostatic and Mucodisplasive Impression Technique*

INTRODUCTION

Also-called 'fibrous' or 'flabby' ridge is a superficial area of mobile soft tissue affecting the maxillary or mandibular alveolar ridges. It can develop when hyperplastic soft tissue replaces the alveolar bone and is a common finding, particularly in the upper anterior region of long term denture wearers.

Masticatory forces can displace this mobile denture-bearing tissue, leading to altered denture positioning and loss of peripheral seal. Forces exerted during the act of impression making can result in distortion of the mobile tissue. The resulting stability of the denture can be poor and both function and appearance can be heavily compromised. It has long been believed that the condition, sometimes named 'combination syndrome', is caused by the presence of opposing natural teeth to an edentulous area.⁸

Typically these 'flabby ridges' are composed of mucosal hyperplasia and loosely arranged fibrous connective tissue as well as more dense collagenised connective tissue.² In the soft tissue, varying amounts of metaplastic cartilage and/or bone have been reported.⁵

CASE REPORTS

In both the cases presented in this article a combination of both Mucostatic and mucodisplasive impression technique was used.

This technique was first described by Osborne in 1964 for use in the mandible. This is a popular technique described by many authors, as it ensures that pressure exerted by the tray does not cause distortion of the mobile tissues.^{1,3,4,7}

Case One

A 60 year old male patient reported in the Department of Prosthodontics, Sardar Patel Post Graduate Institute of Medical And Dental Sciences, with a completely edentulous maxillary and mandibular arch. The patient had flabby ridge in the maxillary anterior region.

In this case, Hobbick technique was followed which involved only a single custom tray for the final impression of the flabby ridge and the procedure followed was.

1. The preliminary impressions were made with alginate and poured to produce a cast with a relatively undistorted ridge.
2. The displaceable tissue was marked on the impression and transferred to the primary cast.
3. A self polymerizing acrylic resin special tray was constructed on the primary cast in the usual manner, but with double spacer in the flabby region.
4. Border molding was done in the usual manner and

impression was made with medium bodied addition silicone.(Figure 1 and 2)

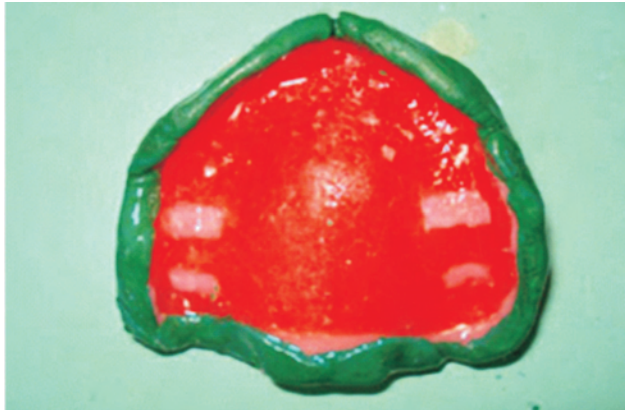


Fig. 1. Border moulding done

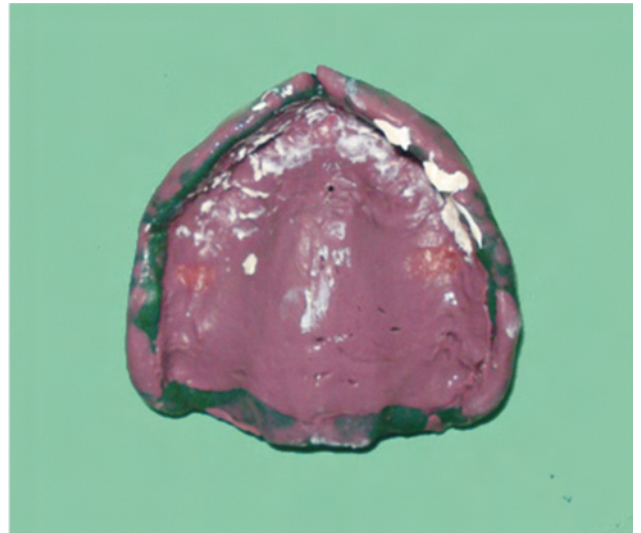


Fig. 4. Flabby region transferred to the impression

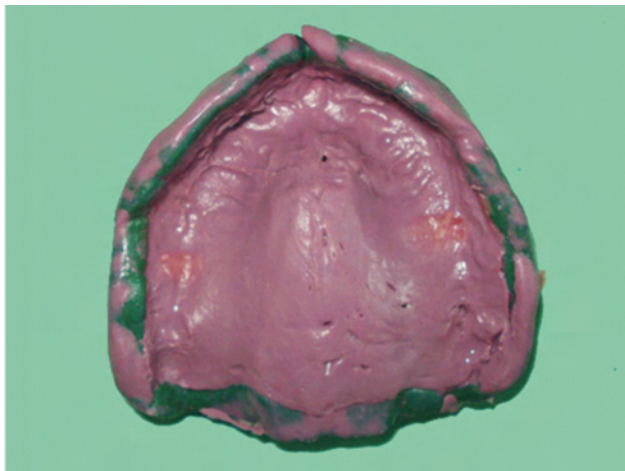


Fig. 2. Final impression made with medium body addition silicone

5. The displaceable tissue was painted on the flabby region and transferred to the impression.(Figure 3 and 4)

6. The impression was removed from the flabby region, thus creating a space in the flabby region.(Figure 5)

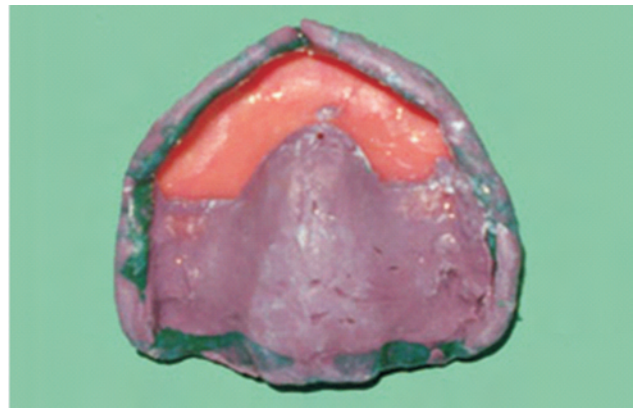


Fig. 5. Impression removed from the flabby region



Fig. 3. Flabby portion painted in mouth

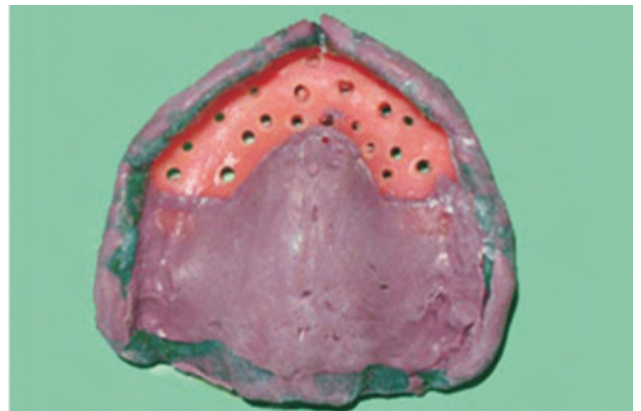


Fig. 6. Multiple vents made in the window region

7. Multiple vents were made in the window region.(Figure 6)

8. An impression of the displaceable mucosa was then recorded by applying or syringing a thin mix of light-bodied silicone in the window area. (Figure 7)

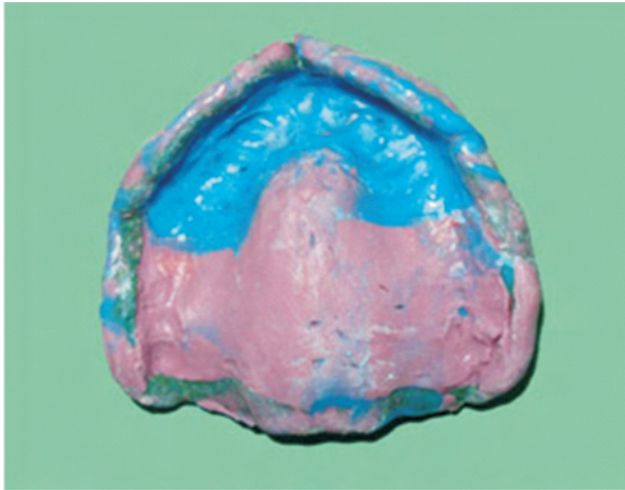


Fig. 7. Flabby region recorded with light body silicone

Case Two

A 60 year old patient reported in the department of Prosthodontics, Sardar Patel Post Graduate Institute of Medical And Dental Sciences with a completely edentulous maxillary and mandibular arch. The patient had flabby ridge in the mandibular anterior region. (Fig 8)

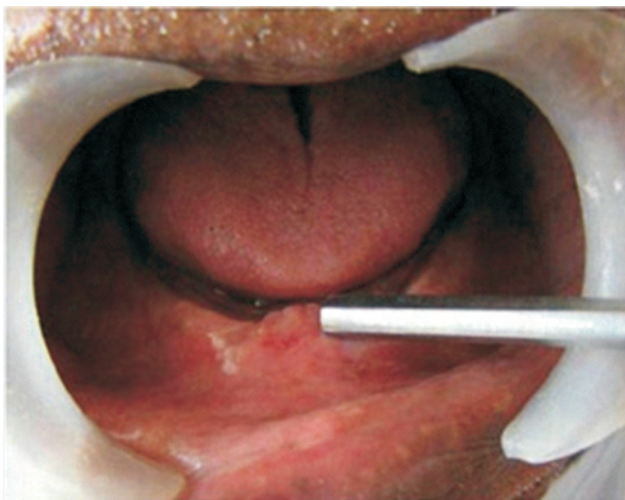


Fig. 8. Mandibular anterior flabby region

In this case, Zafarulla Khan technique was followed which involved, the following procedure.

1. The preliminary impressions were made with alginate and poured to produce a cast with a relatively undistorted ridge.

2. The displaceable tissue was marked on the impression and transferred to the primary cast.
3. A self polymerizing acrylic resin special tray was constructed on the primary cast in the usual manner, but with double spacer in the flabby region.
4. Border molding was done in the usual manner and impression was made with zinc oxide eugenol impression paste.
5. The displaceable tissue was painted on the flabby region and transferred to the impression.
6. The impression along with the tray portion was cut off and removed from the flabby region thus creating a window. (Figure 9)



Fig. 9. Tray portion cut off from flabby region thus creating window

7. An impression of the displaceable mucosa was then recorded by applying or syringing a thin mix of impression plaster in the window area. (Figure 10,11,12)



Fig. 10. Special tray in mouth showing flabby region



Fig. 11. Flabby region recorded with impression plaster

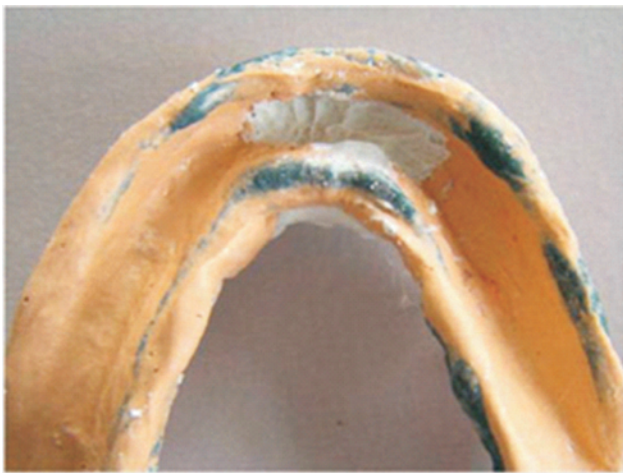


Fig. 12. Final impression

DISCUSSION

The three main approaches to the management of the flabby ridge are

1. Surgical removal of fibrous tissue prior to conventional prosthodontics
2. Implant retained prosthesis
 - a. Fixed
 - b. Removable
3. Conventional prosthodontics without surgical intervention.

There appears to be a consensus in the literature that surgical removal of the fibrous areas often results in a greater prosthodontic challenge. Implant retained prostheses may offer a solution to the problems of stability and retention in fibrous ridge cases. However,

they are not without their disadvantages i.e surgery, treatment time, cost, etc.² A conventional prosthodontic solution may avoid these problems associated with surgery. Due to the obvious difficulties in analysis of the success of prostheses constructed using the various impression techniques described, the clinical choice has fallen mainly to personal preference, based on analysis of theoretical principles. Various techniques have been recommended and there is controversy as to whether a mucodisplasive technique which compresses the mobile tissue aiming to achieve maximum support from it, or whether a mucostatic technique with the aim of achieving maximum retention should be employed.¹⁰

The following theoretical impression technique selection criteria for flabby ridge may be considered of relevance:

1. The patient's chief complaint, for example, instability during mastication or lack of retention during rest, speech, etc.
2. The amount and position of displaceable tissue should be considered. Where distortion is minimal, the use of perforations of the special tray overlying the fibrous region may be all that is required. Where distortion is significant, either a compressive impression, such as the selectively flamed composition, or a passive technique, either through palatal splinting or two stage could be considered.
3. The importance of optimising other design factors, for example, correct border extension, occlusion, tooth positioning, etc.

SUMMARY

Fibrous ridges pose a prosthodontic challenge for the achievement of stable and retentive dental prostheses. Emphasis has moved away from surgical removal of the fibrous tissue.⁷ Implant retained prosthesis may not be most suitable treatment option for many patients. When considering conventional prosthodontics, there are a variety of impression techniques available to address the problems caused by the unsupported tissue during denture construction, however currently there is a lack of scientific evidence for support of any technique over another. Considerations for selection should include the location and extent of unsupported tissue, as well as the patient's chief complaint.

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Conflict of Interest: Nil

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Ectopic third Molar in Subcondylar Region: A Case Report

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ABSTRACT

Third molar removal is among the most common surgical procedures performed around the world.^{1,2} Nevertheless; few cases of ectopic third molar in the subcondylar region of the mandible have been reported. Considering the rarity of this condition, the etiology and management remain unclear.³⁻⁸

Keywords: Ectopic third molar

INTRODUCTION

A 65 year old female visited our outpatient department in June 2010 complaining of cyclic pain and swallowing followed with purulent drainage on the left side of her face that had lasted for 2 years. Long term use of antibiotics, anti-inflammatory, and analgesics was also reported. A panoramic radiograph showed the patient's lower left third molar to be located in the subcondylar area.

The surgery was performed with the patient under General anesthesia, via the extra oral approach by utilizing the sinus tract at the preauricular region. To aid in the hemostasis in the area of soft tissue incision and dissection, a local anesthetic with 1:80,000 epinephrine was injected. Subperiosteal soft tissue dissection was first attempted & posterior border of the ramus was identified and subsequently dissection progressed towards anteriorly. The tooth was identified and carefully removed in toto. Sharp bony areas were smoothed, the site was curetted and cleaned with sterile saline solution and povidone iodine. Hemostasis was achieved with electrocautery. A closed suctioned drain no 8 was secured and layered closure was performed.

The postoperative period was uneventful. A small follicular space enveloping the crown of the tooth was also identified, suggesting a dentigerous cyst. However, the pathology report identified the tissue as compatible with the inflammatory process, possibly due to long-term infection and associated drainage.

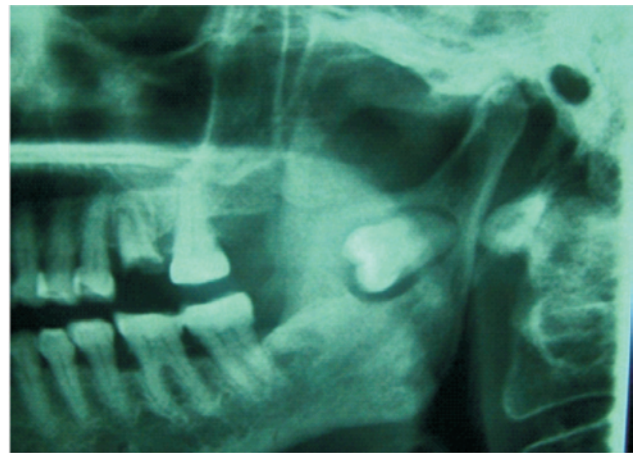


Fig. 1. Panoramic view of ectopic third molar in the left subcondylar region



Fig. 2. 1 Week postoperative view

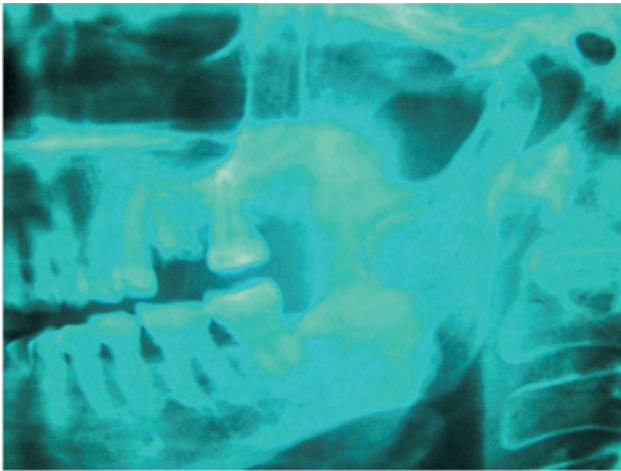


Fig. 3. 6 month post operative view showing the bone regeneration

DISCUSSION

Etiology

The etiology of ectopic mandibular third molars has not yet been completely clarified. They may occur owing to a deviant initial position of the third molar germs^{9,10} or an aberrant eruption pattern.¹⁰ A lack of space between the mandibular second molar and the ramus of the mandible¹¹ or a disproportion between the base and the direction of growth of the third molar may contribute to the deviant position of the impacted third molar. Keros and Susic¹² reported that the cause may be the primary and complete dislocation of the third molar tooth base posteriorly from the muscle process. They hypothesized that during the growth of the mandible, the base of the condylar process develops as a result of bone tissue apposition in the posterior segment of the ramus. The bone that forms the mandibular base in childhood may be shifted to the region beneath the coronoid process in adulthood. The base of the ectopic mandibular third molar becomes embedded in this tissue. Following the normal growth pattern, the third molar and its base moves upward, eventually reaching the coronoid process of the mandible. A mandibular third molar may be displaced by a lesion such as a cyst or a tumor.¹³ The expansion of a cyst as it develops may result in pressure on the crown of a tooth and displace it in a direction opposite to the path of eruption. Usually when a tooth is dislocated high in the condyle, a large cyst occupies the entire ramus.¹³ Few cases of spontaneous regression of a cyst associated with an impacted third molar were reported.^{14,15,16}

TREATMENT

Treatment of ectopic third molars in the condylar

region is recommended to avoid the morbidity caused by infection of the cyst, malfunction of the temporomandibular joint, and risk of fracture in an area with a very thin bone. In the cases described in the literature, several approaches have been used, such as preauricular, retromandibular, intraoral and, recently, endoscopic, although the latest technique requires specific instrumentation and training. The use of endoscopy has some advantages in a very difficult area to reach via an intraoral approach, because it provides good illumination and magnification of the surgical area,¹⁷ but this technique may not be indicated in all cases of an ectopic third molar in the condylar region. In addition, the endoscopic approach can be used for other ectopic teeth such as those placed in the nasal cavity or maxillary sinus. The endoaural approach, which causes low morbidity from facial palsy when performed by an experienced surgeon and gives adequate exposure of the temporomandibular region. It is preferable to be as conservative as possible with the mandibular condyle. Follow-up of such patients annually is recommended in the first years after surgery, until complete ossification of the defect is reached, as this is a weakened area with high risk of fracture.¹⁸

CONCLUSIONS

Ectopic mandibular third molars are rare and usually found because of the clinical symptoms. However, the occurrence of such impactions is probably under-reported, because the literature review contains only published cases in English and there must be other cases where either they are not discovered or are asymptomatic and not reported. The etiology is still not clear, even though some case reports with a radiolucent area around the crown of the ectopic tooth indicate that the cystic lesion might be the possible cause. The incidence seems to be higher in women, but further investigations are necessary to confirm this finding. Annual follow-up visits with panoramic radiographs are required in cases of symptom-free highly aberrant wisdom teeth. The treatments should be carefully planned according to the position of the ectopic tooth and the possible trauma caused in the surgery.

Oral surgeons should inform the patient of the possibility of transient paresthesia of the inferior alveolar nerve and the reduction of masticatory force in cases with removal of the coronoid process.

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Bacteriological Analysis of Water of Guwahati City

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ABSTRACT

Objectives The present study was carried out to evaluate the quality of different sources of drinking water from various parts of Guwahati city

To draw out information on drinking water sources, methods of purification and on the perception of drinking water as a source of illness a study was carried out in the Microbiology Department of Gauhati Medical College and Hospital. A total of 254 water samples were collected from Greater Guwahati and for the purpose of the study; the city was divided into four distinctive zone namely- North, South, East and West Guwahati. The study also lays emphasis on the quality of ground water and supply water.

Materials and method: The water samples were analyzed from different parts of Guwahati city from the period 1/6/05 to 31/5/06. Samples were evaluated by MPN using MacConkey broth. Fecal Escherichia count was done by Eijkman test1.

Observation and results: In the 254 water samples evaluated, the overall average Coliform count irrespective of season in the two Urban supply systems, well, tube well and deep tube well are 6.3, 9.8, 46.1, 30.38 respectively. The overall count was highest in the well water followed by tube well, supply water and deep tube well.

Season had a significant effect on the variation of Coliform count in the ground water. The overall average bacterial count irrespective of sources during pre-monsoon, monsoon, post-monsoon and winter is 90, 160, 50, 10 respectively. Statistical analysis revealed significant difference in the average bacterial count of water from different sources.

The grading of samples on the basis of Coliform count revealed that the percentage of excellent, satisfactory, suspicious and unsatisfactory water samples were 7.69%, 44.41%, 76.47%, 11.76%, from Urban supply, 0, 0, 30.35%, 69.65% from well, 0, 18.18%, 9.1%, 72.73% from tube well, 52.63%, 31.58%, 15.79%, 0% from deep tube well, 0, 0, 0, 100% from stream, 100%, 0, 0, 0 from bottled water / filter water. The percentage of water sample with no Coliform bacteria was 100%, 52.63%, 7.69%, 0% in the bottle water / filter, deep tube well, urban supply and other sources of ground water supply respectively.

Out of 254 different water samples examined 221(87%) were positive for Coliform bacteria. Out of which 151(59.44%) were Escherichia coli, 57(22.44%) were Klebsiella, 13(5.12%) were Citrobacter and 34(13.38%) of the samples were Coliform free.

Conclusion: Results from supply and ground water were outside the acceptable limit recommended by WHO for drinking water. Of all sources Deep tube well water showed the least average MPN. So it can be concluded that both ground water and supply water should be properly treated if used for drinking purpose.

Keywords: Coliform Count, Eijkman Test

INTRODUCTION

"We shall not finally defeat AIDS, tuberculosis, malaria, or any of the other infectious diseases that plague the

developing world until we have also won the battle for safe drinking water, sanitation and basic health care".

Kofi Annan

Former United Nations Secretary – General

Water is a life giving nectar, but polluted water can be a cause of major diseases and water borne epidemics. Waterborne diseases, according to the World Health Organization, are those which generally arise from the contamination of water by feces or urine, infected by pathogenic viruses or bacteria, and which are directly transmitted when unsafe drinking water is consumed.

MATERIAL AND METHOD

Collection of samples

Water samples were taken from locations that are representative of water source, treatment plant, storage facilities, distribution network, point at which water is delivered to the consumer and point of use. Specimen are taken in sterile neutral bottles (properly covered with kraft paper) of 230 ml capacity with ground glass stopper having overhanging stoppers having overhanging rims. If the water is chlorinated, a crystals of sodium thiosulphate(0.1ml of 3% solution) should be put into the bottle before sterilization to counteract the action of chlorine ² .

Description of methods

H₂S test

The test is based on measuring bacteria that produces hydrogen sulfide under the test condition employed. The test measures the production of H₂S by its reaction with iron to form an insoluble, black precipitate ³ .

Multiple-tube fermentation test

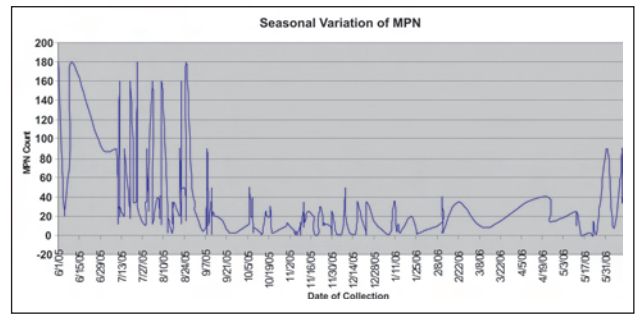
The test is used for detection and enumeration of coliform organisms, thermotolerant coliform organisms and for presumptive Escherichia coli. The result of multiple – tube fermentation test was reported as MPN index.

A series of tube containing single and double strength MacConkey broth is inoculated with test portion of water sample After 24 hrs to 48hrs of incubation period at 35^{ae}% C, each tube showing gas formation is regarded as “presumptive positive”. Fecal coliform and confirmed Escherichia count was done by Eijkman test ¹ .

Observation and results

Seasonal Variation of MPN

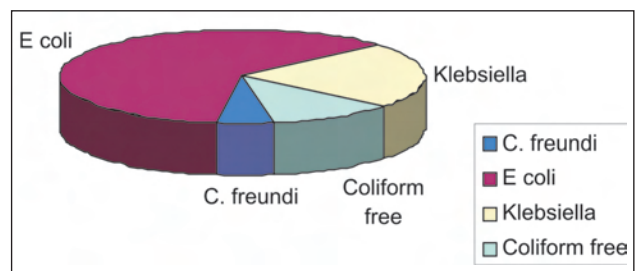
The study showed high MPN during June 2005 – August 2005 which falls in the monsoon period and MPN decreased gradually during post- monsoon period, being least during winter. During the year 2006 monsoon arrived late so much variation in the MPN could not appreciated during this period.



Percentage of different Coliform isolated

Out of the 254 water samples, 151 (59.44%) were Escherichia coli, 57(22.44%) were Klebsiella, 13(5.12%) were Citrobacter freundii and 34(13.38%) were Coliform free.

A significant chi-square value was observed between various isolates, where E.coli had the highest incidence, followed by Klebsiella, Coliform free and C.freundi had the least incidence.



Graph 1. Distribution of sample by Coliforms isolated

Source Vs MPN count

Out of the different sources, average MPN was highest in well (46.1) followed by tube well (30.0), stream (25.0), Urban 2 supply (9.8), Urban 1 water supply (6.3), Deep tube well (3.8). Count was 0 in bottle water and filter water.

Table 2

	Average MPN Count	Number of Samples
Urban 1	6.3	52
Urban 2	9.8	68
Well	46.1	56
DeepTube Well	3.8	19
Tube Well	30.0	22
Bottled Water/Filter/Aquaguard	0.0	20
Stream	25.0	4

P-Value = .000 (Highly significant)

Significantly more number were collected from Urban 2, well and urban 1 supply, where as only 4

samples were collected from streams. Chi-square value revealed a highly significantly difference between the frequencies.

Grading of water samples on the basis of coliform count

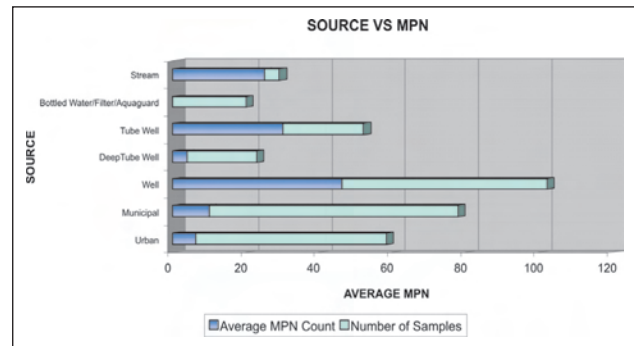
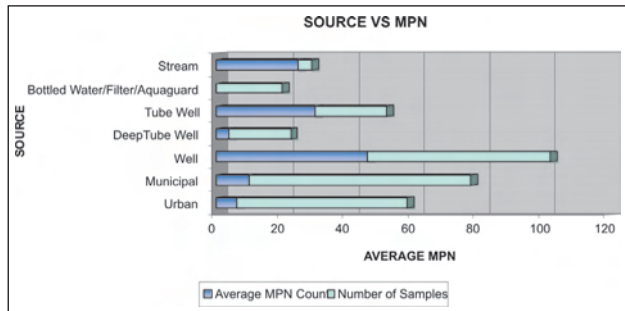


Table 5. Frequency of isolation of coliform bacteria from different sources of drinking water Organism isolated

Sources	No of Samples	No of positive Coliform	No of Fecal Coliform	% of Fecal Coliform	E Coli	Klebsiella	C. freundi
Urban Supply 1	52	48	2	4.17%	28	20	0
Urban Supply 2	68	63	3	4.76%	46	14	3
Well	56	56	12	21.43%	35	13	8
Tube Well	22	22	3	13.64%	14	7	1
Deep TubeWell	19	9	0	0.00%	7	1	1
Stream	4	4	1	25.00%	4	0	0
Bottled Water/ Filter/ Aqua guard	17	0	0	0.00%	0	0	0

Table 6. Grading of water Sample on the basis of coliform count

Source	No of Samples	MPN			
		0	1-3	4-10	>10
		Excellent	Satisfactory	Suspicious	Unsatisfactory
Urban 1	52	4(7.69%)	5(9.61%)	42(80.77%)	1(1.93%)
Urban 2	68	5(7.36%)	3(4.41%)	52(76.47%)	8(11.76%)
Well	56	0(0%)	0(0%)	17(30.35%)	39(69.65%)
TubeWell	22	0(0%)	4(18.18%)	4(9.1%)	12(72.73%)
Deep TubeWell	19	10(52.63%)	6(31.58%)	3(15.79%)	0(0%)
Stream	4	0(0%)	0(0%)	0(0%)	4(100%)

Chi-square= 262.985; P<.000 (HS)

As far the source and grading is considered again chi-square test revealed a highly significant value indicating that pattern of MPN is different for different sources. From the table it is evident that Excellent gradings were recorded in deep tube well source, more of satisfactory gradings were observed again in deep tubewell, and more suspicious gradings were observed in urban 1 and urban2 sources, and lastly more of unsatisfactory gradings were recorded in tubewells and well.

Fecal Coliform in different source

The bacteria-wise analysis revealed that more of E coli and Klebsiella were recorded in Urban supply and well water. However, maximum incidences of C.

freundii were reported from wells. Chi-square test revealed a highly significant value indicating that pattern of distribution is different for different sources in different bacteria.

DISCUSSION

The study was conducted on water samples from different parts of Guwahati city, from the period 1/6/05 to 31/5/06 in the Department of Microbiology, Gauhati Medical College. Samples were evaluated by Multiple tube test using double strength MacConkey broth as the indicator medium; MPN was derived from it and the organisms was processed accordingly as per standard bacteriological methods¹.

Results suggest that well, supply water and tube well and deep tubes well are utilized as source of drinking water. The major danger associated with drinking water was the possibility of its recent contamination by human excrement or by sewage or animal pollution.

Therefore, a study was conducted to estimate the coliform and total bacterial count in the water of Bharulu river during different season. The MPN of coliforms varies from 180, 90, 180, 180 during winter, pre-monsoon, monsoon and post – monsoon season respectively ⁴.

In the present study seasonal variation of MPN was evident, during the rainy season count was in the range 160-180 and during the dry season MPN was in the range 40 -50.

The various water sources may contain not only the natural and the soil bacteria but also large numbers of organisms derived from sewage. Bacteriological examinations of water have been restricted mainly to study of coliform

Mean wise comparison revealed that Bottled Water/Filter had no MPN whereas wells and tube wells had the highest MPN count

Comparing the relative proportion of coliform bacteria, it is obvious from the present study that E.coli was the most frequently isolated from culture followed by Klebsiella and Citrobaacter irrespective of sources, which was in agreement with the finding of other studies ⁵.

Compared to the surface water system, the lower percentage of contamination for ground water system in the community water supply ⁶

The most desirable drinking water is one that requires no treatment at all, but the wide spread pollution of water has rendered readily accessible source of water unsuitable for human consumption without some degree of treatment. Chlorine in the form of calcium hypochlorite in Bleaching powder is very effective in controlling growth of E.coli. The superiority of chlorine over iodine, K_2MNO_4 and ultraviolet radiation was reported by many workers. And in the near future use of chlorine (in the form of calcium hypochlorite) is likely to continue as the most appropriate form of drinking water disinfectant because of its relative low cost, residual effect and broad spectrum of activity.

CONCLUSION

The microbiology of drinking water remains an important worldwide concern despite progress in science and technology. Each year more than 1 billion of our fellow human beings have little choice but to resort to using potentially harmful sources of water. This perpetuates a silent humanitarian crisis that kills some 3900 children every day and thwarts progress towards achieving the MDGs. The Water for Life Decade started from World Water Day 2005, 22 March; it is a unique occasion not just to highlight the magnitude of the problem, but also to bring all stakeholders together to apply solutions that work. Providing safe drinking water is a complex multidisciplinary task requiring the collective effort of individuals from a wide variety of disciplines and background. There are numbers of issues about microbiological monitoring which have been fully resolved but continued to be debated. There is a continuing need both for using the available research finding for development of more rational regulations and standards and for research studies, which are designed to resolve the issues of microbiological monitoring of water quality.

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A Cross Sectional Study of Correlation of Portal Vein Diameter with the Physical Data in Bangalore Karnataka

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ABSTRACT

Objective: To estimate portal vein diameter (PVD) in co-relation with physical data.

Background: The normal diameter of portal vein at the level of portahepatis varies from 7 to 15 mm. Various text books describe the measurement of portal vein diameter but not its correlation with the physical data. As per the data available in literature there is only one case study done correlating portal vein diameter and physical data of the individual. Hence this study has been taken up with the criteria of ultrasonic measurement of portal vein diameter and its correlation with physical data of individual like age, sex, height, weight and body surface area(BSA).

Method: The study was conducted in the department of Radiodiagnosis, M.S. Ramaiah teaching hospital. 500 individuals (patients) were selected for the study based on inclusion and exclusion criteria. Height, weight and body surface area was measured, statistical analysis was done.

Result: The portal vein diameter increases proportionately with increase in all the following parameters such as age ($r=0.169$, $p<0.001$), height ($r=0.170$, $p<0.001$), weight($r=0.217$, $p<0.001$) and body surface area ($r=0.237$, $p<0.001$).

Conclusion: The relation between portal vein diameter and physical data is significantly positive.

Keywords: *Physical Data, Portal Vein Diameter, Ultra Sound*

INTRODUCTION

The portal vein begins by the convergence of superior mesenteric and splenic veins, behind the neck of pancreas and at the level of second lumbar vertebra. In an adult it is about 8 cm long and lies anterior to inferior vena cava and posterior to the neck of the pancreas below and the first part of duodenum above.¹⁻⁶ The diameter of portal vein is variable, normally ranging from 7 to 15mm.^{1,7-13} Normal portal venous pressure is between 5 and 10 mmHg (14 cm of H₂O). If portal venous pressure is more than 15 mmHg (30 cm of H₂O) then it will lead to portal hypertension.¹⁴

In one of the previous study done by Claus Niederau in 1983, the maximum diameter of the portal vein was taken, and correlated with various physical parameters like age, sex, height, weight and BSA of subjects. The statistical analysis of the previous study showed that there exists a significant correlation between portal vein diameter and physical data.

There is limited literature available in Anatomy, Radiology and Surgical text books with regard to portal vein diameter and its correlation with physical data. A definite correlation exists between portal vein diameter and various physical parameters like age, sex, height, weight and BSA of subjects as available in documented literature.^{15,16}

Therefore the ultrasonographic measurement of PVD and its correlation with physical data like age, sex, height, weight and BSA of population of southern part of Karnataka has been taken up in this study.

The main objective of this study is to study the portal vein diameter at the level of portahepatisultrasonographically and its correlation with the age, sex, height, weight and body surface area of the patient. 500 patients visiting M S Ramaiah Hospital were selected for this study.

Abdominal ultrasonography of the patients visiting the Department of Radiodiagnosis of M.S. Ramaiah Hospital was done and the diameter of portal vein was measured at the level of portahepatis. The height of the patient in centimeters (cm) and weight in kilogram (kg) were noted and the body surface area was calculated by using Du Boi's formula. The patients above the age of 18 years were included in the study, at the same time patients with signs and symptoms of cirrhosis of liver or portal hypertension, hepatobiliary or pancreatic disorder (congenital or acquired) were excluded from the study.

Master chart of all the selected parameters like age, sex, height, weight, and body surface area was prepared. Statistical analysis was done before final conclusion.

MATERIAL AND METHOD

Source of data: Patients visiting Radiodiagnosis Department of M S Ramaiah Memorial Hospital for ultrasound scanning of abdomen.

Method of collection of data

Abdominal ultrasound scanning of the patients was done and the diameter of portal vein was measured at the level of portahepatis(fig 1).

Study design: Cross sectional study.

Sample size: 500.



Fig. 1. Showing Ultrasound image of the Portal vein

Inclusion criteria: Individual above the age of 18 years of either sex.

Exclusion criteria:

- a) Patients with cirrhosis of liver or portal hypertension.
- b) Patients with hepatobiliary or pancreatic disorder (congenital or acquired).

Measurements taken (Data collected)

1. The height of each individual was measured in centimeters (converted to meters for calculations).The weight of each individual was measured in kilogram. Body surface area was calculated by using by Du Boi's formula.

Parameters included were

Portal vein diameter (PVD), Age in years, Sex, Height, Weight, Body surface area (BSA).

All the above parameters were measured by the aid of: Ultrasound machine, Measuring Tape, Weighing machine, Du Boi's formula for calculating Body Surface Area.

Descriptive statistical analysis has been used in the present study. Pearson correlation has been used to find the relationship of PVD with BSA, height, weight and age. Student-t test has been used to find the significance of correlation.^{17,18}

RESULTS

The 500 patients with the age more than 18 years were taken for the study. The total number of male patients taken for study was 288(57.6%) and the total number of female patients taken for study was 212(42.4%). The height of the 500 patients taken for the study ranged from 145 to 180 cm and the weight ranged from 35 to 90 kg. The body surface area of the 500 patients taken for the study ranged from 1.5 to 2 meter square. The portal vein diameter of 500 individuals was obtained by using ultrasound machine. Statistical analysis was done with these parameters using student-t test to find correlation between portal vein diameter and physical data.

Table 1: Showing correlation of PVD with the physical data in males

Parameter	Correlation value of portal vein diameter(r)
Age	(0.178)
Weight	(0.219)
Height	(0.152)
Body surface area	(0.211)

In males, the PVD proportionately increases with increase in height ($r = 0.152$ and $p = 0.010$), weight ($r = 0.219$ and $p < 0.001$) and BSA ($r = 0.211$ and $p < 0.001$) indicating that there is a significant positive relation between these variables. But however there was no correlation between the age and portal vein diameter indicating that the portal vein diameter does not vary with age ($r = 0.178$ and $p = 0.187$).

Table 2: Showing correlation of PVD with the physical data in females

Parameter	Correlation value of portal vein diameter(r)
Age	(0.128)
Weight	(0.128)
Height	(0.077)
Body surface area	(0.180)

In females, the portal vein diameter showed a proportionate increase with increase in parameters such as weight ($r = 0.128$ and $p = 0.064$) and the BSA ($r = 0.180$ and $p = 0.009$) indicating the relation between these variables is significantly positive. But there existed no correlation between the portal vein diameter and age ($r = 0.114$ and $p = 0.128$), height ($r = 0.077$ and $p = 0.267$) indicating that the PVD does not vary with age and height in case of females.

Table 3: Person correlation of PVD with other study parameters

Gender	PVD vs Age	PVD vs Height	PVD vs Weight	PVD vs BSA
Male	0.178(0.187)	0.152(0.010)	0.219(<0.001)	0.211(<0.001)
Female	0.114(0.128)	0.077(0.267)	0.128(0.064)	0.180(0.009)
All cases	0.169(<0.001)	0.170(<0.001)	0.217(<0.001)	0.237(<0.001)

p value is indicated in the brackets

In all cases, (including both male and female sexes)

With increase in age, PVD proportionately increases ($r = 0.169$ and p is less than 0.001), indicating the relation between these two variables is significantly positive.

With increase in height, PVD proportionately increases ($r = 0.170$ and p is less than 0.001), indicating the relation between these two variables is significantly positive.

With increase in weight, PVD proportionately increases ($r = 0.217$ and p is less than 0.001), indicating the relation between these two variables is significantly positive.

With increase in BSA, PVD proportionately increases ($r = 0.237$ and p is less than 0.001), indicating the relation between these two variables is significantly positive.

Thus these results show that the portal vein diameter increases proportionately with increase in all the following parameters such as age ($r=0.169$, $p<0.001$), height ($r=0.170$, $p<0.001$), weight ($r=0.217$, $p<0.001$) and body surface area ($r=0.237$, $p<0.001$).

DISCUSSION

Normally PVD varies between 7 to 15 mm.¹⁴ Normal portal venous pressure is between 5 and 10 mmHg (14 cm of H₂O) If portal venous pressure is more than 15 mmHg (30 cm of H₂O) then it will lead to portal hypertension.¹⁵ Not much studies have been carried out correlating normal portal vein diameter and physical data. Study done by Claus Niederau in 1983 on this topic states that there is a significant correlation between the portal vein diameter and physical data of individuals irrespective of the gender. He concluded that PVD varies proportionately with height, weight and body surface area of an individual. However separate statistical analysis for males and females had not been provided in that study.¹⁷

In the present study after the statistical analysis it was concluded that in males there was no correlation between the PVD and age, indicating that PVD does not vary with the age. But the other parameters such as height, weight, sex and BSA had a significant correlation with the PVD and the PVD varied proportionately with these parameters. In females there was no correlation between the PVD and age as well as height, indicating that the PVD does not vary with the age and height. But the parameters like weight, sex and BSA had direct correlation with the PVD and the PVD varied proportionately with these parameters.

Conclusion: It was concluded from the present study that there was a significant correlation between the PVD and the physical data (age, sex, height, weight and BSA) studied. But however further studies have to be done to know the reason for PVD not having a correlation with age in case of males and age as well as height in case of females.

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Isolation of *Haemophilus Ducreyi* from Genital Ulcer: A Case Report

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ABSTRACT

Seventeen year young male patient presented with complain of burning micturation, fever since 8 days and ulcer in genital area. After clinical examination impression smear and swab from ulcer were received. Gram stain showed presence of pus cells, gram negative plump coccobacilli. Even though primary isolation of *Haemophilus ducreyi* is difficult we get growth on Muller Hinton based chocolate agar containing 1 % IsovitalX supplement and 3 µg/ml of vancomycin. Phenotypically the organism was identified as *Haemophilus ducreyi*.

Keywords: Genital Ulcer, *Haemophilus Ducreyi*, Chancroid

INTRODUCTION

Sexually transmitted infections (STI) spread primarily from person-to-person through sexual contact. There are more than 30 different sexually transmissible bacteria, viruses and parasites. Genital ulcerative disease is a common presentation in many sexually transmitted diseases. On a global basis, chancroid is thought to be the most common cause of genital ulcer disease (GUD)¹. Chancroid & other GUD could facilitate the transmission of HIV infection.² The overlap of clinical symptoms leads misdiagnosis of sexually transmitted infections. So only clinical diagnosis of GUDs is unreliable. Gram staining and culture remains the important diagnostic tests in suspected cases of chancroid.¹

Case

Previously healthy 17 year unmarried male patient sweeper by occupation presented with history of low grade fever since eight days. Patient was complaining of pain in genital area and burning micturation. Patient gave history of red papule which progressed to small painful ulcer within 3-5 days. On repeated questioning patient gave history of unprotected sex with a commercial sex worker for multiple times.

On examination genital area showed presence of four small ragged ulcerative lesions on area just behind the head of penis. Ulcers were painful, measuring

about 3 x4 mm with undermined edges and dirty base. Yellowish discharge was present. Inguinal lymph nodes on right side were tender and enlarged.

Area was cleansed with sterile physiological saline. Impression smear was collected on clean glass slide by pressing the slide on ulcerative lesion. Discharge material was collected from base of the ulcer with sterile cotton swabs. Slide and cotton swabs were immediately sent to microbiology laboratory. Impression smear was stained with gram stain. Gram stain showed plenty of pus cells and gram negative coccobacilli. (Fig 1) Swab was inoculated on blood agar, Muller Hinton based chocolate agar containing 1 % IsovitalX supplement and 3 µg/ml of vancomycin. Plates were incubated in 5% CO₂ at 35°C in humid environment. After overnight incubation chocolate agar showed small yellow-gray colonies that typically remained cohesive as they were pushed across the surface of the agar plate, consistent with the colony characteristics of *H. ducreyi*. Smear from these colonies showed gram negative coccobacilli arranged in clustered groups. (Fig 2) Biochemical tests were done. Catalase was negative, Oxidase was positive. Alkaline Phosphatase and nitrate reductase tests were positive. Patient was negative for HIV and VDRL tests. Patient was treated with 1 gm Azithromycin stat followed by Doxycycline 100 mg twice a day for 7 days. Patient responded well to the treatment.

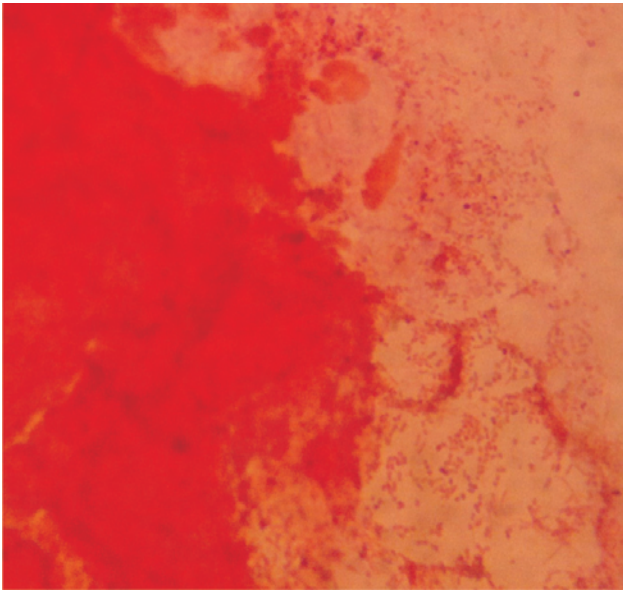


Fig. 1. Gram stain of impression smear showing gram negative coccobacilli.

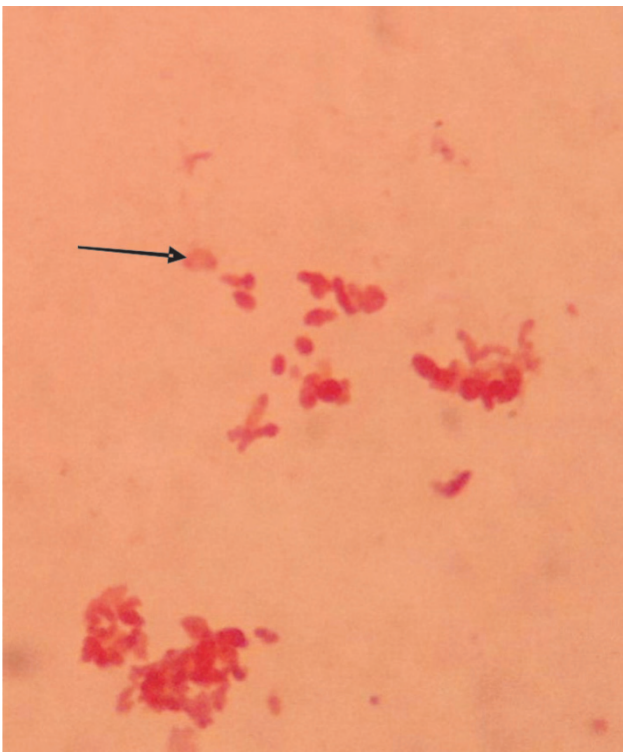


Fig. 2. Gram stain of colony showing gram negative coccobacilli with typical arrangement.

DISCUSSION

Genital ulcers are common presentation in patients suffering from sexually transmitted diseases. UNAIDS and the World Health Organization estimate that the

annual global incidence of chancroid is approximately 6 million cases³. In African & Asian developing countries chancroid is one of the most common sexually transmitted disease⁴. Apart from being serious diseases in their own right, STIs enhance the sexual transmission of HIV infection Isolation of *H. ducreyi* is not done routinely because of its fastidious nature, requirement of selective media. So this condition remains underreported.²

Prevalence of chancroid in India is 26%.⁵ The male-to-female ratio among patients with proven chancroid ranges from 3:1 in areas where it is endemic to as high as 25:1 in outbreak situations. Female sex workers serve as a reservoir for *H. ducreyi* and are thought to play an important part in transmission by infecting many male partners age group affected is 20-30 years.⁶ Chancroid presents with characteristic genital ulceration & lymphadenopathy. But due to HIV & other immunocompromised conditions clinical presentation may vary. Microbiological diagnosis is important for effective management and also to generate reliable data of chancroid prevalence as exact etiology of genital ulcer may be confusing.

The specimen of choice for the diagnosis of chancroid is a swab that has been taken from the base of genital ulcer & from undermined edges. Culture from intact bubos has even lower detection rates compared with culture of the ulcer base or culture from ruptured bubos. As *H. ducreyi* dies rapidly outside the human host immediate processing of sample is necessary for its isolation.¹ Microscopy is of limited value as high load of organisms needed. Even though there is low sensitivity (5-63%) and low specificity (51%-99%) of gram stain in GUD cases, it definitely supports the presumptive diagnosis and guides for choosing selective culture media. Culture of the organism from the ulcerative genital lesion remains the gold standard for the diagnosis of chancroid. Many studies have reported 40%-71% sensitivity of different culture media.⁷ Further confirmation of the isolate can be done by sixteen S rDNA PCR method.

Because of the fact of Epidemiological synergy, in the current era of AIDS epidemic, prompt diagnosis of chancroid & other genital ulcerative diseases by microbial culture and molecular techniques have gained immense importance. Presence of chancroid in any population identifies the need for targeted interventions and STD control activities.

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Comparative Study of Various Statin Combinations in Dyslipidaemias

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ABSTRACT

Hyperlipidaemia results from a disorder in the synthesis and degradation of plasma lipoproteins. Dyslipidaemias have genetic and other causes, and are often associated with high fat diet. The lipids that are of relevance in hyperlipidaemias are cholesterol, an essential component of cell membranes and a precursor of steroid hormone synthesis, and triglycerides, an important energy source. They are transported in the blood as lipoproteins. This study involved 120 patients (both male and female) aged between 30 to 80 years, presenting for treatment in the medical outpatient department of GSL General Hospital. The patients were divided into two groups namely Group A and Group B. Group A patients are those who are taking Atorvastatin 10mg with Fenofibrate 160mg and Group B patients are those who are taking Atorvastatin 10mg and Ezetimibe 10mg as Fixed dose Combinations. After thoroughly analyzing results it was understood the patients with Dyslipidaemias had significantly higher lipid profile levels when compared to post treatment values and their statin combinations therapies resulted in significantly lower mean lipid profile values, which was well correlated with the decrease in total cholesterol, Triglycerides, LDL, VLDL and increase in HDL cholesterol levels.

Keywords: *Dyslipidaemias, Ischemic Heart Disease, Hyperlipidaemias, Fenofibrate, Atorvastatin, Ezetimibe*

INTRODUCTION

Dyslipidaemia is a form of a disorder in the synthesis and degradation of plasma lipoproteins. Dyslipidaemias have genetic and other causes and are often associated with fat diet. The cardiovascular diseases obviously are the forerunners of ischemic heart disease, stroke, and sudden cardiac death. Dyslipidaemia is a common feature associated with hypertension. The key features of the dyslipidaemias associated with hypertension and elevated triglycerides and reduced HDL uncontrolled hypertension and presence of complications can come further changes in the lipid profile.

Entry of combination therapies offering targeted forms of treatment⁵

The Framingham Study¹ found a 9% increase in death from cardiovascular disease for each 10mg/dl (0.26 mmol/l) rise in total plasma-cholesterol concentration.

Low plasma concentrations of HDL-cholesterol (below 1mmol/l or 40 mg/dl) are generally associated with increased risk of IHD, whereas high concentrations are protective⁴

Hyperlipidaemia may result from a number of underlying defects and various methods have been used for classification²

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Non pharmacological approach: Lifestyle modifications are the first step for decreasing the risk for atherosclerosis like consist of healthy diet (low fat + high roughage),

weight control, increased physical activity, and smoking cessation. Clinical guidelines recommended drug therapy to be started concurrent with lifestyle changes in patients with IHD or in patients having LDL greater than 130mg/dl.

Pharmacological approach: Against hypercholesterolemia.

First line therapy: More effective in lowering LDL-C, increasing HDL-C.

- 1) **HMG CoA reductase inhibitors (vastatins):** Atorvastatin, Simvastatin, Lovastatin, Pravastatin, and Rosuvastatin.
- 2) **Bile Acid-Binding Resins:** Cholestyramine, Colestipol, Colesevelam.
- 3) **Inhibitors of Intestinal Absorption of Cholesterol:** Stanol esters, Ezetimibe.

Second line therapy: More effective in lowering TG, VLDL.

- 1) **Activators of lipoproteins Lipase (LPL) (Fibrates):**
- 2) **Inhibitors of the Secretion of Apo-B100 containing Lipoproteins:** Niacin (nicotinic acid)
- 3) **Miscellaneous agents:** Probucol, Gugulipid, Omega 3 FAs.

Atorvastatin:

Pharmacodynamics: Partially inhibits HMG-CoA reductase, the rate limiting step of cholesterol synthesis. This induces LDL receptor formation and removal of LDL cholesterol from blood.

Pharmacokinetics

Absorption: Atorvastatin is rapidly absorbed after oral administration. C_{max} occur in 1-2 hrs, the absolute bioavailability is 14% and systemic availability is 30%.

Distribution: Mean volume of distribution is 381 liters. It is 98% plasma protein bound ⁶ A blood/Plasma ratio of 0.25.

Metabolism: Atorvastatin is extensively metabolized to ortho and para hydroxylated metabolites. Atorvastatin metabolized by cytochrome p450 3A4 consistent with increased plasma concentration by co-administration with Erythromycin.

Excretion: Atorvastatin is eliminated primarily in bile following hepatic and/or extra hepatic metabolism. However the drug does not appear to undergo enterohepatic circulation. Mean elimination half life is 14 hrs less than 2% of dose is recovered in urine.

Therapeutic uses: Lowered LDL-cholesterol 20-60% depending on doses and drugs. Raises HDL-C 5-10%. However, at higher doses (>=40 mg) can lower HDL-C, lowers TG's 15-25%.

Side Effects: Abnormal LFT's, Myositis/Myalgias, Rarely Rhabdomyolysis with acute renal failure may develop.³ Toxic epidermal necrolysis apparently caused by Atorvastatin has been reported ⁷

Ezetimibe:

Pharmacodynamics: Selectively inhibits the intestinal absorption of cholesterol and related Phytosterols.

Pharmacokinetics

Ezetimibe is administered orally, its absolute bioavailability cannot be determined because of its aqueous insolubility; the oral absorption ranges from 35-60%. Mean peak concentrations are reached within 1 to 2 hrs, exclusively bound (>90%) to plasma proteins. The co-administration of food with ezetimibe has no effect on the extent of absorption.

Therapeutic uses: Decreases the delivery of intestinal cholesterol to the liver, thereby reducing hepatic cholesterol stores and increases the clearance of cholesterol from the blood rather than inhibiting cholesterol synthesis. Reduces LDL by 18% TG by 5% and apolipoprotein B by 16%.

Side Effects: Well-tolerated with few adverse reactions similar to placebo.

Fenofibrate

Pharmacodynamics: Reduces VLDL synthesis and induces lipoprotein lipase.

Pharmacokinetics:

Fenofibrate is readily absorbed from G.I.T. It is rapidly hydrolysed to its active metabolite which is 99% bound to plasma albumin. Its peak plasma concentration is reached in 4-8hrs. The plasma half life is 20-22hrs. Fenofibric acid is excreted predominantly

in the urine-60-90%, mainly as glucuronide conjugation, 5-25% in faeces. It is not removed by haemodialysis.

Therapeutic uses: Best triglyceride reducing drugs lowers 50% or more in many patients. Raises HDL 15%, reduces CHD patients with low HDL, high TG's.

Side Effects: Nausea and skin rash.

MATERIALS AND METHODS

This study involved 120 patients (both male and female) aged between 30 to 80 years, presenting for treatment in the medical outpatient department of GSL General Hospital. The patients were divided into two groups namely Group A and Group B. Group A patients are those who are taking Atorvastatin 10mg with Fenofibrate 160mg and Group B patients are those who are taking Atorvastatin 10mg and Ezetimibe 10mg as Fixed dose Combinations.

The study was conducted over a period of one year i.e. from July 2008 to August 2009.

An informed consent was taken from all the patients and an approval from the ethical committee of the institution.

Inclusion Criteria

- The patients included are above 18 years of age, any race, and any gender.
- The patients must have the following fasting parameters:
 - LDL-C > 100 mg/dL and < 250 mg/dL.
 - TG level \geq 100 mg/dL and < 400 mg/dL.
 - HDL-C < 30 mg/dL (men) and < 40 mg/dL (women).
- The patients must have one or more of the following:
 - Treated or untreated hypertension defined as blood pressure (BP)
 - 130 mmHg \geq 85 mmHg (systolic / diastolic).
 - Waist circumference > 88 cm (35 inches) for women or > 102 cm (40 inches) for men.
 - Fasting glucose defined as \geq 100 mg/dL but \leq 125 mg/dL.

- The patient has, in the opinion of the investigator, a life expectancy greater than 6 months.
- Female patients must have a negative pregnancy test prior to study enrollment.
- Female patients of child bearing potential must agree to practice an effective barrier method of birth control for the duration of the study.
- Patient must be willing to observe the Step I Diet recommended by the NCEP throughout the study.

Patient must be willing to participate in the study and to complete all follow-up assessments.

Exclusion Criteria

- A patient has a known hypersensitivity to fenofibrate, ezetimibe, or Atorvastatin.
- Patient has a history of pancreatitis or cholelithiasis or a history of gastric or duodenal ulcer within 3 months of study entry.
- Patient has hematologic, digestive, or central nervous system disorder including cerebrovascular disease or degenerative disease that would limit study evaluation or participation.
- Patient has had a myocardial infarction, coronary bypass surgery, or angioplasty within 6 months of study entry.
- Patient has unstable or severe peripheral artery disease within 3 months of study entry.
- Patient has unstable angina pectoris or uncontrolled cardiac arrhythmias.
- Patient has coagulopathy (PT or PTT > 1.25 times control).
- Patient has known impairment of renal function (serum creatinine > 1.5 mg/dL), dysproteinemia, nephrotic-range proteinuria, or other renal disease.
- Patient has active or chronic hepatobiliary or hepatic disease (subjects with AST or ALT > 2 times the upper limit of the central laboratory reference range).
- Patient is pregnant or lactating.
- Patient is receiving hormonal therapy.
- Patient has a known history of thyroid disease or other endocrine abnormality.

- Patient has a history of diagnosed hereditary or acquired myopathy.
- Patient is known to be HIV positive.
- Patient has a history of mental instability, drug or alcohol (as defined by greater than 14 drinks per week) abuse, or subject has been treated for severe psychiatric illness, which, in the opinion of the investigator, may interfere with optimal participation in the study.
- Patient has received a solid organ transplant.
- Patient has a clinically significant, unstable, uncontrolled disease that could be adversely affected by study participation.
- Patient is unwilling or unable to consent to enter the study.

After a detailed history of signs and symptoms routine physical examination was done followed by routine investigations which included ECG, Chest X-Ray, Haemoglobin, TC, DC, ESR, RBS, Urine R/E and M/E.

5 ml of venous blood was collected for the biochemical analysis.

5 ml of venous blood was also collected from healthy controls after informed consent.

Findings

In this present study 106 patients who were hyperlipidemic between thirty to eighty years of age were taken. Out of 106, 49 were given Atorvastatin plus Fenofibrate (Group A) and 57 patients were given Atorvastatin and Ezetimibe (Group B). Measurements of HDL, LDL, VLDL, Triglycerides and total cholesterol were performed in both the groups. The results of this study were analyzed using SPSS software (statistical package of social studies).

Data was expressed as mean values \pm standard deviation (SD). Standard deviation has been taken to indicate whether the variation of difference of an individual from the mean is by chance. Statistical analysis was performed applying independent sample "ANOVA" test to the data of independent samples for Equality of means between the groups & Levenes Test for Equality of variances within the group. The probability value (P) <0.05 was considered as statistically significant because such a difference could commonly occur due to chance and the factor under study may have no influence on the variables.

Mean values of total cholesterol in Group A and Group B

The mean serum total cholesterol levels in the study Group A (A+F) initial 238.2, at 3months 226.1 and at 6months is 210 that implies significantly lowering of total cholesterol levels following treatment. And that of group B (A+E) were 237.8, 222.4, and 201.2 which shows a $p < 0.05$.

Mean values of triglycerides in Group A and Group B

The mean serum triglyceride levels in the study Group A (A+F) initial 275.9, at 3months 243.5 and at 6months is 225 that implies significantly lowering of triglyceride levels following treatment. And that of group B (A+E) were 181.5, 169.2, and 156.4 which shows a $p < 0.05$.

Mean values of HDL in Group A and Group B

The mean serum HDL levels in the study Group A (A+F) initial 30.9, at 3months 33.1 and at 6months is 35.4 that implies significantly raise of HDL levels following treatment. And that of group B (A+E) were 39.2, 40, and 42.5 which shows a $p < 0.05$.

Mean values of LDL in Group A and Group B

The mean serum LDL levels in the study Group A (A+F) initial 156.9, at 3months 145.2 and at 6months is 130.2 that implies significantly lowering of LDL levels following treatment. And that of group B (A+E) were 164.9, 152.9, and 142.2 which shows a $p < 0.05$.

Mean values of VLDL in Group A and Group B

The mean serum VLDL levels in the study Group A (A+F) initial 57.2, at 3months 48.9 and at 6months is 43.5 that implies significantly lowering of VLDL levels following treatment, which shows a $p < 0.05$. And that of group B (A+E) were 39.2, 38, and 35 which shows a $p > 0.05$ which is not statistically significant.

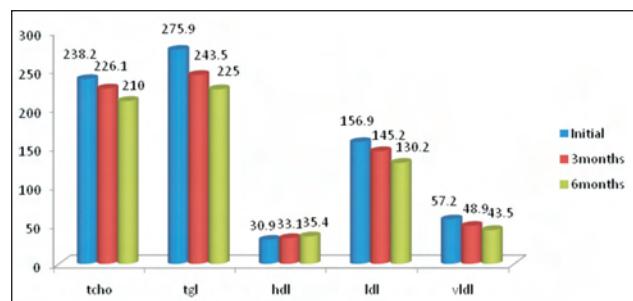


Fig.1. Mean values of Group A (ATORVASTATIN+ FENOFIBRATE) at initial, 3months, and 6months.

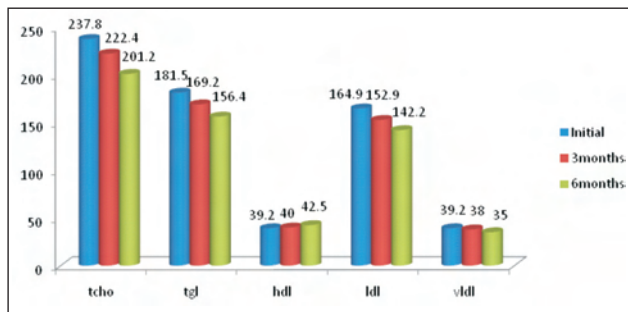


Fig. 2. Mean values of Group B (ATORVASTATIN+EZETIMIBE) at initial, 3months, and 6months.

Alteration in Lipid Profile in Group A (A+F) and Group B(A+E):

The mean total cholesterol in Group A (A+F) at initial, 3months, and 6months was 238.2 ± 5.89 , 226.1 ± 5.37 , and 210 ± 4.91 respectively, ($p < 0.05$).

The mean total cholesterol in Group B (A+E) at initial, 3months, and 6months was 237.8 ± 5.03 , 222.4 ± 4.55 , and 201.2 ± 3.95 respectively, ($p < 0.05$).

The mean triglycerides in Group A (A+F) at initial, 3months, and 6months was 275.9 ± 4.99 , 243.5 ± 5.52 and 225 ± 4.86 respectively, ($p < 0.05$).

The mean triglycerides in Group B (A+E) at initial, 3months, and 6months was 181.5 ± 6.14 , 169.2 ± 5.45 and 156.4 ± 4.79 respectively, ($p < 0.05$).

The mean HDL in Group A (A+F) at initial, 3months, and 6months was 30.9 ± 0.82 , 33.1 ± 0.71 , and 35.4 ± 0.64 respectively, ($p < 0.05$).

The mean HDL in Group B (A+E) at initial, 3months, and 6months was 39.2 ± 1.27 , 40 ± 1.04 , and 42.5 ± 1.01 respectively, ($p < 0.05$).

The mean LDL in Group A (A+F) at initial, 3months, and 6months was 156.9 ± 5.57 , 145.2 ± 3.43 , and 130.2 ± 2.79 respectively, ($p < 0.05$).

The mean LDL in Group B (A+E) at initial, 3months, and 6months was 164.9 ± 4.79 , 152.9 ± 4.09 , and 142.2 ± 3.58 respectively, ($p < 0.05$).

The mean VLDL in Group A (A+F) at initial, 3months, and 6months was 57.2 ± 1.67 , 48.9 ± 1.42 , and 43.5 ± 0.95 respectively, ($p < 0.05$).

The mean VLDL in Group B (A+E) at initial, 3months, and 6months was 39.2 ± 1.92 , 38 ± 1.39

From the above tables it is evident that the mean serum total cholesterol, triglycerides, LDL, VLDL

shows significant decrease in case of group A and in group B, but HDL levels shows increase in both groups. In Group B the VLDL level shows statistically insignificant figures.

CONCLUSION:

The present study was conducted on 106 patients attending the outpatient medical department, GSL General Hospital from July 2008 to August 2009.

Individuals divided into two groups, Group-A and Group-B randomly.

For Group-A cases Atorvastatin with Fenofibrate given daily for 6months and Group-B cases Atorvastatin with Ezetimibe given daily for 6 months and Levels are estimated.

Total cholesterol, Triglycerides, VLDL, LDL, HDL levels were noted before hypolipidaemic agents and 3months and 6 months hypolipidaemic agents therapy.

After thoroughly analysing results it was understood the patients with dyslipidaemias had significantly higher lipid profile levels when compared to post treatment values and their statin combinations therapies resulted in significantly lower mean lipid profile values, which was well correlated with the decrease in total cholesterol, Triglycerides, LDL, VLDL and increase in HDL cholesterol levels.

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BIND Syndrome - A Life Threatening Sequel to Kernicterus

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ABSTRACT

Bilirubin Induced Neurological Dysfunction (BIND) Syndrome is a condition caused by bilirubin toxicity to the basal ganglia, hippocampus and various brainstem nuclei. In the acute phase, severely jaundiced infants become lethargic, hypotonic and suck poorly. If the hyperbilirubinemia is not treated, the infant becomes hypertonic and may develop a fever and a high-pitched cry.[1] The hypertonia is manifested by backward arching of the neck (retrocollis) and trunk (opisthotonus). Surviving infants usually develop a severe form of choreoathetoid cerebral palsy, hearing loss, dental dysplasia, paralysis of upward gaze and, less often, intellectual and other handicaps.[2] Hereby presenting a rare case report of a 9 year old female patient having BIND Syndrome with typical dental manifestations.

Keywords: BIND Syndrome, Kernicterus, Hyperbilirubinemia, Dental Dysplasia, Cerebral Palsy

INTRODUCTION

Parents of a nine year old female patient reported to Department of Oral Medicine, Bapuji Dental College with the complaint of multiple decayed teeth in the upper teeth region of the patient and wished to get them restored. The medical history of the patient dated back to third day post-partum of full term normal delivery, when the patient developed jaundice and hyperbilirubinemia which was more than 20 mg/dL. The patient had delayed milestones, she was not able to speak or hear since birth. The patient had abnormal movement and posture of the limbs. Patient does not have bowel and bladder control, child eats if food is placed in the mouth but never shows active intentional movements. Patient frequently has febrile episodes and cough. There is no history of seizures.

The parents of the patient had consanguineous marriage. The blood group of the mother is "O" Rh positive whereas that of the patient is "A" Rh positive. Two year old male sibling is normal.

On general physical examination the patient is poorly built and nourished. There is generalized wasting and rigid tonicity of the muscles. Superficial abdominal reflexes and deep tendon reflexes could not be elicited due to rigidity. Gross motor milestones like

neck holding, sitting and standing without support not achieved. Milestone of sitting and standing with support is that of two years normal child. Fine motor milestones are not achieved. There is exaggerated lumbar lordotic curvature and bowing of the trunk (opisthotonus) and backward arching of the neck (retrocollis). Severe mental retardation was noted.

The patient weighs 9kgs, height 90cms and Body Mass Index (BMI) of 11kg/m². Respiratory rate was 32 cycles per minute and blood pressure 90/80 mm of Hg.

On extra oral examination patient is dolico-cephalic and dolico-facial with frontal bossing. Emaciation of the face is seen. Depressed nasal bridge is seen. The patient has paralyzes of upward and downward gaze. Rigidity of the neck and facial musculature noted. On intra oral examination patient exhibited involuntary movements of the tongue. On examination of hypoglossal nerve, tongue spasticity was noted. Patient has a complete set of deciduous teeth with all permanent first molars. Teeth show rampant caries and generalized enamel hypoplasia. A provisional diagnosis of kernicterus was made based on medical history and clinical examination.

Hematological examination reveals Hb 10.1 gm%, ESR 26 mm/1st hour and normocytic hypochromic

anemia. Unconjugated bilirubin of 0.5 mg/dl and albumin and globulin ratio of 1.2. Auditory examination by "Brainstem Evoked Response Audiometry" (BERA) test revealed profound bilateral peripheral sensorineural hearing loss.

Patient was then referred to pediatrician who cross examined the patient and arrived at the final diagnosis of BIND syndrome.



Fig. 1. Dolicocephalic, dolicofacial and frontal bossing



Fig. 2. Retrocollis, opisthotonus and generalized hypertonia of the muscles

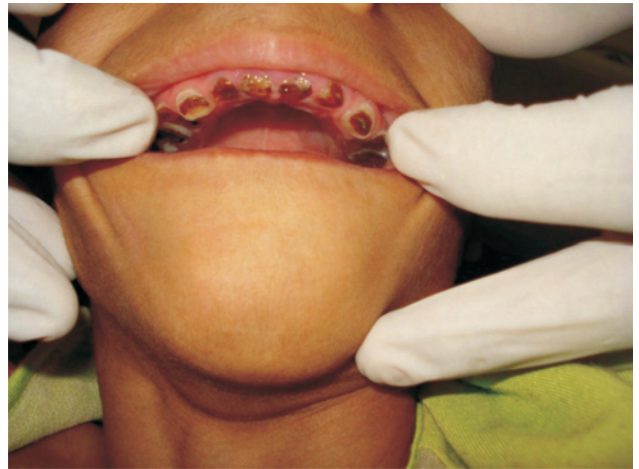


Fig 3. Rampant caries



Fig. 4. Generalized enamel hypoplasia

DISCUSSION

The syndrome of Bilirubin induced neurological dysfunction (BIND) refers to a wide spectrum of disorders caused by severe hyperbilirubinemia that includes kernicterus. The common insult in all cases of BIND is a total serum bilirubin level that exceeds the infant's neuroprotective defenses and results in neuronal injury, primarily in the basal ganglia, central and peripheral pathways, and hippocampus brain stem nuclei for oculomotor function and cerebellum.^[1] It is a common complication of hyperbilirubinemia associated with Rh erythroblastosis fetalis and, occasionally, ABO hemolytic disease.^[3] Bilirubin toxicity manifests as hypotonia followed by hypertonia and/or opisthotonus or retrocollis.^[4]

Risk factors for severe hyperbilirubinemia include Rh and ABO incompatibility, glucose-6-phosphate

dehydrogenase (G-6-PD) deficiency.^[5] Serum bilirubin levels of $e'' 20$ mg/dL pose a high risk for kernicterus, and represent a medical emergency; severe kernicterus is often fatal, and characterized by lethargy, poor feeding, hypertonicity, seizures and apnea; survivors have sequelae in the form of dental dysplasia, cerebral palsy, hearing loss, severe jaundice, lethargy, poor feeding, choreoathetoid cerebral palsy, mental retardation, sensorineural hearing loss, gaze paresis.^[6]

The classic signs of bilirubin encephalopathy in the severely hyperbilirubinemic term infant include increasing hypertonia, especially of extensor muscles, with retrocollis (backward arching of the neck) and opisthotonus (backward arching of the back), or both, in association with varying degrees of drowsiness, poor feeding, hypotonia, and alternating tone. The early presenting signs and symptoms of BIND can be described in terms of mental status, muscle tone, and cry.^[7]

The chronic, irreversible bilirubin encephalopathy in its various presentations may include extrapyramidal movement disorders (dystonia chorea and athetosis), gaze abnormalities, auditory disturbances (especially sensorineural hearing loss with central processing disorders and/or auditory neuropathy), and enamel dysplasia of the deciduous teeth.^[8]

Approximately 55-65% patient of BIND syndrome present with these features. In early stage of BIND hypertonia and retrocollis, which increase in severity and are usually accompanied by a shrill cry and an unexplained irritability alternating with increasing lethargy.^[8]

Visual abnormalities: Ocular movements are affected, most commonly resulting in upward gaze abnormality, although horizontal gaze abnormalities and gaze palsies can also be observed. These deficits result from damage to the corresponding cranial nerve nuclei in the brain stem.^[6]

Auditory abnormalities: Hearing abnormalities are the most consistent feature of chronic bilirubin encephalopathy and can develop in patients who show none of the other characteristic features. Auditory disturbances are almost always present and are both central (brainstem) and peripheral (auditory nerve) in origin. The most common abnormality is high-frequency hearing loss, which can range from mild to severe.^[6] These deficits can result from damage both to the cochlear nuclei in the brain stem and to the auditory nerve, which appear to be exquisitely

sensitive to the toxic effects of bilirubin, even at relatively low levels.^[8]

Some degree of dental enamel hypoplasia and multiple carious teeth can be observed in about three-quarters of the patients with BIND.^[8]

Advanced signs are marked by cessation of feeding, seizures, fever, and coma. Death from acute kernicterus is due to respiratory failure and progressive coma or intractable seizures.^[9]

Patient's history of post-partum jaundice, parents having consanguineous marriage, mother having "O" blood group and patient having "A" and clinical examination revealing mental retardation, delayed milestones, generalized hypertonia, wasting of muscles, retrocollis, opisthotonus, paralysis of upward and downward gaze, sensorineural hearing impairment, involuntary tongue movements and dental enamel hypoplasia strongly favors diagnosis of BIND Syndrome.

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Awareness Regarding Tuberculosis in An Urban Setting of Varanasi

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ABSTRACT

Research question: What is the extent of knowledge about tuberculosis and different components of RNTCP among people residing in an urban area of Varanasi?

Objectives:

1. To assess the knowledge of residents of study area regarding tuberculosis and different component of RNTCP.
2. To identify socio-demographic correlates influencing the knowledge of population about tuberculosis and RNTCP.

Study Design: Community based cross sectional study.

Setting: The Study was carried out in an urban area of Varanasi district.

Results: A total of 667 subjects were interviewed. It was found that about one third of the study subjects were not aware about the correct cause of tuberculosis as germs. The study reveals that 85.8% study subjects had knowledge of DOTS centre and 52.6% knew about DOTS provider. Duration of treatment of tuberculosis ranged from 6 to 9 months was known to 47.0% subjects while 32.0% had no idea about it. Majority (64%) mentioned/ reported that stigma is the main reason for delay in seeking treatment. Still stigma associated with TB is widely prevalent. Approximately 88.0% of them knew that tuberculosis is curable.

Conclusion: Overall knowledge of population of urban area was found to be fairly good. Community based efforts are also required to identify the DOTS provider as major change agent in the demand generation as well as service provision. As the programme is based on passive surveillance, IEC strategies should be tailor made & suited to all the needs of a sub population.

Keywords: Awareness, DOTS provider & Stigma

INTRODUCTION

Tuberculosis is viewed as a problem of suffering of the individual, of the family and of the community & can rightly be classified as one of the biggest public health problems, especially in the under-served areas of country. India has the highest burden of tuberculosis in the world and it accounts for nearly one-fifth (20%) of the total global burden of disease. In terms of mortality, the disease is responsible for more than one thousand deaths per day.

TB programmes all over the world are based on the DOTS strategy. Its objectives are to achieve 85% treatment success and 70% case detection. The annualized total case detection rate still remained high at 203 smear positive cases per 1,00,000 population. The TB control programmes have recognized and addressed those system components in which knowledge and behaviour of not only the patient, but also the general population are the key issues which have a profound influence on the treatment seeking behaviour and completion of treatment. Under the

RNTCP, case detection of tuberculosis mainly relies on the passive reporting of symptoms which to a large extent is dependent on voluntary presentation and motivation of an individual for recognizing the symptoms as well as cultural and social factors. It has been well documented that poor health education and awareness about tuberculosis of the patients and health care providers are one of the fundamental problems which adversely affect the current strategy of tuberculosis control. Lack of adequate information plays a key role as one of the major barriers to treatment compliance. In those settings where high cure rates had already been achieved, community health education was observed to be highly relevant.

Studies reveal that most of the patients are reluctant to admit that they have TB because they fear stigma, and they prefer not to discuss the disease in the presence of family or neighbours. This has been recorded more so in urban than in rural areas. Family support for treatment was more frequent among cured patients than among those who had defaulted. The IEC activities under RNTCP are fashioned as a response of the health system towards such behaviour. They aim to promote better understanding of TB and its cure (KAP), improve the quality of TB patient care (patient-friendly), and to reduce stigma. It is understood that IEC activities at the national and state levels are complementary. While mass media activities are planned at the national level, state-level activities are more specific and need-based, with emphasis on sensitization of the health provider, production of state-specific IEC material, and dissemination of this material to local levels and optimum use of folk media at the district levels. Effective, regular and consistent IEC activities are expected to enhance the performance of the RNTCP.

Based on information collected primarily from 667 people, this paper has tried to discuss some of the important issues related to disease & its program i.e., (i) the current awareness regarding causation, (ii) knowledge regarding delay in seeking the treatment, and (iii) information concerning DOTS centre and DOTS provider in their area.

MATERIALS AND METHOD

This is a cross sectional community based study that was carried between July-September, 2009 in the field practice area of Urban Health and Training Centre, Sundarpur under the auspices of department of Community Medicine, IMS, BHU, situated at the

distance of 2.5 Km. Head of the family or an adult member from every house hold was interviewed with the help of Pre-designed & semi-structured questionnaire. Verbal consent was taken from the subjects before starting the interview. A total of 679 households have been identified in the study area. Due to inaccuracy/ and or unreliability of information, 12 cases are excluded from the analysis. Thus this study deals with 667 persons only. Detailed information has been taken on the socio-economic & demographic characteristics, knowledge of the respondents regarding tuberculosis and other components of RNTCP. The data thus collected was coded and entered into computer in *SPSS version 16 software* package worksheet and analyzed accordingly. The likelihood association of the variables as mentioned above is examined across some important socio-economic and demographic explanatory variables through chi-square statistics.

RESULTS & DISCUSSIONS

Socio-demographic profile of respondents

In the study area, all the interviewed respondents were male. Out of the total 667 interviewed persons, about 45% of respondents were of 30-45 yrs of age followed by 35.5% belong to 46-60 years. All of them were Hindus, majority were OBCs, 16% of the head of the family of respondents were illiterate & only 9.9% were graduate and above. The household income of majority (>80%) of respondents was between Rs 225-1499 & only 17% were having more than Rs 1500 per capita per month. Majority (34.6%) of interviewed head of household were skilled workers only 3.6% were unemployed & 16.2 % were professionals.

Awareness about the cause of TB

No clear pattern was observed between different age group & awareness level about correct cause of TB (Table 1.) although it was found to be more in 31-50 years of age groups of the respondents. The awareness about right cause of TB was not found associated with age of the respondents ($\chi^2=8.86$; d.f.=4). So far as awareness according to caste is concerned, a higher percentage of the people having the correct knowledge were found higher up in the caste hierarchy. Correct knowledge about the cause of TB was found to be significantly associated with caste ($\chi^2=26.97$; d.f.=2). It was observed that majority of those who has per capita income of Rs >1500/ month were well aware of right cause of TB in comparison to

the lower income group (Rs <225/month) i.e. percentage of unawareness was reported less with increased per capita income of the family. This difference was also found to be significant ($\chi^2=45.55$; d.f.=5). This is in accordance with other studies which show that low socio-economic-status group subjects had either no knowledge or incorrect knowledge about tuberculosis & RNTCP (Purohit et.al., 1988).

Impact of education cannot be ignored in assessing and measuring the awareness level of a person because adequate educational attainment is related to 'acceptable' social behaviour (Basu and Basu, 1987). Awareness about correct cause of TB was observed

more (83 percent) in educational categories of graduate & above in comparison to other categories. This is well supported by the study of Purohit et. al., 1988 (in which nearly 85 to 92 per cent of illiterates were either unaware or had mis conceptions about tuberculosis whereas this phenomenon was witnessed in 18 to 29 per cent of the literate group) & Malhotra et. al., 2002. Like educational status, awareness status of the respondents was found to be associated with the occupation ($\chi^2=33.62$; d.f.=8). The respondents who were involved either in professional or semi-professional jobs possessed comparatively better awareness compared to others.

Table 1. Awareness of respondents about the cause of TB with some selected socio-economic & demographic variables

Variables	Awareness about the correct cause (as Germs)			χ^2 value
	Yes (1)	No (2)	Don't Know(3)	
Age				8.86d.f.=4
<30	38(52.8)	19(26.4)	15(20.8)	
31-40	110(65.9)	32(19.2)	25(15.0)	
41-50	129(64.2)	32(15.9)	40(19.9)	
51-60	71(52.2)	34(25.0)	31(22.8)	
>60	55(60.4)	11(12.1)	25(27.5)	
Caste				26.97***d.f.=2
SCs/ST	48(42.1)	36(31.6)	30(26.3)	
OBC	308(62.2)	88(17.8)	99(20.0)	
Others	47(81.0)	4(6.9)	7(12.1)	
Per capita Income				45.55***d.f.=5
<225	14(37.8)	7(18.9)	16(43.2)	
225-374	37(41.6)	24(27.0)	28(31.5)	
375-564	87(54.7)	35(22.0)	37(23.3)	
565-749	56(62.9)	16(18.0)	17(19.1)	
750-1499	118(65.2)	36(19.9)	27(14.9)	
>1500	91(81.2)	10(8.9)	11(9.8)	
Education of the head				54.18***d.f.=5
Illiterate	42(43.3)	31(32.0)	24(24.7)	
Literate/ Primary	69(51.1)	26(19.3)	40(29.6)	
Middle	63(49.6)	28(22.0)	36(28.3)	
High School	91(66.9)	25(18.4)	20(14.7)	
Inter mediate	57(77.0)	8(10.8)	9(12.2)	
Graduate & above	81(82.7)	10(10.2)	7(7.1)	
Occupation of the head				33.62***d.f.=7
Unemployed	5(20.8)	8(33.3)	11(45.8)	
Unskilled	62(54.9)	32(28.3)	19(16.8)	
Semi- skilled	28(56.0)	7(14.0)	15(30.0)	
Skilled	133(57.3)	48(20.7)	51(22.0)	
Shop owner	54(65.1)	15(18.1)	14(16.9)	
Farm owner	22(64.7)	2(5.9)	10(29.4)	
Semi-professional	15(65.2)	3(13.0)	5(21.7)	
Professional	84(77.8)	13(12.0)	11(10.2)	
Total	403(60.4)	128(19.2)	136(20.4)	

χ^2 values calculated after merging the column (3) into (2)

Figures in parenthesis are the percentages; ***p<0.001

Awareness about DOTS centre & DOT provider

The study highlighted that about three-fourth of the total respondents irrespective of their age, caste, income, occupation & educational status knew about the DOTS centre. This may be due to that the existence of DOTS centre in the study area. The education of

head of the household and per capita income of the household was found to be associated with the awareness level ($\chi^2=24.2$; d.f.=5 & $\chi^2=17.77$; d.f.= 5 respectively). This is not in coherence with the findings of Base line KAP study by Swami R.K. (2003) & another study on Social assessment of RNTCP,ORG-MARG (2001-04) done in the general community.

Table 2. Distribution of respondents according to awareness about DOTS centre & DOT provider

Variables	DOTS Centre (%)	DOT Provider (%)	Total (N)
Age			
<30	84.7	45.8	72
31-40	87.4	53.9	167
41-50	85.1	54.7	201
51-60	87.5	52.2	136
>60	82.4	52.7	91
χ^2 value	1.69; d.f.=4	1.80; d.f.=4	
Caste			
SC/ST	78.9	45.6	114
OBC	87.1	51.7	495
Others	87.9	75.9	58
χ^2 value	5.25; d.f.=2	14.97**; d.f.=2	
Per capita income			
<225	70.3	27.0	37
225-374	79.8	41.6	89
375-564	83.0	49.1	159
565-749	85.4	51.7	89
750-1499	91.2	59.1	181
>1500	91.1	66.1	112
χ^2 value	17.77**; d.f.=5	26.11***; d.f.=5	
Education of head of the household			
Illiterate	78.4	48.5	97
Literate/Primary	77.0	43.0	135
Middle	85.8	45.7	127
High school	90.4	54.4	136
Intermediate	89.2	60.8	74
Graduate & above	95.9	71.4	98
χ^2 value	24.20***; d.f.=5	24.26***; d.f.=5	
Occupation of head of the household			
Unemployed	75.0	25.0	24
Unskilled	82.3	39.8	113
semiskilled	82.0	44.0	50
Skilled	85.8	56.0	232
Shop owner	86.7	54.2	83
Farm owner	91.2	55.9	34
Semi-profession	87.0	69.6	23
profession	90.7	63.9	108
χ^2 value	-	25.72**; d.f.=7	
Total	85.8	52.8	667

***p<0.001; **p<0.01

On the contrary, only half of the interviewed respondents knew about DOT providers (table 2). Majority

(91.1%) of respondents having per capita income more than Rs.1500 per month heard about DOT provider as compared to those whose per capita income was less than Rs. 225 per month i.e.70.3%. Education shows positive effect on the knowledge of DOT provider, substantial difference was observed with graduate & above (about 70%) as compared to illiterate (40%) head of households. This difference was found to be statistically significant. Occupation was also found to be associated with the knowledge about DOT provider. It was found that percentage of the respondents having knowledge was more in semi professionals & professionals (>60%) as compared to unemployed (25%).

Awareness regarding cure of TB & Reason/s for delay in treatment

Table 3 shows that majority (87%) of the respondents feels that TB is completely curable irrespective of their age, caste, per capita income,

education & occupational status. This is in concordance with the Base line KAP study by Swami R.K. (2003) & study on Social assessment of RNTCP, ORG-MARG (2001-04). It was found that majority of the respondents in the age group (31-40) and belonging to general caste category had the view that TB is curable. However, caste of the respondents shows no association ($\chi^2= 4.76$; d.f.=2). So far as the association with the knowledge & per capita income of the household is concerned, only about half of the respondents(whose per capita income of the household was less than Rs. 225), higher percentage of respondents reported knowing that TB is curable with more than Rs 1500 ($\chi^2=57.48$; d.f.=5). Education of the respondents was also found to be associated with the information that TB is curable ($\chi^2= 23.26$; d.f.=5). More than 95% of the respondents having their education 'graduate & above' be acquainted with that the TB is curable as compared to about 79 percent in 'illiterate' category.

Table 3: Distribution of respondents according to the knowledge that TB is curable& Social Stigma as main reason for delay in treatment

Variables	TB is curable(%)	Social Stigma as a main reason (%)	Total (N)
Age			
Less than 30	86.1	65.3	72
31-40	92.5	73.7	167
41-50	86.6	59.2	201
51-60	89.7	59.6	136
61-70	79.1	59.3	91
χ^2 value	11.18*, d.f.=4	10.72*, d.f.=4	
Caste			
SC/ST	83.3	58.8	114
OBC	87.9	62.2	495
Others	94.8	84.5	58
χ^2 value	4.76, d.f.=2	12.47**, d.f.=2	
Per Capita Income of the household			
Less than 225	51.4	54.1	37
225-374	83.1	47.2	89
375-564	88.1	64.8	159
565-749	86.5	69.7	89
750-1499	93.9	68.0	181
>1500	94.1h	93.8	112
χ^2 value	57.48***, d.f.=5	15.1*, d.f.=5	
Education			
Illiterate	79.4	59.8	97
Literate or primary	81.5	63.0	135
Middle	87.4	63.0	127
High School	89.7	66.2	136
Intermediate	93.2	68.9	74
Graduate & above	98.0	61.2	98
χ^2 value	23.26**, d.f.=5	2.18, d.f.=5	
Total	87.2	63.3	667

***p<0.001; p<0.01; *p<0.05

When respondents were enquired about the reasons of delay in seeking treatment of tuberculosis, stigma was found to be the most common reported reason for the same irrespective of age, caste, occupation & education of head of household & per capita income. The other reasons 'services are not easily accessible', 'money problem' etc were also reported in the study. About 74% and 65% of the respondents in the age group of (31-40) and < 30 years respectively reported that the stigma is the main reason of delay in seeking treatment of tuberculosis. Caste of the respondents was also found to be associated with the main reason (social stigma) for delay in seeking treatment ($\chi^2=12.47$; d.f.=2). Surprisingly, social stigma is more prevalent in general caste category (about 85 %) as compared to OBC (62.2%) and SC/ST (58.8%). Findings revealed that more than 90% of the respondents whose per capita income of the household was more than Rs. 1500 reported social stigma as a most important reason for delay in treatment. Social stigma was also found to be significantly associated with per capita income ($\chi^2=15.1$; d.f.=5). In our study, stigma as a reason was reported more in the respondents found having their education 'Intermediate & above' as compared to less educated. However 'social stigma' was not found to be significantly associated with educational status of the respondents ($\chi^2=2.81$; d.f.=5). Stigma associated with TB is widely prevalent even in an urban area. Corroborative with the findings of the study conducted in general community by ORG-MARG (2001-2004).

CONCLUSION & RECOMMENDATIONS

Some misconceptions about the disease is still prevalent even in an urban community but awareness about the causation of disease & information concerning RNTCP program i.e., DOTS centre, DOT provider is fairly good. Households with less per capita income, less educated, unemployed & lower caste needs to be informed on priority basis. Stigma related to disease is still widely exists in the community.

Community based efforts are required to identify the DOT provider as major change agent in the

demand generation as well as service provision. As the programme is based on passive surveillance, IEC strategies should be tailor made & suited to the needs of a sub population.

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Unilateral Ulnar Deficiency with Monodactyly: A Case Report

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ABSTRACT

Ulnar deficiency, a complex spectrum of postaxial forearm and hand abnormality, is an infrequently encountered, highly variable, reduction defect¹. It can be defined as a congenital anomaly characterized by missing or foreshortened upper limb resulting from a disturbance in embryonic development affecting the ulnar side².

A case unilateral ulnar deficiency in a 36 year old male is presented. This is a typical example of postaxial defect which is rarer, with the ratio of postaxial: preaxial deficiencies being 1:10 and characterized by greater degree of variations than those on the preaxial side and are usually unilateral compared to preaxial deficiencies³. Unlike preaxial deficiencies, different degrees of ulnar hypoplasias are rarely associated with other syndromes⁴.

Keywords: Postaxial Type of Defect; Ulnar Deficiency

INTRODUCTION

Among congenital deformities, anomalies of limbs are disabling and may include absence/supernumary/ rudimentary bones with or without fusions. The incidence of congenital upper limb defects is reported to be 1:9400 live births⁵. Embryologists have designated the following 3 types of sequences causing the congenital limb abnormalities³.

1. Malformation sequence: Intrinsic defect with the embryo. Eg: Radial dysplasia.
2. Deformation sequence: No intrinsic defect. Only an external force causing a secondary distortion. Eg: Constriction bands
3. Disruption sequence: Healthy embryo is subjected to infections. Eg: TORCH infections

Case History and Observations

A 36 yr old male presented with a short malformed forearm and presence of only thumb on the right side. He was born of a non consanguineous marriage and there was no history of any drug intake or any maternal illness during the pregnancy.

On Examination, the patient was moderately built and nourished. Right upper limb was short and the hand comprised of only thenar eminence with thumb. Other digits were absent.

On clinical examination activity of the said limb was limited with the following Range of movements (ROM): At elbow flexion was limited to 90° with normal extension of 180°. Supination was normal but pronation was exaggerated. At radio carpal joint, flexion was limited to 30° with normal range of extension. At carpo metacarpal joint, there was both limited flexion of 10° and extension of 15°. No movement was possible at interphalangeal joint.

Radiological examination of the affected limb revealed short ulna with absence of distal 1/3rd of shaft. Radius showed bowing with overriding which explained the exaggerated pronation. Only one carpal bone was present articulating with lower end of radius. First metacarpal with proximal and distal phalanges of thumb were present. All other bones of the hand were absent.

Other investigations like X-ray of left upper limb, lateral X-ray of skull, echocardiography and

Abdomino pelvic USG were normal. These were done to rule out other Syndromic associations.

DISCUSSION

Limb development takes place during 3rd to 8th week of gestation. The most critical period of limb development is from 24 to 36 days after fertilization⁴. The upper limb bud appears by 26th day as swelling on the ventrolateral aspect of the embryo. Growth occurs along three axes, and each growth axis is controlled by a key area of developing limb which can be elaborated as follows³.

Signalling Centre	Responsible Substance	Action
Apical ectodermal ridge (AER)	Fibroblast growth factors(FGF)	Proximal-to-distal orientation
Zone of polarizing activity (ZPA)	Sonic hedgehog protein (Shh)	Radial-to-ulnar orientation
Wingless type (WNT) pathway	LMX-1	Dorsal-to-ventral orientation

Several different chemical signals regulate activity of these key areas. These include fibroblast growth factors (FGF) expressed in the AER; Retinoic acid and sonic hedgehog protein together mediate the activity of the ZPA. These chemical signals interact with each other in feedback loops: E.g. WNT induces sonic hedgehog expression, which in turn influences AER via an FGF etc.

Though molecular studies have implicated gene mutation of BMP, Shh, WNT, EN-1 etc, Homeobox genes are the “master genes” that regulate the expression of the other genes⁶.

Ideally, a limb malformation could be assigned to a specific genetic or teratogenic cause. But most human limb defects appear to have a multifactorial etiology, arising from an ill defined interaction between environmental influences and the individual’s genetic makeup. Many environmental teratogens like Acetazolamide, cyclophosphamide, and other drugs exhibit strong teratogenic effects on experimental animal models^{7,8}. Further Histologic and electron microscopic examination in animal models suggested the limb malformations were probably induced by an inhibition of matrix synthesis by

chondrogenic cells, as well as by actual cell death of core cells within the chondrogenic rudiment. Cell necrosis within some of the regions was often transitory, with damage to the rudiment being incompletely repaired by synthesis of matrix in cells near the perichondrium. It seems likely that this mechanism might be significant in partial defects of major longitudinal bones.⁸

The classification proposed by Swanson² is accepted by the International Federation of Societies for Surgery of the Hand (IFSSH). Swanson classified the congenital anomalies of upper limbs into 7 types. Type I- Failure of formation, Type II- Failure of Differentiation, Type III- Duplication, Type IV- Overgrowth, Type V- Undergrowth, Type VI- Constriction band syndromes and Type VII- Generalized anomalies

The present case falls into the category of type I (failure of formation) which can be further subdivided into: Transverse arrest and Longitudinal arrest. This case falls into longitudinal arrest subtype.

- Longitudinal arrest is classified as Preaxial (Varying degrees of hypoplasia of radial side) and Postaxial (Varying degrees of ulnar hypoplasia to hypothenar hypoplasia) varieties.

Bayne further classified postaxial deficiencies as²

- **Type I:** Deficient ulna, minimal deformity
- **Type II:** Partial absence of ulna with fibrous anlage and radial bowing
- **Type III:** Total absence with anlage; radius may be straight
- **Type IV:** Humeroradial synostosis; entire limb is short

The present case falls into the Type II Bayne category.

Treatment of postaxial deficiencies

Generally the management of upper limb partial hemimelia is challenging and largely individualised⁴. The surgical management advised by the concerned specialist for this case was the creation of a 1-bone forearm by fusion of the proximal ulna to the distal radius which could solve the problem of radial bowing. Later a below elbow prosthesis could be prescribed depending upon the response to the surgery. This would create a stable forearm with a better appearance and moderately improved function.

But the treatment should have been started in childhood. The financial limitation of the patient, added to the fact that he is leading a near normal life despite such a gross deformity is responsible for his present neglected status.

In conclusion it can be said that in the present case, the absence of contributory family and drug histories in addition to the non-specific linkage to any environmental factor in this patient led us to believe that this may be a case of sporadic occurrence.



Fig. 1. Showing the short forearm, Presence of Thumb and only Thenar eminence



Fig 2. Note the Normal Lt side and bowing of Radius, Absent Distal third shaft of ulna, Presence of only 1 carpal and 1 metacarpal bone on the Rt side.

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Psychological Profile of Acne Vulgaris among Professional Students

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ABSTRACT

Background: Acne Vulgaris (AV) is one of the most common disorders of skin especially affecting young population. Because of its visible nature and the resulting scarring and hyper pigmentation, acne is associated with a significant psychosocial impact on the student's life that could be much more than any other medical condition. Very few Indian studies have been under taken to study profile of AV amongst professional college students and its psychological impact on them.

Aims & Objectives: Present study was conducted to determine profile of acne vulgaris in professional college students and to study psychological impact of acne among them.

Material & Method: The study was conducted in 240 professional college students with acne vulgaris attending dermatology out patient department of medical college, Greater Noida, India. The parameters included age, sex and age at the time of onset of AV, site of acne, number and type of acne lesions (comedones, papules, pustules, cysts), grading of acne & its psychological impact.

Results: Age group of patients was 16-22 years. Male to female ratio was 1.76:1. Face was involved in all patients followed by back, chest, arms & neck. 84 patients (35%) had grade I acne, 60 (25%) had grade II, 64 (22%) had grade III while 44 (18%) had grade IV acne Vulgaris. Out of total 240 students, 53% had feeling of low self-esteem because of acne and 40% revealed they avoided social gatherings and interaction with opposite sex because of acne. Suicidal ideation was found in 8 students (3%) while 28 students thought acne would lead to difficulty in getting them a good job.

Conclusion: This study brings out the clinical profile of acne Vulgaris amongst students and psychological impact of acne on them.

Keywords: *Acne Vulgaris, Grade of Acne, Psychological Impact*

INTRODUCTION

Acne Vulgaris is a common, chronic inflammatory disease of the pilosebaceous unit producing comedones, papules, pustules, cysts and scars. [1] The majority of patients with acne begin to develop lesions at or around puberty and the onset is on average a year or two earlier in girls than in boys. Grading system

based on the clinical appearance of the lesions, site of lesions and lesion counting are useful in assessing the severity of acne Vulgaris. Owing to its visible nature and the resulting scarring, acne is associated with a significant psychosocial impact on the patient's life that could be comparable to the psychosocial impact of any other major medical condition. [2] On the other hand, psychosocial distress itself can be a provocative factor in acne flares. Acne sufferers also have been shown to have higher levels of anxiety compared with a control population. Studies have further found that school-going adolescents with acne feel embarrassed because of their facial appearance, are socially isolated and more self-conscious than their companions. The disease if left untreated can cause severe emotional distress especially among teenagers.

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MATERIAL AND METHOD

Total 240 professional college students (medical, engineering and business administration) with acne vulgaris attending dermatology out patient department of Medical College, Sharda Hospital, Greater Noida, India, who consented to participate were included in the study. Exclusion criteria was

- Patient with drug induced acne or other acneform lesions.
- Female patients with signs of hyper androgenicity. (Hormonal acne)
- Patients with some other associated chronic medical disorder like hypothyroidism, tuberculosis, diabetes etc.

The study was conducted from December 2009 to June 2010. Parameters evaluated included age, sex, age at the time of onset, duration of lesion, site of lesions, number and type of acne lesions (comedones, papule, pustule, nodule), grading of acne and psychological impact. Acne vulgaris was graded using a simple grading system taking into account the predominant lesion to grade acne, which classifies it into four grades.

Grade I: predominantly comedones

Grade II: predominantly papules

Grade III: predominantly pustules

Grade IV: nodulo-cystic acne & scarring

Questionnaires were provided to students regarding psychological impact of acne on their life.

Simple proportion and percentage was used to represent the data collected.

RESULT

Two hundred forty students having acne vulgaris attending skin OPD were included in the study. The age group, which was studied, was 16- 22 years. Of the 240 patients 84 females (35%) and 148 (65%) were males. Male to female ratio was 1.76:1.

Face was involved in all the patients with acne vulgaris. However, face alone was involved in 202 (65.4%). This was followed by the involvement of the back (28.2%), chest (20.1%), neck (9.4%) and arms (10%).

As shown in chart-1, the most common type of lesion in this study was comedones, present in all

patients. They were followed by papules in 140 (58%) patients while pustules were found in 72 (30%) number of patients. Nodules and cysts were found in 50(21%) patients. (Figure-1)

A total of 84 patients (35%) had grade I acne, 60 (25%) had grade II, 52 (22%) had grade III while 44 (18%) had grade IV acne Vulgaris.

Post-acne scarring was seen in 100 patients (42%). Cheeks were the most common site of post-acne scarring, being involved in all the 100 patients.



Fig. 1. Patient with grade IV acne. Nodules, cysts and comedones are seen

Chart 1: Type of acne lesion

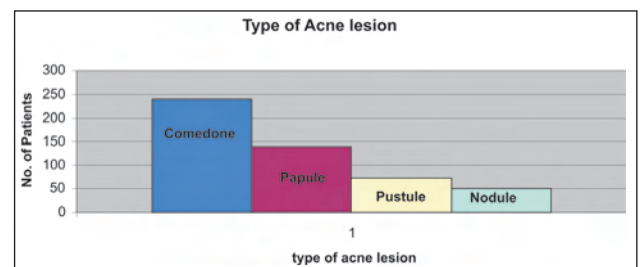


Fig. 2. Post acne scarring

Post-acne hyper pigmentation was observed in 140 patients (58%). Seasonal variation was observed only in 42 patients (18%); 35 patients (15%) exacerbated in summer and 7 patients (3%) in winter.

Psychological impact- Total of 128 (53%) students had feeling of low self-esteem because of acne. Ninety-six students (40%) revealed they avoided social gatherings and interaction with opposite sex because of acne. Forty-nine out of total 84 females (58%) had social inhibition because of acne. Suicidal ideation was found in 8 students (3%). Twenty males and eight females students felt that they had less chance of getting good scoring in their placement interview because of acne. (Refer- chart 2)

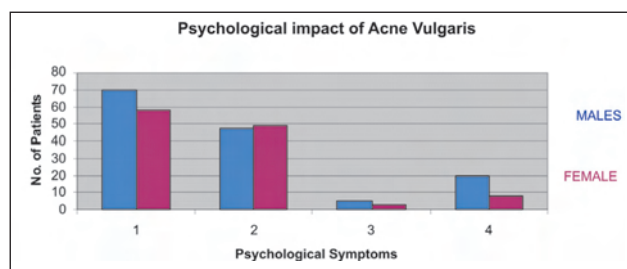


Chart 2: Psychological impact of acne

Psychological Symptoms	Males	Females	Total
1. Felling of low self esteem	70	58	128
2. Social inhibition	47	49	96
3. Suicidal ideation	5	3	8
4. Fear of not getting good placement	20	8	28

DISCUSSION

Acne vulgaris is a chronic condition that is more or less universal in adolescence. An individual is more likely to develop acne than any other skin disease. [1] Adityan B et al. in their study on acne vulgaris in south Indian population reported 1.06% while Al-Ameer and Al-Akloby, had reported 11.2% prevalence of acne patients in the new patients attending their hospitals.[3][4] In our study mean age of presentation was 18 years in females and 19 years in males. Al-Ameer and Al-Akloby [4] also observed similar age of presentation in their study. Kane et al. in their study noted that the mean age of presentation of their patients was 25.58 years. [5] Due to earlier onset of puberty in females, acne appears earlier in them, it reflected in our study also.

Face is the most common site of acne vulgaris, as acne is a disorder of pilo-sebaceous unit, which are found in abundance over face. All of our patients (100%) had involvement of face, which was followed

by back (28.2%). Chest was involved in 20.1%, neck was involved in 9.4% and arms were involved in 10%. Adityan B et al. in their study on acne vulgaris also observed similar findings. Acne vulgaris is a polymorphic disease characterized by presence of comedones, papules, pustules and cysts. Most common lesion found in our study was comedone (100%). Kilkenny et al, Cunliffe et al and Adityan B, in their respective studies also reported that comedones were the most common type of lesion. [3][6][7]

In our study, we graded the severity of acne vulgaris, using a simple and quick system of classification using a four-grade system. [8] In our study grade I acne was most common, as previously established by other studies. As comedone is the most common acne lesion, grade I is rightly the most common grade. Adityan B et al and Kane et al also noticed similar finding in their study. [3][5] Few studies have shown lower incidence of scarring in their acne patients. [6][9] We noticed high incidence of post acne scarring (42%) as well as post acne hyper pigmentation (58%). Adityan B et al, in their study also noticed high incidence of post acne scarring in south Indian population. [3]

Post inflammatory hyper pigmentation is a common complication of acne vulgaris, particularly in pigmented skin. Acne has traditionally been accepted in the society as a self-limiting condition. It is the complication of acne in the form of hyper pigmentation and scarring that warrants timely treatment. We observed high (58%) incidence if post-acne hyper pigmentation. Kane et al (67.7%), Yeung et al (52.6%) and Taylor et al (52,6%) also observed higher post acne hyper pigmentation in their respective studies. [5][9][10] Adityan B et al in their study in south Indian patients observed lower incidence of hyper pigmentation. [3]

Studies done in the past have shown conflicting results regarding seasonal variation in acne vulgaris. In our study seasonal variation was observed only in 42 patients (18%); 35 patients (15%) exacerbated in summer and 7 patients (3%) in winter. Previous Indian study done by Adityan B et al also reported similar findings while Al-Ameer and Al-Akloby in their Saudi Arabian study has shown the reverse trend, that acne exacerbates in winter, and often improves during the summer months. [3][4]

Our study observed great psychological impact of acne on college students. Total of 128 (53%) students revealed feeling of low self-esteem because of acne.

Ninety-six students (40%) said they avoided social gatherings and interaction with opposite sex because of acne. College time is very crucial for students, as it affects overall personality of the student in his future professional life, so acne may have great impact on student's life. Forty-nine out of total 84 females (58%) had social inhibition because of acne. In our study suicidal ideation was found in only 8 students (3%). Similar study done by Rehn LM et al reported much higher (14.5%) suicidal ideation tendency.^[11] This is a positive trend observed by us. Twenty males and eight females students felt that they had less chance of getting good scoring in their placement interview because of acne. Their fear to some extent can be justified as there has been evidence to support that employers are inclined to favour those with clear complexions when making job offers.^[12]

CONCLUSION

To conclude, our study included 240 patients with acne vulgaris. Face was involved in all patients followed by back, chest, arms & neck. 72 patients (30%) had grade I acne, 60 (25%) had grade II, 64 (27%) had grade III while 44 (18%) had grade IV acne Vulgaris. Out of total 240 students, 53% had feeling of low self-esteem because of acne and 40% revealed they avoided social gatherings and interaction with opposite sex because of acne. Suicidal ideation was found in 8 students (3%) while 28 students thought acne would lead to difficulty in getting them a good job. Thus acne vulgaris has lot of negative psychological impact on students, which included low self-esteem, social inhibition and fear of not getting a good job. Our study thus brings out the clinical profile and psychological impact of acne vulgaris in students attending a teaching hospital in north India.

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Conflict of Interest: None.

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Dilaceration-Case Series, Review of Literature and Clinical Considerations for Management

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ABSTRACT

Dilaceration is a dental anomaly characterized by an angulation or bend in root or less frequently in the crown of tooth. This condition is thought to be caused by trauma during the period in which the tooth is forming, with the result of tooth is formed at an angle. This article presents case series, review of literature and clinical implications of dilacerations with the techniques for successful management of dilacerated teeth.

Keywords: Dilacerations, Trauma, Clinical Implications

INTRODUCTION

Dilaceration is an abnormal angulation or bend in the root or less frequently in the crown of tooth. Term dilaceration (Latin- dilacero = tear up) was first used by Tomes in 1848.^[1] Moreau used the term *scorpion tooth* for dilacerated tooth.^[2] Dilacerations has been coded as ICD -9- CM 520.4 according to the International Classification of Diseases.^[3] Dilacerations result from the displacement of the crown of the incisors usually still without roots, in a vestibular direction, while root growth is still progressing in a cranial direction.^[4]

Definition

According to Tomes- An angulation or a sharp bend or curve in the root or crown of formed tooth or a deviation or bend in the linear relationship of a crown of a tooth to its root.^[1]

According to some authors, a tooth is considered to have a dilaceration toward the mesial or distal direction if there is a 90 degree angle or greater along the axis of tooth or root.^{[5][6]}

According to others it is a deviation from the normal axis of the tooth of 20 degrees or more in the apical part of the root.^[7] Some other authors consider distal curvature of apical third of root as dilaceration while others may not.

Tooth dilacerations may be asymptomatic or revealed in radiograph taken for the diagnosis of missing permanent tooth or prolonged retention of primary tooth, or presented as apical fenestration of labial cortical plate. Tooth can lose its eruptive pathway, becoming ectopic and even unerupted, because root direction is not in accordance with crown direction. The further apical and milder the dilaceration is, the greater the chance is for spontaneous eruption.^[8] Those that achieve eruption often follow an altered path and present in a labial or lingual position. Many of the affected teeth, especially anterior mandibular teeth are nonvital and associated with periradicular inflammatory lesion, typically altered posterior teeth demonstrates involvement of apical half of root and frequently do not exhibit delayed eruption.^[9]

Etiology

Two possible etiologies are suggested for dilacerations and classified as trauma and idiopathic reasons. The most widely accepted cause is mechanical

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trauma to primary predecessor tooth, which results in dilacerations of the developing succedaneous permanent tooth, tooth germ is placed in such a way that the remainder of the permanent tooth germ forms at an angle to it. Although a corroborating history may be absent, majority appears to arise after an injury that displaces the calcified portion of tooth germ and the remainder of tooth is formed at an angle. Damage frequently follows avulsion or intrusion of the overlying primary predecessor, an event that normally occurs before 4yrs of age. Less frequently bend develops secondary to the presence of an adjacent cyst, tumor or odontogenic hamartoma.^[9]

An idiopathic developmental disturbance is proposed as another possible cause in cases that have no clear evidence of traumatic injury. Other possible contributing factors that have been reported include scar formation, developmental anomaly of the primary tooth germ, facial clefting, advanced root canal infections, ectopic development of tooth germ and lack of space, the effect of anatomic structures, the presence of an adjacent cyst, tumor, or odontogenic hamartoma, orotracheal intubation and laryngoscopy, mechanical interference with eruption, tooth transplantation, extraction of primary teeth and hereditary factors.^[10] Some syndromes and developmental anomalies such as Congenital ichthyosis^[11], Smith Magenis syndrome^[12], hypermobility type of Ehler- Danlos Syndrome^[13], Axenfeld-Riege Syndrome^[14] have been associated with root dilacerations.

Curves or bends may occur anywhere along the length of the tooth, sometimes at the cervical portion, at other times midway along the root or even just at the apex of the root depending upon the amount of root formed when the injury occurred. Most frequently involved teeth are permanent maxillary incisors followed by mandibular anterior dentition. Von Gool emphasized that such an injury to the permanent tooth, resulting in dilacerations often follows traumatic injury to the deciduous predecessor in which that tooth is driven apically into the jaw. The age of patient and the direction and degree of force appear to determine the extent of the tooth's malformation.^[15]

Crown dilacerations are less common than root dilacerations, and they usually occur in maxillary permanent incisors because of their close position to primary incisors where many traumatic injuries occur. The injuries to the primary dentition that can result in crown dilacerations are avulsion or intrusion. Crown dilacerations with palatal angulation of the crown

occur most commonly in upper incisors, whereas labial angulation is more common in lower incisors^[16]. [Figure-1a, 1b]

A recent study showed that root dilacerations in incisors, canines and premolars is most common in the apical third of the roots. Dilacerations with the middle third of the root is more frequent in molars, whereas dilacerations within the coronal third of the root is most commonly seen in third molars.^[6] Most publications concerning dilacerations are case reports, and only a few have reported the prevalence of dilacerations with the frequencies ranging from 0.32% to 98% of teeth. Table-1 summarized the prevalence of dilaceration in teeth according to various in-vivo and in-vitro studies.^[5, 6, 7, 17, 18]

CLINICAL IMPLICATIONS

Diagnosis

Crown dilacerations may be diagnosed clinically. Altered maxillary anterior teeth frequently demonstrate the bend in the crown or the coronal half of the root; failure of eruption is often seen. Affected mandibular incisors also exhibit involvement of the crown or superficial portion of the root, but more frequently they erupt into full occlusion.^[9]

Root dilacerations can be diagnosed with periapical or panoramic radiographs. If root bend mesially and distally, it will clearly evident on radiograph, but if bends buccally or lingually, central rays passes approximately parallel with the deflected portion of the root. The dilacerated portion, then, appears at the apical end of the unaltered root as a rounded opaque area with a dark shadow in its central region cast by the apical foramen and root canal and will give *target or bull's eye appearance* on radiograph. Periodontal ligament space around this dilacerated portion may be seen as a radiolucent halo, and the radio-opacity of this segment of root is greater than the rest of the root.^[19] Additional radiographs from different angles are quite useful in diagnosis. Computed tomography scan is helpful to determine the exact location and degree of angulation of dilaceration.^[20] Occasionally dilacerated roots are difficult to differentiate from fused roots, condensing osteitis, or a dense bone island.^[19]

Endodontic considerations

Available literature lacks informative research on techniques that facilitates endodontic treatment of

dilacerated teeth. Diagnosing root dilacerations before commencing endodontic treatment is essential to allow proper and safe use of endodontic instruments within the curved roots. In dilacerated teeth, accepted basic endodontic techniques must be strictly followed, that is, good preoperative and working radiographs, straight line access as possible to the apical third of the canal, precurvature of files and thorough irrigation.

An adequate access preparation is must for successful endodontic management of dilacerated teeth. Failure to recognize multiplanar nature of curvature of dilacerated root might result in unfavorable outcomes in endodontic treatment. Enough tooth structure must be removed to allow direct access to the apical foramen and to allow the endodontic instruments to be moved freely with in the canal. In dilacerated teeth, it is difficult to explore and negotiate root canals because of apposition and resorption of root canal dentin walls. Careful exploration of subpulpal wall with endodontic explorer (DG-16) may give information about the location of canal orifices.

Pre-enlargement of the coronal half to two thirds to allow files unimpeded access gives the clinician better tactile control in directing small adequately precurved negotiating files into the delicate apical third. Gates-glidden drills, ProFile orifice shapers, GT accessory files, The ProTaper SX, FlexMaster Intro file, 0.08 and 0.10 taper RaCe files are suggested for coronal pre-enlargement.^[21] Scout file presents critical information about the angulation and curvature of the root. That curve should be maintained throughout the cleaning and shaping procedure by the use of precurved files and extent of precurvature required will depend on level of curvature, severity of curvature, size of the file and the depth at which the file is to be used in root canal. As the size of the file progressively increases, tendency of straightening with in the canal increases and so the chance of transportation of the canal increases. Dulling the flutes on the outer portion of the apical third and inner portion of the middle third of curved instrument prevents transportation of the apical foramen and overinstrumentation in dilacerated area.^[22] Hand Ni-Ti files is especially useful to maintain curvature of root canal without causing blockage of the canal. Ledging, zipping, perforations and instrument breakage are the common problems encountered with stainless steel instruments size more than # 20. All root canal instruments are to be considered as disposable as curvature of instrument is the potential site of

fracture. Ni-Ti rotary file may not be suitable for negotiation of severely curved root canals.^[23]

Many dilacerated teeth are nonvital and associated with periapical inflammatory lesions, so a multi-visit endodontic treatment should be followed with the use of intracanal medicaments to disinfect root canal system, especially in the inaccessible areas of the root canals to the instrument to be used. In obturation process, flexible Ni-Ti spreaders might be useful for lateral compaction technique, but only useful in mild to moderate dilacerations cases.^[23] Severe root bends are difficult to obturate with cold compaction techniques so use of warm or thermoplasticized gutta percha techniques might be more applicable.^[24]

Prosthetic treatment

As long term prognosis of many dilacerated teeth is poor, their extraction and replacement may be a part of the long term treatment strategy, but, dilacerated tooth should be extracted after establishing proper alveolar growth in vertical as well as in labio-lingual direction by bringing in proper alignment in dental arch through orthodontic or surgical intervention, to make it more suitable for future implant or conventional bridge placement. Retention of even a very short rooted tooth will preserve the normal shape and architecture of the alveolar ridge.

One modified technique is the utilization of the crown of the extracted tooth as its own space maintainer or as an adhesive bridge construction while facial growth is active. The definitive restoration with a bridge or an Osseo-integrated implant would be recommended later when facial growth is complete.^[25]

Dilacerated roots concentrates stress in the supporting structures so if dilacerated tooth has to be used as an abutment splinting to an adjacent tooth might be required for stability and longevity of prosthesis.^[26]

For dilacerated anterior teeth, from the esthetic point of view, most of the coronal tooth structure needs to be removed and a definitive prosthesis will need to be provided.

Orthodontic and combined orthodontic- surgical intervention-

If extraction of the impacted dilacerated tooth and restoration with a bridge or an implant is planned, orthodontic traction of that tooth into the proper position should be performed initially to improve

esthetics and to achieve and maintain an acceptable bone height.^[27] If the crown is impacted, it should be surgically exposed and an eyelet bonded to it for forced eruption. Care should be taken not to apply much force initially as orthodontic treatment of dilacerated teeth might result in severe root resorption. Other methods with a magnet system have been described with good results.^[28] The closed-eruption technique is considered a good surgical choice for unerupted teeth, considering the long-term esthetic-periodontal status.^[29]

In some cases orthodontic therapy is not indicated because of extensive deformation of the affected tooth or the possibility of perforation of the buccal alveolar ridge on repositioning by the malpositioned root. Severely dilacerated tooth requires surgical intervention. Dilaceration more close to apical third, offers better prognosis, because the apical third may be surgically amputated without much compromising root length. Critical portion of the tooth for the dilacerations to occur is coronal part of the root, close to cemento-enamel junction. Since the majority of the root will need to be amputated during procedure, leaving the tooth with a nonviable coronal remnant of the root. Such a tooth will need to be extracted.

Surgical intervention

Surgical repositioning is a simplified treatment for dilacerated incisors, especially valuable in cases of difficult-to-treat impaction. Early loss of a dilacerated maxillary anterior tooth may result in midline shift, the space's being occupied by an adjacent tooth and, most critically, loss of alveolar height in the anterior region of the maxilla. If the extraction option is chosen, the space can be closed orthodontically if the child has crowded dentition or accompanying Class II malocclusion or replaced with a fixed prosthesis. The most complicated situation is root dilaceration with the crown in an inverted direction; thus, the tooth always is impacted. Intra-alveolar surgical uprighting and anterior tooth transplantation should be considered as alternative to surgically extracting the tooth.^[30-31]

Extremely deformed teeth require surgical removal. Extraction of the dilacerated tooth could result in fracture. So a preoperative radiograph is must before any treatment planning.

Prognosis

Prognosis is varying according to the severity of deformity. Altered deciduous teeth often demonstrate

inappropriate resorption and results in delayed eruption of permanent teeth. Extraction of deciduous dilacerated tooth is indicated when necessary for normal eruption of the successor tooth. Patient with minor dilacerations of teeth require no therapy. Those teeth that exhibit delayed or abnormal eruption may be exposed and orthodontically moved into position. A multi-disciplinary approach involving general dentistry, orthodontic, endodontic, oral surgery considerations to treat a tooth with root dilacerations has been suggested.

Case

A 22 yrs old female patient with a noncontributory medical and familial history came to dental office for esthetic correction of a mandibular incisor. On presentation tooth was asymptomatic, clinical crown had a bend at 105 degree angle to the root of the tooth, with mesiolabial inclination (Figure-1a, 1b). Her mother gave history of trauma due to fall from roof of her house during play at the age of about 4 yrs with avulsion of one mandibular anterior tooth. She didn't receive any dental treatment at that time. Vitality tests showed no response to thermal and electric pulp testing. Radiographic examination revealed a mature tooth with complex root morphology and periradicular radiolucency (Figure-1c) Clinical diagnosis of dilacerations and asymptomatic chronic periapical abscess was established.

Access to pulp chamber was made; two poorly visible and narrow root canal orifices were detected with DG-16 explorer. Canal were negotiated, working length was established by taking periapical radiograph with files placed in root canals. Canals were instrumented with copious irrigation with 2.5% sodium hypochlorite solution, distilled water and 2% Chlorhexidine solution. EDTA gel (Glyde/Dentsply) was used as a lubricant. Final flushing was performed with 5ml normal saline for each canal. Canals were then dried with paper points and intracanal medicament of calcium hydroxide given and access cavity was sealed with glass ionomer cement (GC fuji). After 3 wks, calcium hydroxide was removed and canals were obturated with gutta-percha cones by using a lateral compaction technique and AH plus (Dentsply/ DeTray, Konstan Z, Germany) was used as a sealer (Figure-1d). A radiographic control revealed satisfactorily obturated root canals. Access cavity was restored with composite resin by using acid etch technique. After that full coverage metal ceramic crown was provided for the esthetic correction. (Figure-1e)

In the present case young female gave history of fall from roof of house during play at the age of about 4 yrs that exactly coincides with the age of

development of the root of central incisor and completion of the crown. So the bending at the cemento-enamel junction is justified by the history.

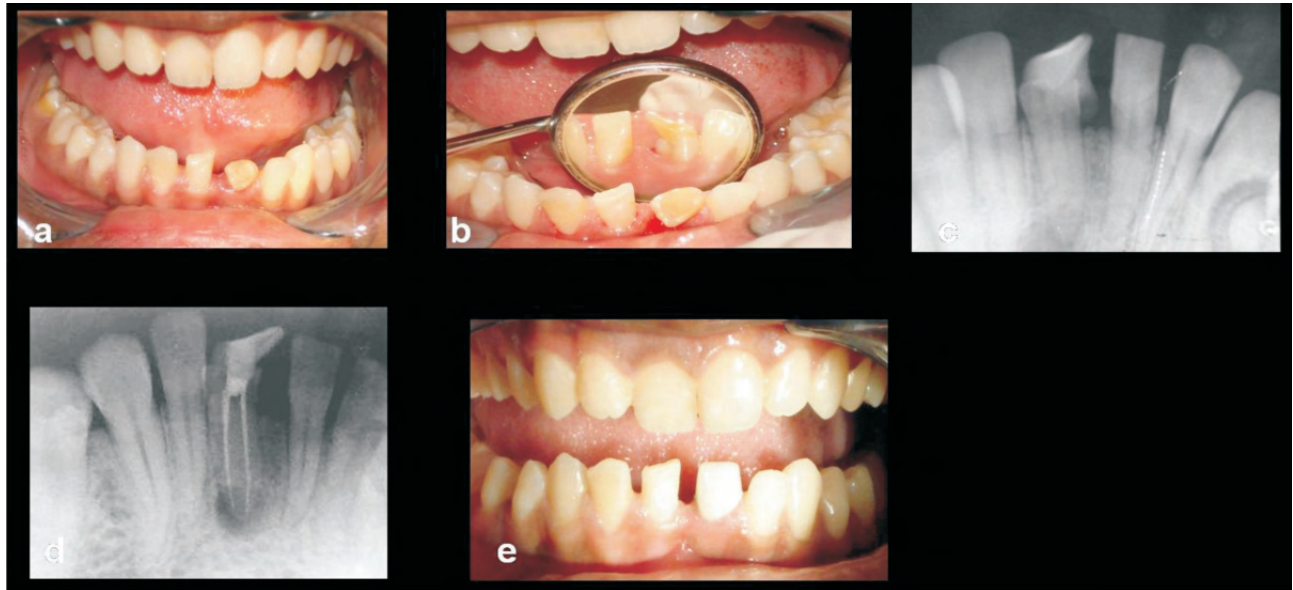


Fig. 1(a). Preoperative Intraoral photograph of dilacerated mandibular incisor, (b). Intraoral photograph showing lingual view of dilacerated tooth, (c). Preoperative radiograph of dilacerated tooth, (d). Postoperative radiograph, (e). Esthetic correction of dilacerated tooth by metal ceramic full coverage crown.

Case II

A 27 yr old male came to dental office with the complaint of pain in mandibular right posterior tooth region. Intraoral examination revealed deep caries with mandibular right third molar. On clinical and radiographic examination diagnosis of acute irreversible pulpitis was established. Periapical radiograph showed sharp bend at apical third of distal root and bend in middle third of mesial root. (Figure-2a)

Access cavity preparation was done, three root canal orifices mesiobuccal, mesiolingual and distal

were found. Working length was established with radiograph. Coronal third was prepared first with Gates-glidden drills upto middle third of all three canals. Cleaning and shaping was done up to k file # 20 with precurved stainless steel files under copious irrigation with sodium hypochlorite. Glyde was used as lubricant. Then cleaning and shaping of all the canals was done with hand Ni-Ti files. Temporary dressing was placed, 3 days later on, after symptomatic relief, all canals were obturated with gutta percha using cold lateral compaction technique. Access cavity was restored with silver amalgam restorative material. (Figure- 2b)

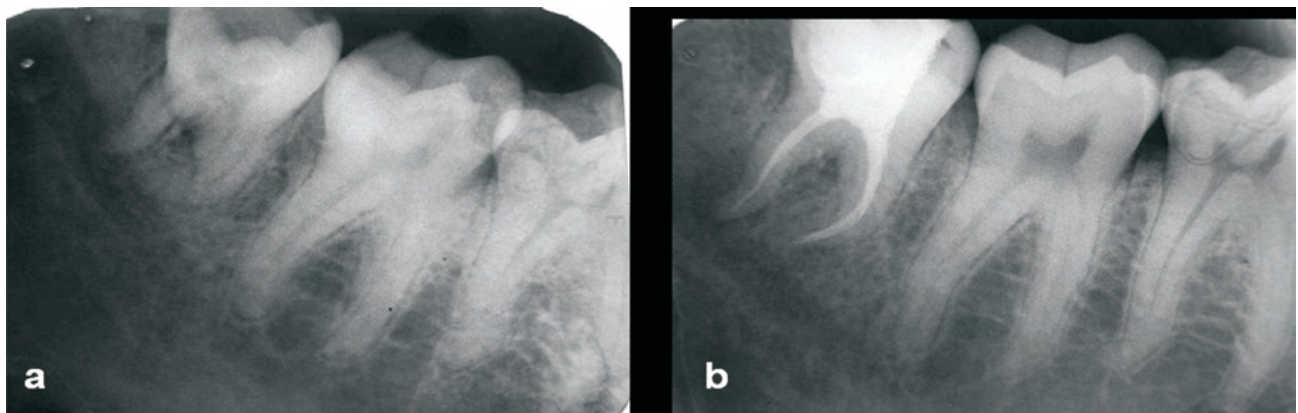


Fig. 2(a). Preoperative radiograph of mandibular third molar showing curvature in apical third of distal root and a sharp bend in middle third of mesial root, (b)- Postoperative radiograph of tooth.

Case III

A 38 yr old male patient was referred to endodontic department for the root canal therapy of mandibular right first molar. Proximal carious lesion was present with the tooth and was sensitive to percussion. Periapical radiograph revealed a sharp bend at the apical third of distal root (Figure-3a). Diagnosis of chronic apical periodontitis was established, root canal therapy was initiated. After access cavity preparation, three canal orifices mesiobuccal, mesiolingual, distal were located and working length was confirmed with

periapical radiograph cleaning and shaping of mesial canals were done with stainless steel K-file. Cleaning and shaping of distal root was done with crown down method. Coronal third was prepared with gates-glidden drills; middle third was prepared with stainless steel K-files with EDTA used as lubricant. Apical third was lastly prepared with Hand Ni-Ti files. 3% Sodium hypochlorite was used as irrigant. Obturation was done with lateral compaction technique using gutta percha and zinc oxide eugenol based sealer. Access cavity was sealed with silver amalgam restorative material (Figure-3b).

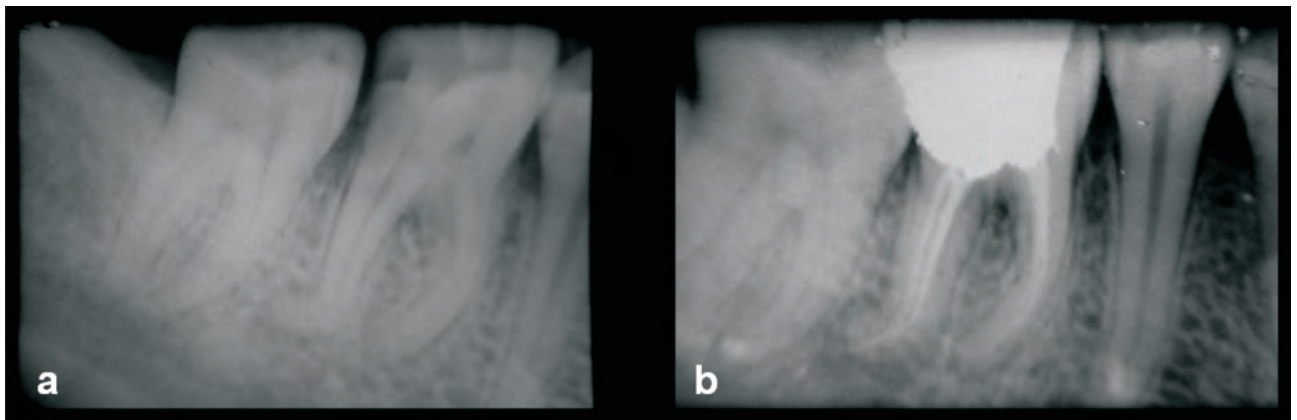


Fig. 3(a). Preoperative radiograph of mandibular first molar showing a sharp bend in apical third of distal root, (b)- Postoperative radiograph of tooth.

Conclusion

Dilacerated teeth pose a number of challenges in diagnosis and management, so its presence should be

identified before the initiation of treatment with the consideration of further restorative challenges for long term retention of such teeth in oral cavity.

Table 1. Prevalences of dilacerations in teeth: Summary of studies in dental literature

Author	Year	Tooth	Type of study	Percentage
Chohayeb	1983	Max lateral incisors	In-vitro visual inspection	97.90%
		Max lateral incisors	In-vivo periapical radiography	98%
Hamasha et al (Jordian population)	2002	All teeth	periapical radiography	3.78
Malcic et al (Cratian Population)	2006	Max central incisor	periapical radiography	1.3
			panoramic radiography	0.53
		Max lateral incisor	periapical radiography	7
			panoramic radiography	1.43
		Max Canine	periapical radiography	3.6
			panoramic radiography	0.74
		Max first premolar	periapical radiography	4.5
			panoramic radiography	3.32
Max second premolar	periapical radiography	6.7		
	panoramic radiography	4.1		
		Max first molar	periapical radiography	15
			panoramic radiography	7.01

Table 1. Prevalences of dilacerations in teeth: Summary of studies in dental literature (Contd.)

Author	Year	Tooth	Type of study	Percentage
		Max second molar	periapical radiography	
			panoramic radiography	11.4
		Max third molar	periapical radiography	7.84
			panoramic radiography	8.1
		Mand central incisor	periapical radiography	8.46
			panoramic radiography	1.7
		Mand Lateral incisor	periapical radiography	0.42
			panoramic radiography	0
		Mand canine	periapical radiography	0.32
			panoramic radiography	1.2
		Mand first premolar	periapical radiography	0.93
			panoramic radiography	2.1
		Mand second premolar	periapical radiography	1.42
			panoramic radiography	1.5
		Mand first molar	periapical radiography	1.99
			panoramic radiography	2.2
Mand second molar	periapical radiography	0.45		
	panoramic radiography	1.7		
Mand third molar	periapical radiography	1.99		
	panoramic radiography	24.1		
		30.92		
Author	Year	Tooth studied	Type of study	percentage
Chistopher et al (Nigerian population)	2009	All teeth	Periapical radiography	2.97
Ozkan et al (Turkish population)	2010	Max central incisor	Periapical radiography	0
		Max lateral incisor		3.3
		Max Canine		1.1
		Max first premolar		3.2
		Max second premolar		5.1
		Max first molar		6.7
		Max second molar		5.4
		Max third molar		7.4
		Mand central incisor		0
		Mand Lateral incisor		0
		Mand canine		1.3
		Mand first premolar		4.6
		Mand second premolar		4.3
		Mand first molar		5.3
Mand second molar		5.5		
Mand third molar		12.8		

Interest of Conflict: None

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Positive Publication Bias in Indian Journals of Surgical Origin

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ABSTRACT

Background: Positive publication bias is the tendency to publish research with a positive outcome more frequently than research with a negative outcome. The work with positive results in any scientific field appears to be highly prevalent in peer reviewed journals all over the world. As far as the study of positive publication bias in medical field is concerned, few works have appeared in western countries but this study is unique in context of Indian medical journals of surgical origin

Material and Method: Five Indian peer reviewed journals of surgical origin were selected for the study. The period of study was from 2005 to 2009. Only original articles were selected for the study. The abstracts of all original articles were downloaded and evaluated by two co-authors of two different Institutes and categorised into positive, negative and neutral based on the criteria in Table 1. In case of any difference of opinion, the whole article was downloaded and studied by first and both the co-authors again until the decision was taken with majority.

Results: Out of 383 original articles studied 333 had positive result. Only 9 articles were negative in true sense and 41 fell into neutral category. So the percentage of published positive articles in these journals was 86.94 and of true negative articles was only 2.34%.

Conclusion: The positive publication bias for articles published in Indian journals of surgical origin are quite alarming. The bias could be at the level of author, editor or peer reviewer. It is not possible from this study to find out the exact contribution of this bias at different levels unless authors, editors and reviewers take part honestly in the study. This bias ultimately affect the data of evidence based surgery. Prevention of publication bias is important both from the scientific perspective and from the perspective of those who combine results from a number of similar studies (meta-analysis). It is need of the time that steps should be taken to give adequate representation to honest work with negative results in peer reviewed journals.

Keywords: Positive Publication Bias, Responsible Writing, Articles with Negative Results

INTRODUCTION

In the letter to the editor of Indian Journal of Surgery in response to the editorial 'Responsible Writing'¹ I wrote, 'But, sometimes even after putting

honest efforts one may not come up with any fruitful observations and then what? Will such work find a place in any journal? Rarely, I think. This may then compel one to manipulate the data and to become dishonest².' Ever since then the thought of positive publication bias was hovering in my mind. I started searching the English literature and found that a few work has been done in this field abroad^{3,4,5} but in India probably this type of work is quite new. Some critics have gone so far as to claim that publication bias results in 'most published research findings' being false. Many

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studies in a given area of research may be conducted but never reported. This is known as file drawer effect⁶. The effect of this is that published studies may not be truly representative of all valid studies undertaken, and this bias may distort meta-analyses and systematic reviews of large numbers of studies on which evidence-based medicine, for example, increasingly relies⁷.

MATERIAL AND METHOD

Five peer reviewed reputed Indian medical journals of surgical origin were randomly selected for the study. They were

- Indian Journal of Surgery
- Indian Journal of Urology
- Journal of Minimal Access Surgery
- Journal of Indian Association of Paediatric Surgery
- Indian Journal of Plastic Surgery

The official websites of all the journals provided with the necessary inputs^{8,9,10,11,12,13}. The period of study was from 2005 to 2009. Only original articles were selected for the study. The abstracts were downloaded and blinded. Three sets of abstracts were generated randomly. The sequence of abstracts varied in all the sets. One set each was sent to each co-author. They were given the task of going through the abstracts carefully and classify it into positive, neutral and negative categories as per the criteria led down in Table1. The co-authors were not aware of the study design. The results were analysed. In case of difference between the co-authors, the whole article was downloaded and sent to co-authors for re-evaluation. The first author also evaluated the whole article. Now the decision to categorise the articles were taken with majority. Only in 13 articles was there difference of opinion among co-authors. After re-evaluation decision on 9 articles were taken with consensus. In the rest 4 articles decision had to be taken by 2:1 ratio. In all these 4 articles the confusion was whether it should be grouped under neutral or negative.

Table 1 Showing the criteria used for classifying the articles into positive, neutral and negative category

POSITIVE	NEGATIVE	NEUTRAL
statistically significant result(P<0.05)	statistically insignificant result(P>/=0.05)	
straight forward positive conclusion	straight forward negative conclusion	
perceived as important or striking by the author	perceived as unimportant or unstriking by the author	
significant difference between study groups with positive recommendation	significant difference between study groups with negative recommendation	no clear conclusion or recommendation
favourable clinical outcome	unfavourable clinical outcome	
identification of variables which contribute to favourable outcome	identification of variables which contribute to unfavourable outcome	

RESULTS

Out of 383 original articles studied, 333 had positive result. Only 9 articles were negative in true sense and 41 fell into neutral category[Table2]. So the percentage of published articles with positive conclusion in these journal was to the tune of 86.94%. There was no confusion regarding categorising the article in positive group. However there was confusion over 4 articles regarding putting them into neutral or negative group. Even after putting neutral and negative groups together, the percentage came to only 13.06, which was minimal compared to the 86.94% for articles with positive result. Looking at the sample size and the variables there was no need for any statistical analysis.

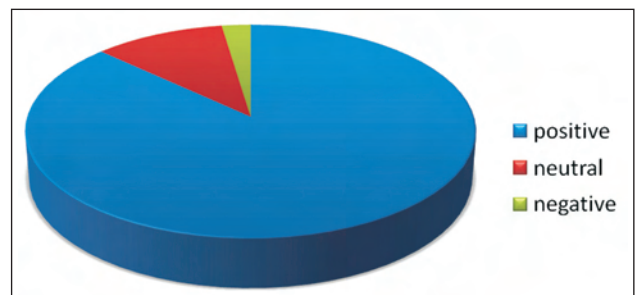


Table 2 Showing break-up of 383 original articles into positive(n=333), neutral(n=41) and negative(n=09) group

DISCUSSION

Publication bias is the tendency for certain kinds of studies, typically those showing a significant

positive result in a clinical trial or an observational study, to receive more favourable publication decisions than equally well-conducted studies that report a negative or neutral result. Any discussion on positive publication bias is incomplete without having an understanding of the process of publication in peer reviewed journals. After submission of the articles, majority are rejected by the editorial board prior to peer review on its face value. A JAMA study reported a 50% editorial rejection rate for that journal¹⁴. After this the filtered articles are sent for peer review. So the positive publication bias can be at the level of author, editor or peer reviewer. We agree that without taking into account these factors this study remains incomplete. In a study on submitted manuscripts, the authors did not find a statistically significant difference in publication rates between those with positive vs negative results. The study concludes that authors are less likely to submit manuscripts reporting negative results to journals¹⁴. This is known as File drawer effect⁶. In yet another study there was no evidence of publication bias on the part of the scientific reviewers as regards direction of study outcome and scientific quality of manuscript was found to be more important in terms of the accept/reject decision. This was an encouraging result for the referral process¹⁵. At whatever level the bias may be, it was apparent from our study that research reporting negative outcomes and/or statistically insignificant results was underrepresented in the surgical literature. One study has blamed some countries publishing unusually high proportions of positive results and has even warned the researchers undertaking systematic reviews to carefully manage data from these countries¹⁶. The clinical implications of this trend are of concern due to the potential impact on patient care. The "positive-publication-bias" may alter the balance of the available evidence-based literature and may negatively affect recommendations and guidelines derived from systematic meta-analyses. Perhaps the greatest threat to the validity of a meta-analysis is the possibility of publication bias, where studies that are interesting or statistically significant are more likely to be published than those with less encouraging results. In particular, there is the concern that this bias might be 'one-sided', where studies indicating that the treatment is beneficial has a greater probability of publication. In one retrospective study 487 projects submitted for publication were reviewed and found a high odds-ratio in favour of publishing articles with a statistically significant outcome as compared to those manuscripts which reported no difference between the study groups. The tendency towards publication bias was greater with observational and laboratory-based

experimental studies than with randomised clinical trials. The citation impact factor was also very high for articles with positive results. Systematic reviews of randomised trials are the best strategy for appraising evidence; however, the findings of some meta-analyses were later contradicted by large trials. A simple analysis of funnel plots provides a useful test for the likely presence of bias in meta-analyses, but as the capacity to detect bias will be limited when meta-analyses are based on a limited number of small trials the results from such analyses should be treated with considerable caution¹⁷. The concept of funnel plot is quite controversial and has been challenged by many authors¹⁸.

Study funding patterns have furthermore been identified as independent factors that influence the publication bias. In particular, the presence of corporate funding was shown to be associated with a higher prevalence of published studies with positive findings^{19,20,21,22}. Industry funded studies demonstrated a statistically greater likelihood to report positive results than studies with other funding sources. Potential explanations for this are biased study design, biased experimental technique, biased result interpretation, or publication bias. The expense of research and limited funding sources have forced an increased reliance on industry support for funding basic science and clinical spine research, this does introduce the potential for bias and must be recognized by the reader²³.

The clinical trial registration has been a notable recent step to prevent this and encourage publication of work with negative results. In September 2004, editors of several prominent medical journals including the New England Journal of Medicine, the Lancet, Annals of Internal Medicine and JAMA announced that they would no longer publish results of drug research sponsored by pharmaceutical companies unless that research was registered in public database from the start²⁴. This is one step which can encourage the publication of articles with negative results. In our opinion even registration of study design for original and review articles may help in this direction.

Recently, a newly opened access online journal was launched which is devoted exclusively to publishing negative results in biomedicine²⁵. The publication of this journal will act as an eye opener for all of us. In our opinion, it is imperative to promote the submission and publication of studies with negative outcomes and insignificant results, if the study design, material and methods are up to mark.

The importance of self-regulation and self-discipline cannot be overstated in the field of medicine. The ultimate voice for the research should come from within. The articles should not be submitted under compulsion rather out of devotion, dedication and passion. It should not be submitted for name and fame but as a service to humanity. Altruism and trust lie at the heart of research on human subjects. We conclude with the message that the publication of well-conducted negative or neutral studies is important to overcome the problems caused by positive publication bias and to encourage ethical and honest reporting.

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Prevalence of HIV Infection and Profile of Persons Attending an Integrated Counseling and Testing Centre at a Private Rural Tertiary Care Hospital in Andhra Pradesh, India

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ABSTRACT

The Human Immunodeficiency Virus (HIV) infection is a global pandemic and now has grown into a public health problem of unprecedented magnitude. Estimating HIV prevalence can be helpful to plan and implement preventive strategies. Hence the study was undertaken to determine the prevalence of HIV infection among persons attending Integrated Counseling and Testing Centre, at Santhiram Medical College and General Hospital, Nandyal, Kurnool Dt, A.P, over a period of one year (April 2010-march 2011). A total of 6286 study persons attended ICTC, either by self referral or following referral by health care provider.

Results: Out of 6286 blood samples tested, 139 samples found to be seropositive. Male to female ratio in HIV seropositive individuals was 3:2. Maximum seropositivity 33.8% was found in the age group of 35-44yrs, followed by 32.37% in 25-34 yrs age group. Heterosexual route (81.3%) was predominant route of transmission. parent to child route of transmission of HIV infection was 1.4%. Many attendees were daily wage workers (64.5%) and illiterates (64.8%). All seropositive persons were referred to a care and support programme.

Conclusion: ICTCs at private rural hospitals should be encouraged so that people from such areas can access services to establish their HIV status.

Keywords: HIV, ICTC, Seroreactive, Route of Transmission

INTRODUCTION

Every year throughout the world and particularly in Asia, there is a tremendous increase in the number of people affected by HIV/AIDS pandemic, either directly or through someone they care for.(1)

According to the Acquire Immunodeficiency Syndrome (AIDS) Epidemic update released in 2010 by Joint United Nations Programme on HIV/AIDS [UNAIDS] and World Health Organization (WHO), approximately 31.4 million to 35.3 million people are living with HIV/AIDS worldwide.(2) According to annual report (2009-2010) by NACO, that 22.7 lakh people are living with HIV/AIDS. In India by the end of 2008 with an estimated adult prevalence of 0.29%.(3)

In India HIV spread has been diverse, with much of India having a low rate of infection and epidemic being most extreme in southern states.(4) Even though the epidemic is concentrated in urban India, increasing HIV infection from urban to rural and from core population to low risk groups has been documented. Existing studies document the prevalence of HIV infection and profile of ICTC attendees from urban area and or those of ICTCs located within government sector establishments, to the best of our knowledge very few studies about prevalence of HIV infection and profile of ICTC attendees from rural areas.

Due to increasing spread of HIV infection into rural areas, this study aims to assess the prevalence of HIV

infection and profile of ICTC attendees in a private, rural, tertiary care teaching and research hospital situated on NH-18,4 Kms from Panyam(village), kurnool (Dt).Our study population includes general population ,high risk group and referrals (excluding pregnant women) from rural areas.

MATERIALS AND METHOD

All the persons attending Integrated Counseling and Testing Centre of Santhiram Medical college and General Hospital which is a private,rural, tertiary care teaching and research hospital in kurnool(Dt), Andhrapradesh, were counseled on one to one counseling method over a period of one year, from April 2010 to March 2011.

Blood samples were collected only from those persons who signed informed consent for HIV testing.The Consent was obtained from 6286 persons attending ICTC. Serum was separated and tested for HIV antibodies at our ICTC, Department of Microbiology, SRGH, as per National Aids Control Organization (NACO) guidelines. (5) First test was performed using COMBAIDS test (span diagnostics Ltd, Surat ,India). Samples positive by COMBAIDS were tested by ACON (Acon biotech (Hangzhou) co; Ltd, China) and SDBIOLINE test (Standard diagnostics, Inc, Korea).All the kits were supplied by NACO.

Only the samples found reactive with the three above tests (WHO STRATEGY ²²²) were included in this study. Statistical analysis was done using percentages, Chi Square test, and Diagramatic representation. Persons were asked about their awareness regarding AIDS, personal habits, safer sex methods, blood transfusions and drug abuse etc . Reports were issued only after post test counseling .Strict confidentiality was maintained.

RESULTS

Our analysis showed that out of the total 6,286 persons, who attended the ICTC and consented to participation and respond to our questionnaire, 139 (2.16%) were found to be seropositive. Our study sample constitute 2998 males (47.7%) and 3288(52.3%) females. Of the 139 HIV seropositive persons 84(60.4%) are males and 55(39.6%) were females. Male to female ratio in seropositive individuals was 3:2 and statistical difference between them was not significant. ($p>0.05$).(Table-1)

Out of the 2998 blood samples from males 84(2.8%) were found to be seropositive, while of 3288 blood samples from females 55(1.67%) were found to be seropositive. Maximum seropositivity 33.8% found in the age group of 35- 44 years followed by 32.37% (25-34 yrs) and 29.49% (>45 yrs) age group. Demographic characteristics of the attendees are showed in the Table-1.

Other than demographic variables like age, sex in our study we had observed their social status also based on variables such as marital status, education and occupation. According to present study 68% of the ICTC attendees were married, 2.1% among them were seropositive. 17.7% were widow /divorce, 2.3% among them were seropositive. 2.7% single / unmarried people were found to be seropositive.(Table-2) Majority of the study group 64.8% are illiterates and rest of 35.2% are literates in the sense who knows to read and write. Of the total 4077 illiterate persons, 2.4% are seropositive and another 2% of seropositive persons are literates.(Table-3) 64.5% of our clients were daily wage workers, while 20.27% were agricultural labourer.1.8% among daily wage workers were seroreactive.3.4% of the agricultural labourer were seropositive.(Table-4)All the above analysis, which has been related to the social variables are statistically tested.

Heterosexual route113 (81.3%) was happened to be the predominant route of transmission of HIV infection, followed by parent to child transmission 2(1.4%),in 24 cases (17.3%),history regarding route of transmission was uneventful ,hence their route of transmission was labeled as not specified.(Table-5)

Our data reveals that majority of the study participants 92.5% (5816) are referred by healthcare providers and other 7.5% (470) are self initiated. Most of the referral persons had associated medical problems. Among the self initiated persons 62.55%were males and 37.45%were females.(Table-6)

DISCUSSION

Integrated Counseling and Testing Centres have established as cost effective intervention to reduce HIV epidemic. The ICTCs in general (or) VCTC is an ideal point for prevention of HIV infection, where HIV negative individuals learnt to use full array of existing services and interventions to adopt and maintain risk reduction behavior, and HIV positive individuals use quality prevention services to adopt and sustain

lifelong protective behavior and avoid virus transmission. Thus ICTC can represent an opportunity to clients for HIV prevention as well as care and support services.

The prevalence of HIV seropositivity in ICTC clients in present study was noted to be 2.16%, which is similar to the seropositivity among ICTC clients in Gujarat in 2006-07, which was 2.7% in Dang, a tribal and rural district. (6) HIV prevalence in present study was lower than that reported from a study conducted in district of Karnataka (9.6%) in 2007. (7) Seropositivity in present study was lower than the overall prevalence of Gujarat (7.3%) (6), South kannada (9.6%) (8), West Bengal (17.1%) in 2003. (9)

The reason for the lower seropositivity, compared to the later study could be the fact that the ICTC was situated in both a rural and private environment. The estimated adult prevalence of HIV in India is 0.29%. The difference in HIV prevalence in different studies may be attributed to the difference in health seeking behaviors in different parts of the country which depends on socio cultural milieu of the community.

In this study prevalence of HIV antibody was higher in men than women. Male to female ratio was 3:2 and statistical difference between them was not significant. It ranges from 1:1 in some parts of Nigeria (10), 2.33:1 in Hyderabad. (11)

According to present study HIV infection was highest in the age group of 35-44 years, followed by 25-34 years and >45 years age group. Various workers also reported this peak incidence (10, 11, 12). Adults of these age groups are more susceptible for developing HIV and other STDs, as it is the most sexually active group. Hence one should focus attention on this age group for the prevention of high

rate of HIV transmission. High prevalence in sexually active age group culminates in financial burden for the nation.

Predominant route of HIV transmission in this study was heterosexual route (81.3%), which is consistent with other studies (12,13). In order to prevent HIV transmission through sexual route, certain effective interventions like early and effective treatment of STDs, promotion of condoms, promotion in the reduction of sex partners and building of monogamous sexual partnership are needed.

In this study parent to child transmission of HIV found to be 1.4% compared to that of 2.7% of parent to child transmission over the country. (14) The present study clearly indicates that 62.55% of self initiated ICTC attendees were male. This indicates the existence of some barriers preventing the access of females to have health services even now. Social stigma and discrimination may also be a barrier for them.

In present study majority of the study group were married (68%), illiterates (64.8%) and are daily wage workers (98.2%). The difference in the literacy rates may be due to the regional demographic variation. However, it seems that education does provide some protection as much the people who are well educated are more receptive to information, education, and communication and amenable to interventions.

CONCLUSION

Integrated Counseling and Testing Centre is now seen as a key entry point for HIV prevention. In addition to scaling up of ICTC services, it is also important to raise awareness by aggressive health education programmes and integration of ICTC into various community organizations.

Table 1. Age & sex wise Distribution of Persons Tested and Seroreactive

Age Group in years	Total No. of Persons Tested			HIV Seroreactive Persons Undergone 3 Tests		
	Male	Female	Total	Male	Female	Total
0-14	91	83	174	1(50%)	1(50%)	2(1.44%)
15-24	406	368	774	3(75%)	1(25%)	4(2.87%)
25-34	522	447	969	24(53.33%)	21(46.67%)	45(32.37%)
35-44	478	496	974	32(68.1%)	15(31.9%)	47(33.8%)
45 & ABOVE	1501	1894	3395	24(58.53%)	17(41.5%)	41(29.49%)
TOTAL	2998	3288	6286	84(60.4%)	55(39.6%)	139(2.16%)

NOTE : Percentages are calculated for totals.

Table 2. Distribution of Persons Based on Marital Status

Marital status		HIV-Negative	HIV-positive	Total
1.	Unmarried	876 (97.3%)	24(2.7%)	900(14.3%)
2.	Married	4182(97.9%)	90(2.1%)	4272(68%)
3.	Widow /Divorce	1089(97.7%)	25(2.3%)	1114(17.7%)
TOTAL		6147	139	6286

NOTE : Percentages are calculated for totals.

Table 3. Distribution of Persons Based on Education Status

Education		HIV-Negative	HIV-positive	Total
1.	Illiterate	3980(97.6%)	97(2.4%)	4077(64.8%)
2.	Literate	2164(98%)	42(2%)	2209(35.2%)
Total		6147	139	6286

NOTE :Percentages are calculated for totals.

Table 4. Distribution of Persons Based on Occupation

Occupation		HIV-Negative	HIV-positive	Total
1.	Daily wage workers	4007(98.2%)	75 (1.8%)	4082(64.5%)
2.	Salaried	156(97.5%)	4(2.5%)	160(2.5%)
3.	Business	197(93.8%)	13(6.2%)	210(3.3%)
4.	House wife	496(100%)		497(7.8%)
5.	Agriculture Labour	1225(96.6%)	43(3.4%)	1268(20.27%)
6.	Others (students & retired)	66(94.3%)	04(5.7%)	70(1.11%)
Total		6147	139	6286

Note : Percentages are calculated for totals.

Table 5 : Route of Transmission of Seroreactive Persons

Route of Transmission	Male	Female	Total
Hetero sexual	76(67.3%)	37(32.7%)	113(81.3%)
Homo sexual	0	0	0
Blood & Blood products	0	0	0
Infected syringes & needles	0	0	0
Parent to child	-	2	2(1.4%)
Not specified	8	16	24(17.3%)
Total	84	55	139

NOTE : Percentages are calculated for totals.

Table 6. Distribution of Persons Based on Referrals

Referrals		Male	Female	Total
1.	Client initiated	294 (62.55%)	176 (37.45%)	470(7.5%)
2.	Health care provider initiated	2704(46.5%)	3112(53.5%)	5816(92.5%)
Total		2998	3288	6286

NOTE : Percentages are calculated for totals.

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Recent Trends in Antimicrobial Resistance Pattern Escherichia Coli in Urinary Tract Infection

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ABSTRACT

E.coli and other coli forms account for the large majority of naturally acquired urinary tract infection. Urinary tract infections are serious, but common, health problem affecting millions of people each year women are especially prone to urinary tract infections for reasons that are poorly understood.

Normal urine is sterile and contains fluids salts, and waste products, but it is free of bacteria, viruses and fungi. An infection occurs when microorganisms usually bacteria from the digestive tract cling to the urethra and be gain to multiply. Most infections are due Escherichia coli (E.coli) which normally live in the colon. Other micro organisms like Chlamydia and mycoplasma may also cause Urinary tract infections in both men and women but these infections tend to infect reproductive system and may be sexually transmitted.

Keywords: *E.coli, Media Used for Culture Blood Agar, MacConkey Agar, Used Antibiotics Amikacin (AK), Gentamycin (G), Nitrofurantoin (F), Norfloxacin (Nx), Ciprofloxacin (CF), Ofloxacin (Of), Tetracycline (T) 800 Urine Samples Collected*

INTRODUCTION

Urinary tract infection simply means presence bacteria undergoing multiplication in urine with the urinary drainage system. First report of urinary tract infection appeared in Britain in 1412 by John of Ardennes. In 1863 Pasteur recognized urine as a good culture medium for bacteria and Roberts in 1881 related the presence of bacteria in urine to symptoms. But very little progress was made in exploring this relationship until quantitative assessments of the number of bacteria in the urine of patients with urinary tract infection were carried out by Marple (1941) Barr and Rantz (1948) and Samford et al. (1956). In (1955) Kass developed that patients with clinical infection had counts of 1 lack/organisms/ml which was regarded

as true or significant bacteria. Increased confidence in defining the occurrence of bacteria in selected groups of patients has led to better understanding of all types of urinary tract infection and the prevention of complications. However despite the vast wealth of published literature on urinary tract infection, and the wide range of available investigative procedures, diagnostic aids and therapeutic possibilities, the basic reason why symptom less infections are so common, particularly in women, still remains to be elucidated.

The urinary tract consists of the kidney, ureter, bladder and urethra. Often urinary tract infections (UTIs) are characterized as being either upper or lower based primarily on the anatomic location of the infection. The lower urinary tract encompasses the bladder and urethra, and the upper urinary tract encompasses the ureters and kidneys.

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PATHOGENCITY

The urinary tract is a complex drainage system consisting of distinct anatomical physiological areas. In the urinary tract there is a dynamic culture system

in which bacteria undergoes multiplication while urine is continuously being added by glomerular filtration and lost by micturation. The bacterial population will be controlled by its growth rate and the balance between the speed of urinary flow and volume of the system (O Grady AND CATTLE 1966). The growth rate or mean generation time vary widely.

The ability of the urine to support bacterial growth is related to urinary PH osmolality and chemical constituents such as glucose, amino acids and organic acids. Optimal bacterial growth occurs with a pH range of 6.0 – 7.0. Outside this range growth is either slowed or inhibited. The osmolality encourages bacteriuria (Weinberg 1959, Kaitz 1961) normal urine usually contains sufficient glucose to support maximal growth rates and any lowering of the pH is prevented by its buffering capacity. Organic acids are also normally present in urine and may be bacteriostatic according to the degree of their dissociation.

MATERIALS AND METHOD

Sample collection

Sample is collected into a dry sterile wide mouth leak proof container. First morning voided mid stream urine is collected. In case of male patients genitalia are washed with soap water. In case of female patients the area of urethral opening is cleaned with water and after drying mid stream urine should be collected with labia held apart.

Straight catheterized urine

This procedure allows collection of bladder urine with less urethral contamination. This is performed by either a physician or trained health professional. But it has risk of introducing infection. This procedure is now a days is done only if there are special indications for its requirements in the course of cyst scope investigations.

Supra pubic bladder aspiration

Urine is withdrawn directly into a syringe through a percutaneously inserted needle thereby ensuring a contamination free specimen. This procedure is indicated in certain clinical conditions such as pediatric practice, when the urine is difficult to obtain. Also useful in premature infants, small children, pregnant women.

Non invasive method

Non invasive method of stimulating urine flow in a baby is by tapping just above the pubis with two fingers at 1 hour after feed, 1 tap/sec is given per one minute an interval of 1 min is allowed then tapping is resumed in this cycle.

Indwelling catheters

In hospitalized patient with indwelling catheters chances of infections are more. In such cases urine is directly aspirated via a needle or syringe after thorough cleaning of the tube. (Bailey & Scott Diagnostic microbiology eleventh edition page no.930-32)

Other considerations

Urine volume

At least 10ml of urine is required to detect significant pyuria.

Number of specimen and timing of collection

First morning voided specimen is collected. If it is not possible urine is allowed to incubate in the bladder for as long as possible (min 4 hours) before collection to increase the bacterial density.

A single clean voided specimen in a specifically symptomatic patient is sufficient

In case of pregnant women without symptoms to detect symptomatic bacteriuria single first voided urine is collected. If necessary one or two sample are collected on two days.

ADDITIVES

Additives like boric acid are added as preservatives to preserve the bacterial density present at the time of collection. (Connie R. Mahon, George Marsalis text book of Diagnostic microbiology. Page no. 1023-24)

Specimen transport

Immediately transported to the laboratory without any delay. If there is any delay kept in refrigerator or preserved.

Processing of the sample

Microscopic examination by wet mount

Urine is examined for pus cells presence of more than "8" PMN/mm³ indicate infection.

Grams staining

Uncentrifuged urine sample is examined under oil immersion. Presence of at least one organism/per oil immersion field correlates with significant bacteriuria.

Culture

For semi quantitative culture urine is inoculated on routine culture media like blood agar and MacConkey agar incubated for 37°C/24 hours.

Inoculation method

Standard loop method

An inoculating loop of standard dimensions is used to take a small fixed know volume of urine and inoculated on to culture media. The number of colonies counted is estimated. E.g.:-0.004ml loop full of urine yields 400 colony's the count per ml will be 100000.

METHOD

A calibrated loop is taken flamed and allowed to cool without touching any surface.

Urine is thoroughly mixed and loop is inserted vertically to ensure that proper amount of specimen adheres to the loop.

Loop is touched to the centre of the plate from which inoculums is spread in a line across the diameter of the plate. Without flaming or reentering urine loop is drawn across the entire plate crossing 1st inoculums streak numerous times to produce isolated colonies. Plates are inoculated per 24 hours at 37°C colonies are counted on each plate.

Media used for culture

Blood agar: It is an enriched medium. It is prepared by adding sterile blood to sterile Nutrient agar at 50°C.

Composition of Nutrient agar

Agar	20g
Meat (beef) extracts	10g
Peptone	10g
Nacl	5g
Distilled water	1000ml

Colony characters: Colonies are large, thick grayish white moist, smooth opaque or partially translucent with $\hat{\alpha}$ - heamolysis.



Fig. 1. Blood agar with $\hat{\alpha}$ -hemolysis of E.coli colonies

MacConkey Agar

It is a differential medium used to differentiate Lactose fermenting & Non lactose fermenting enterobacteriae.

Lactose fermenting bacteria are identified from MacConkey agar by pink colored colonies. They are conformed further by biochemical reactions as follows.



Fig. 2. MacConkey Agar with Lactose fermenting pink color colonies of E.coli

ANTIBIOTIC SENSITIVITY TEST

Isolated organism Escherichia coli are tested for the sensitivity to various antibiotics. By Kirby Bauer's disk

diffusion technique (Bauer AW, Kirby WMM, Sherris JC, Turck M. Antibiotic susceptibility testing by a standardized single disc method. *Am J Clinpathol* (1966:45 493 – 6). The ideal medium is used in Muller Hinton agar.

A lawn culture of the test organism is made on the Muller Hinton agar. Antibiotic discs 6mm diameter are applied on the medium. Maximum of 6-8 discs are applied on plate of 10cm diameter. The plate incubated at 37°C overnight. The degree of sensitivity is determined by measuring the zones of inhibition of growth around the discs the zone diameter by measuring the zones of inhibition of growth around the discs the zone diameter is measured with the help of calipers or a scale. The results are reported as "Sensitive", "Moderately sensitive", or "Resistance" by comparing standard reference scale as per the NCCLS guide lines.

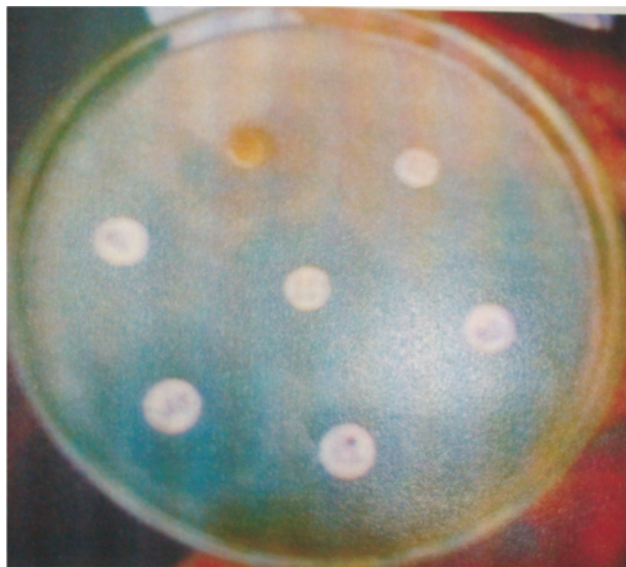


Fig. 3. Antibiotic sensitivity shown by E.coli

RESULT

A total number of 800 urine samples were collected and processed. Out of them 480 samples showed *Escherichia coli* with significant growth (60%) Out of 480 cultures positive samples 390 samples showed significant growth in females with percentage of 81.2% Rest of the samples i.e. 90 samples showed significant growth in males with a percentage of 18.75%. Various antibiotics tested for sensitivity are Amikacin (AK) Gentamycin (G), Nitrofurantoin (F), Norfloxacin (Nx), Ciprofloxacin (Cf), Ofloxacin (Of). All the samples were sensitivity to Amikacin (100%) followed by Nitrofurantoin (90%) followed by Gentamycin (70%),

Tetracycline (40%), and Ofloxacin (5%) all were resistant to Norfloxacin, Ciprofloxacin.

SUMMARY AND CONCLUSION

The present study is conducted on *Escherichia coli* in Urinary tract infection. This is the commonest cause of Urinary tract infection.

Total 800 samples were collected out of them 480 showed significant growth of *Escherichia coli*. Standard protocols were followed for collection transport and processing of specimens. The antibiotic sensitivity pattern showed that the bacterium is resistant to most of the antibiotics and only showed maximum sensitivity to Amikacin. There are various factors which led to the emergence and spread of *Escherichia coli* strains which are resistant to various antibiotics. Wide spread use of drugs to treatment Urinary tract infection in adults and respiratory tract infections in children are creating selective pressures that favor resistance strains in fecal flora. Another risk factor, frequent and recent travel suggesting that exposure to *Escherichia coli* contaminated water and food (travelers Urinary tract infections). Another risk factor is small children attending at a day care centre. Frequent exposure of children with upper respiratory tract infections and to antimicrobial agents as and transmission from child to child or from child to mother. Since antimicrobial resistance varies geographically local surveillance data are needed in order to decide which agents to use. The emergence and spread of resistance to various antibiotics in *Escherichia coli* which cause Urinary tract infection is an example of ongoing global problem of antimicrobial resistance. Ultimately control depends on a multidisciplinary and worldwide approach to the problem including antimicrobial agents in humans reduced use of such agents in animals and other approaches outlined in recent recommendations from the world health organization and the centre for disease control and prevention. The alarming reports of community acquired urinary tract infections caused by fluoroquinolone resistant *Escherichia coli* strains in some parts of the world suggest that we will see an evolution resistance to these agents just as we have with sulfonamides, Ampicillin, cephalosporin, unless we take a much more aggressive approach to the control of antimicrobial resistance.

Traditionally Trimethoprim – Sulfamethoxazole has been recommended as the first line of treatment of acute uncomplicated urinary tract infection in women

resistance of uropathogens to these agents is increasing now. Many strains of E.coli that are resistant to Trimethoprim – Sulfamethoxazole these should not be used. Other β – lactams such as Cefixime or Cefpodoxime can be used but are expensive and may be associated with high relapse rates probably because they fail to eradicate the uropathogens from vaginal reservoir. Nitrofurantoin remains highly active against E.coli rest to Amikacin; 7 days therapy may be required to achieve reasonable cure rates with this drug. (Infectious diseases the clinician's guide to diagnosis treatment and prevention, by DAVID C. DALE Page no.160-161)

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Primary Intra-Testicular Leiomyosarcoma - A Case Report

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ABSTRACT

Primary testicular leiomyosarcoma is very rare with only a few cases being reported in the literature till date. A 19 year-old-man presented with left scrotal swelling with no clinical or imaging evidence of regional or distance metastasis, left radical orchidectomy was performed, followed by satisfactory post operative recovery. Microscopic examination revealed intra -testicular leiomyosarcoma. The patient received no adjuvant therapy and at 15 months after surgery there had been no recurrence.

Keywords: Intra-Testicular Tumor, Leiomyosarcoma, Testis

INTRODUCTION

Leiomyosarcomas can arise anywhere in the body from tissues containing smooth muscle. Primary leiomyosarcoma of the testis is extremely rare tumor compared with the Para- testicular leiomyosarcoma that originate from spermatic cord, epididymis or tunica vaginalis¹. Leiomyosarcoma of testis is known to occur following radiotherapy, with use of anabolic corticosteroid and in association with testicular germ cell tumors. However, occurrence of testicular leiomyosarcoma without these predispositions is extremely rare. There is lack of data on the natural history, histological criteria for diagnosis and treatment recommendations because of rarity of this disease. In a localized case, the prognosis seems to be good if radical resection is performed.

CASE REPORT

A 19 -year-old man visited our hospital complaining of left scrotal painless swelling for 5 months without any history of radiotherapy or anabolic steroid intake. He did not present with any other constitutional symptoms such as weight loss, fatigue or fever. Physical examination revealed a 7x6cm hard mass in left testis with no superficial lymph nodal swelling and no gynaecomastia. Liver function tests and tumor markers including alpha fetoprotein, lactate dehydrogenase and beta human chorionic

gonadotrophin assays were all within normal limits. An ultra sonography showed a solid testicular mass with hypo echoic and hyper echoic components. Abdominal ultrasound and chest x-ray showed no evidence of local, regional or distant malignant lymphadenopathy or retroperitoneal metastasis.

A left radical orchidectomy with high ligation of the spermatic cord was performed. The cut section of the testis showed an intra-parenchymal, yellowish-white, solid and encapsulated lesion measuring about 7x6x3cm (figure- 1). Epididymis and tunics were normal. Microscopic examination showed a cellular tumor composed of cigar shaped elongated cells with central nuclei showing mild pleomorphism arranged in interlacing fascicles and whorls (figure- 2). A few mitosis were also seen, about 3-4 per 10 HPF. No germ cell component was present in the examined sections of the sections of the tumor. The tumor did not involve the spermatic cord, epididymis or tunica vaginalis. Immuno-histochemical examination revealed that the tumor cells were strongly positive for smooth muscle actin and desmin (figure -3 &4), but negative for s-100 and myogenic regulatory protein (MyoD1). The pathological diagnosis was leiomyosarcoma.

The patient had an uneventful postoperative course and received no adjuvant therapy. There was no evidence of recurrence or metastasis 15 months post operation.



Fig. 1. Macroscopic appearance of cut opened testicle shows tumor displacing testicular tissue

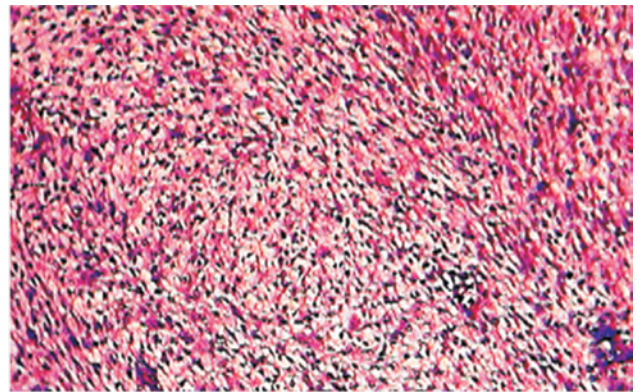


Fig. 2. Section shows tumor tissue composed of interlacing fascicles and whorls of elongated spindle cells (H & E10x)

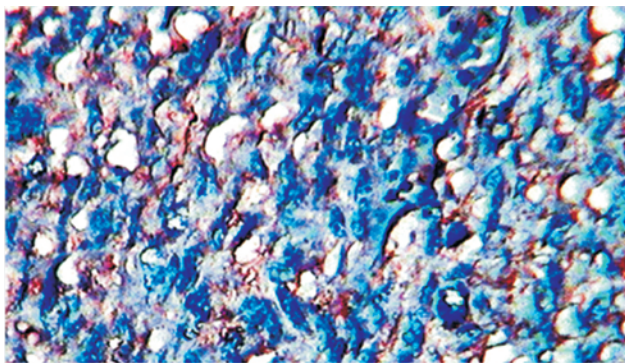


Fig. 3. Section showing tumor cells positive for desmin (40x)

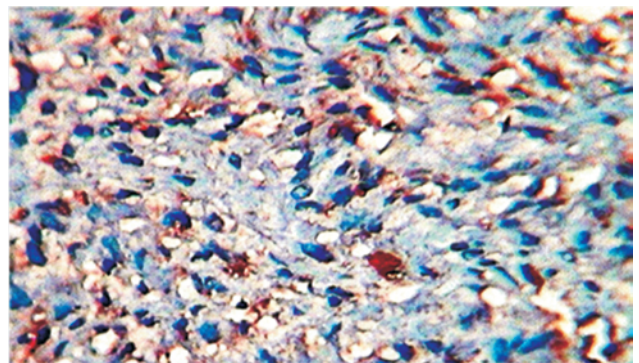


Fig. 4. Section showing tumor cells positive for SMA (40x)

Table: Summary of 16 Reported Cases

Case No	Authors	Age	Side	Clinical Stage	Treatment	Follow Up (Months)	out Come	Risk Factors	Levels of Tumor Markers
1	Yachia	55	R	I	orchidectomy	24	Survived	-	Normal
2	Pellice	37	L	I	orchidectomy	24	Survived	-	Normal
3	Washecka	47	R	I	orchidectomy	49	Survived	-	Normal
4	Washecka	40	R	I	orchidectomy	42	Survived	-	Normal
5	Froehner	32	R	I	Orchidectomy+RPLND	79	Survived	Anabolic steroid	Unknown
6	Rui Pedro	19	L	I	Orchidectomy+Adj chemo+Rt	16	Survived(metastasis to Lt kidney & ileum)+ salvage chemo	-	Normal
7	Hachi	70	L	I	orchidectomy	14	Death(lung metastasis)	-	Normal
8	Ali	65	R	I	orchidectomy	12	Survived	Chronic inflammation	Normal
9	Takizawa	76	L	I	orchidectomy	12	Survived	-	Normal
10	Canales	30	R	I	orchidectomy	6	Survived	radiation	Unknown
11	M. Sattary	27	L	I	orchidectomy	30	Survived	-	Normal
12	Shunsuke	73	L	III	Orchidectomy+ chemo(CYVADIC)	9	Survived	-	Slight elevation
13	Labanaris			I	orchidectomy		Survived	-	
14	Kumar	65	R	I	orchidectomy		Survived	-	Normal
15	Venkatesh	55	L	I	orchidectomy	12	Survived	-	Normal
16	Mohd Shafi	45	R	II	Orchidectomy+chemo		Survived(Para Aortic L.N mets)	-	Normal
	Current case	19	L	I	orchidectomy	15	Survived	-	Normal

DISCUSSION

Leiomyosarcoma occurs commonly in the stomach and colon, but is rare in the genitor-urinary system. Approximately 100 Para-testicular leiomyosarcomas have been reported in the literature¹. With 80 % arising from the soft tissue of the spermatic cord and 20 % originating from the epididymis or darts of the scrotum, few cases of the testis have been reported. Intra-testicular leiomyosarcoma occurs from smooth muscle cells within the testis such as blood vessels, semiferous tubules and tunica. These tumors have a low metastatic potential² and can coexist with germ cell tumors which have an adverse prognosis³. To our knowledge, only 16 cases have been reported (table)²⁻¹⁷. Only one case was reported in an infant¹⁵. The age range was between 19 to 76 years. Eight patients had a right sided tumor while other eight patients had left sided tumor. Fourteen cases had stage I tumor, one case had stage II and one more case had stage III leiomyosarcoma testis with subcutaneous metastatic nodules of 1 to 4 cm on the chest and abdomen¹³.

In all reported cases of intra-testicular leiomyosarcoma a radical orchietomy was performed²⁻¹⁷. Fourteen patients who had stage I disease did not receive any adjuvant treatment. One patient received adjuvant chemotherapy (gemcitabine plus docetaxel) and radiotherapy to prevent distant and local metastasis after orchidectomy as the histopathology was high grade intra-testicular leiomyosarcoma stage I. After 16 months follow there was a recurrence so patient received salvage chemotherapy⁶. Patient with clinical stage III disease received additional CYVADIC (cyclophosphamide, vincristine, adriamycin, decarbazine) chemotherapy¹².

The etiology of testicular leiomyosarcoma is unknown. High doses of anabolic steroids⁴ and chronic inflammation⁸ are reported to be risk factors for intra-testicular leiomyosarcoma. One patient developed intra-testicular leiomyosarcoma after receiving testicular radiation for the treatment of leukemia¹⁰.

Our case had stage I presentation without metastasis and patient denied any past history of chronic inflammation or long interval steroid therapy. All tumor markers were within normal range. Treatment was left orchidectomy followed by observation.

CONCLUSION

Intra-testicular leiomyosarcoma is a rare tumor. Based on a review, treatment for an intra-testicular leiomyosarcoma is a radical orchidectomy and surveillance followed by radiological examination in cases at stage I. There is no available data regarding the management of stage II or stage III disease. Because of its rarity, standard therapy is difficult to recommend. For localized cases the prognosis seems to be better.

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Substance use among Women with Depression in a Rural Area of Bangalore Urban District: A Case Control Study

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ABSTRACT

Background: Depression is a common mental disorder and women are more affected. Western studies show that subjects with psychiatric disorders have higher rates of tobacco dependence. In India there is limited literature regarding persons affected with psychiatric disorders and co morbid substance use especially in rural communities.

Objective: To study the association between depression and substance use among women in a rural area of Bangalore Urban District.

Materials & Method: This case control study was based on the registry of a Community Based Mental Health Program located at a rural area in Bangalore district. Cases were women with diagnosis of depression and on treatment. Age-matched controls were women without depression selected from the same neighborhood as the case. Selected subjects were administered Fagerstrom Test for Nicotine Dependence (Smokeless and Smoking Tobacco), Alcohol Use Disorders Identification Test (AUDIT) and Drug Abuse Screening Test to assess substance use and dependence.

Results and conclusion: 51 cases and 102 matched controls consented to participate in the study. 24(47.1%) cases and 49(48.1%) controls were using a substance. Smokeless tobacco was the substance used by all cases and controls, in addition 2(4.1%) controls were found to use alcohol. 9(37.6%) cases and 19(38.9%) controls had a high level of nicotine dependence. There was no significant association seen between depression and substance use (Odds ratio=0.96, 95% CI=0.49 - 1.88, p=0.9) or level of nicotine dependence (Chi square=2.88, df=2, p=0.23) in this study. The high levels of tobacco use in the study population (47.1% among cases and 48.1% among controls) is a pointer to the need for future studies to determine the levels of use of smokeless tobacco among women and necessary interventions for the same.

Keywords: Intra-Testicular Tumor, Leiomyosarcoma, Testis

INTRODUCTION

Mental disorders are prevalent in people of all regions, countries and societies. Depressive and anxiety disorders are the common mental disorders

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(CMDs) that are typically encountered in community and primary care settings.¹ In India depressive disorder is more common in women especially among those having a low household per capita income and low educational status. Domestic violence by the husband, having low autonomy in decision making, and having low levels of family support are some of the other factors which render women prone for depressive

disorder.¹

Drug dependence and its consequences is a growing problem in this country.² In developed countries dependence on drugs, alcohol or nicotine is commonly seen among people having a psychiatric

disorder.^{3,4} In the United States, studies have shown that use of tobacco in adolescence increases the risk for subsequent depression.⁵ In India, hospital based studies provide some information regarding substance use and mental disorders. However there is lack of information from community based studies especially in rural settings. The availability of information on comorbidity of substance use and common mental illnesses will help in planning interventions in community based mental health programs. Therefore this study was conducted to study the relationship between depression and substance use among women residing in rural areas.

OBJECTIVE

To study the association between depression and substance use among women in selected rural areas of Bangalore urban district.

MATERIALS & METHOD

This was a case control study conducted during the period November - December 2009, in 13 villages under Anekal taluk, Bangalore urban district.

Study population

In this study a case was defined as a woman aged 18 years and above diagnosed to have depression by a psychiatrist, on treatment for at least a year and residing in the study area. A control was defined as a woman aged 18 years and above, who does not fulfill a diagnosis of depression as ascertained by a screening tool, residing in the same villages as the cases.

Sample size estimation

Based on an expected level of exposure to tobacco among controls as 10%⁶ and among cases as 30% based on literature⁴, 95% confidence, power of 80% and selecting 2 controls per case, the sample size was calculated to be 51 cases and 102 controls.

Selection of study population

Cases were selected from a registry of a Community Based Mental Health Program located at a rural area in Bangalore urban district. 56 women fulfilled the inclusion criteria and a simple random sampling technique was used to select the required sample of 51. Controls were matched for age ($\pm 10\%$ of the age of the cases), educational status and neighborhood.

Measurement of baseline characteristics and exposure

The following tools were used to assess the sociodemographic profile, substance use and dependence among the study subjects. All the tools were translated into the local language (Kannada) and were administered orally by trained interviewers.

1. Interview schedule prepared to assess sociodemographic profile and substance use.
2. Standard of living index to assess socioeconomic status.⁷
3. Patient Health Questionnaire (PHQ-9) to screen for depression among controls, a nine item schedule which classifies subjects as having no depression (score 0 – 4), mild depression (5-9), moderate depression (10-14), moderately severe depression (15-19) and severe depression (20-27).⁸
4. The Fagerstrom Test for Nicotine Dependence (Smokeless Tobacco⁹ and Smoking Tobacco¹⁰) which is a six item scale which classifies subjects as having low level, medium level and high level of dependence.
5. The Alcohol Use Disorders Identification Test: Interview Version (AUDIT) which is a ten item scale aimed at detecting hazardous and harmful alcohol use, as well as possible alcohol dependence.¹¹
6. Drug Abuse Screening Test (DAST-10) a 10 item scale aimed at detecting the presence of drug abuse associated problems.¹¹

The tools were administered to the selected cases and controls at their place of residence by medical interns trained prior to data collection. Consent was obtained prior to administration. Cases and controls not present at their residence after 3 attempts were replaced.

DATA ANALYSIS

The data was entered in Microsoft Excel and analysed using EPI Info version 3.5.1. Chi-square test, Students t test, Odds ratio, 95% Confidence Interval were the statistical tests used to compare the two groups and study the association between depression and substance use.

RESULTS

Sociodemographic profile (Table 1)

This study included 51 women as cases and 102 women as controls. The cases and controls were matched for age and educational status. Majority of the subjects i.e. 31 (60.7%) cases and 69 (67.6%) controls were housewives, making it the most common occupation followed by daily wage labour. There was no significant difference between cases and controls with respect to occupation, when gainful employment

was considered (OR=0.74, 95% CI=0.35–1.58, p=0.50). On analysis of the socioeconomic status of the subjects, based on Standard of Living Index (SLI), 35 (68.6%) cases and 66 (64.7%) controls were found to be in the middle category of SLI. There was no significant difference between cases and controls with respect to socioeconomic status (Chi square=0.50, df=2, p=0.78). It can be concluded that cases and controls were comparable with respect to sociodemographic factors like age, educational status, occupation and socioeconomic status.

Table 1: Sociodemographic profile of the antenatal women

Sociodemographic Factor	Cases(%) ^a	Controls(%) ^a	Total(%) ^a	Significance
Age (in years)				
25-34	9 (17.6)	20 (19.6)	29 (19.0)	X ² =0.92 df=3p=0.62
35-44	19 (37.2)	42 (41.1)	61 (39.9)	
45-54	14 (27.4)	21 (20.5)	35 (22.9)	
55-64	4 (7.8)	9 (8.8)	13 (8.5)	
>65	5 (10.0)	10 (10.0)	15 (9.7)	
Educational status				
Illiterate	34 (66.6)	68 (66.6)	102 (66.7)	OR=1.95% CI=(0.46-2.17)p=0.85
Primary school(upto 4 th std)	2 (3.9)	4 (3.9)	6 (3.9)	
Middle school(5 th -7 th std)	11 (21.5)	22 (21.5)	33 (21.6)	
High school(8 th – 10 th std)	3 (5.8)	6 (5.8)	9 (5.9)	
PUC	1 (2.2)	2 (2.2)	3 (1.9)	
Occupation				
Daily wage worker	13 (25.4)	18 (17.6)	31 (20.3)	OR=0.7495% CI=(0.35-1.58)p=0.50
Housewife	31 (60.7)	69 (67.6)	100 (65.4)	
Petty shop owner	0	3 (2.9)	3 (2.0)	
Others	7 (13.9)	12 (11.9)	19 (12.3)	
Socioeconomic status				
Low	5 (9.8)	14 (13.7)	19 (12.4)	X ² =0.5 df=2p=0.78
Middle	35 (68.6)	66 (64.7)	101 (66.0)	
High	11 (21.6)	22 (21.6)	33 (21.6)	
Total no. of women	51	102	153	

^a Figures in parentheses indicate column percentages

Substance use among cases and controls

The study revealed that 24 (47.1%) cases and 49 (48.1%) controls were using some kind of a substance (Table 2). There was no significant difference between the number of cases and controls that used a substance (OR=0.96, 95% CI=0.49–1.88, p=0.9). The mean age of

initiation of substance use was 22.54 ±10.49 years among cases and 21.96 ±10.87 years among controls. There was no significant difference between the cases and controls with respect to age of initiation of substance use (Independent t test, p=0.82). None of the study subjects reported quitting substance use after initiation.

Table 2: Substance use among cases and controls

Substance use	Cases (%) ^a	Controls (%) ^a	Total (%) ^a
Yes	24 (47.1)	49 (48.1)	73 (47.7)
No	27 (52.9)	53 (51.9)	80 (52.3)
Total	51 (100.0)	102 (100.0)	153 (100.0)

^aFigures in parentheses indicate column percentages

Odds ratio=0.96, CI=0.49 – 1.88, p=0.9

The substances used by the subjects were smokeless tobacco and alcohol. 24 (100%) cases and 47 (95.9%) controls used smokeless tobacco, making it the most commonly used substance. None of the cases and only 2 (4.1%) of the controls were found to use alcohol (Figure 1). The controls who used alcohol also used smokeless tobacco.

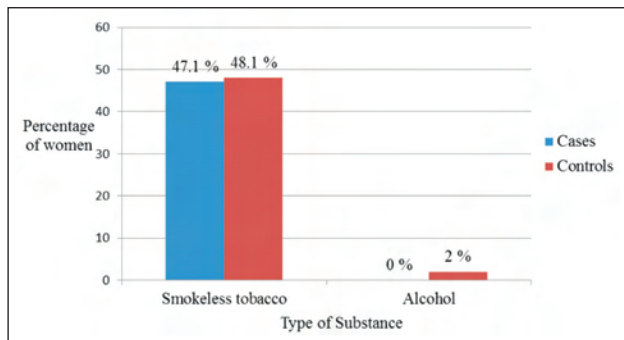


Fig. 1. Type of substance use among cases and controls

An assessment of the level of nicotine dependence revealed that a high number i.e. 9 (37.6%) cases and 19 (38.9%) controls had a high level of nicotine dependence. However there was no significant difference (Chi square=2.88, df=2, p=0.23) between cases and controls with respect to level of dependence (Table 3). Both the controls who used alcohol were found to have high level of dependence on alcohol.

Table 3: Nicotine Dependence among cases and controls

Dependence	No. of cases (%) ^a	No. of controls (%) ^a	Total (%) ^a
Low	10 (41.6)	12 (24.4)	22 (30.1)
Medium	5 (20.8)	18 (36.7)	23 (31.5)
High	9 (37.6)	19 (38.9)	28 (38.4)
Total	24 (100.0)	49 (100.0)	73 (100.0)

^aFigures in parentheses indicate column percentages

X²=2.88, df=2, p=0.23

DISCUSSION & CONCLUSION

Depression and substance use commonly occur together. Very few studies have attempted to examine

this relationship, especially in a rural population, even though 72.18% of the population in India resides in rural areas.¹² Woman’s role in a family in the Indian context is multidimensional and usually she is the primary caregiver who provides maximal care in the family as far as health is concerned and is considered to be the best teacher and have potential influence on the family members.¹³ When women are healthy and educated their family members are healthier and the communities benefit from their creativity, energy and caring.¹⁴ Therefore this study attempted to see if there was an association between depression and substance use in a population of rural women in the state of Karnataka. While the 13 villages in the study cannot be said to be representative of a rural area in southern India, the socio demographic characteristics of the population studied approximates that for a rural area in this part of the country.^{15,16} The study uses data from one of the few mental health program registries available for a rural South Indian population.

This study does not show any significant association between depression and substance use among the women studied. The widespread use of smokeless tobacco, which probably predates the onset of depression, could be responsible for this finding. There is a possibility of a misclassification bias in classifying controls using a screening tool, but the fact that they were not included into the program registry indicates that they were also classified by the program as having no depression. An important finding in the study is that 47.1% of the cases and 48.1% of the controls used tobacco which is higher than reported figures of 4.8% in the general population among women aged 15-49 years in Karnataka.¹⁷ None of the cases and only 2 (4.1%) of the controls were found to use alcohol which finding is similar to the reported figure of 1.2% in the general population among women aged 15-49 years.¹⁷ There is a need for further studies to explore the reasons for the high level of use of smokeless tobacco among women residing in this study area, so that necessary interventions can be planned and implemented to reduce the use of smokeless tobacco among the population in this area.

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To Study the Local Anesthetic effect of Lidocaine and Ropivacaine on Reflex Movements of Nostrils in Rabbits

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ABSTRACT

Local administration of Lidocaine and Ropivacaine cause reversible loss of sensory perception in the body without loss of consciousness or the impairment of central control of vital functions, especially of pain in a restricted area of the body.

Local anesthetics block the initiation and propagation of action potentials by preventing the voltage-dependent increase in Na⁺ conductance. Though they exert a variety of non-specific effects on membrane function, their main action is to block sodium channels. Here we have to compare the local anesthetic effect of individual drug, that means identify the onset and duration of action of lidocaine and Ropivacaine.

Keywords: Local Anesthetics, Lidocaine, Ropivacaine, Reversible Loss Of Sensory Perception, Reflex Movements Of Nostrils, Rabbits

INTRODUCTION

Local anesthetics are the drugs which upon topical application (or) local injection causes reversible loss of sensory perception, especially of pain, in a restricted area of the body. (Tripathi 2008)

The local anesthetics can be traced back to naturally occurring alkaloid cocaine isolated from Erythroxylan coca. It was widely used by South American Indians to allay fatigue by chewing leaves. A Viennese ophthalmologist CARL KOLLER had experimented for several hypnotic and analgesic for use as a local anesthetic in the eye.

CARL KOLLER'S friend, SIGMOND FREUD, was the one who suggested to attempt and establish how the South American Indians allayed fatigue by chewing leaves of the coca bush. KOLLER found that cocaine numbed the tongue, thus he discovered the local anesthetic. Later he found it to be effective even in the eye, leading to wide spread use of cocaine in both Europe and the United States. Although today cocaine is of greater historic than medicinal importance and is widely abused, few development in the chemistry of local anesthetic have lead to synthesis of a chain of local anesthetics.

Since their introduction into the clinical practice local anesthetics have widely been used for various

surgical and non surgical procedures. The development of newer local anesthetics still continues by chemical alteration of older local anesthetics and testing them on experimental animals by using different evaluation techniques.

In this project a novel method of eliciting anesthetics is attempted and successfully done. By eliciting loss of reflex movements of nostrils in rabbits, the method is described and followed.

Mechanism of Action: Local Anesthetics prevent the generation and the conduction of the nerve impulses. Local anesthetics block conduction by decreasing or preventing the large transient increase in the permeability of excitable membranes to Na⁺ that normally is produced by a slight depolarization of the membrane. This action of local anesthetics is due to their direct interaction with voltage gated Na⁺ channels. As the anesthetic action progressively develops in a nerve, the threshold for electrical excitability gradually increases the rate of rise of the action potential declines, impulse conduction slows and the safety factor for conduction decreases. These factors decrease the probability of propagation of the action potential and nerve.

In addition to Na⁺ channels, local anesthetics also can bind to other membrane proteins. In particular,

they can block K⁺ channels. However, since the interaction of local anesthetics with K⁺ channels requires higher concentrations of drug, blockade of conduction is not accompanied by any large or consistent change in resting membrane potential due to block of K⁺ channels.

Quaternary analogs of local anesthetics block conduction when applied internally to per fused giant axons of squid but they are relatively ineffective when applied externally. It is now generally accepted that the major mechanism of action of these drugs involves their interaction with one or more specific binding sites within the Na⁺ channel. (Goodman & Gillman 10th edition)

MATERIALS AND METHOD

AIM: To Study the local anesthetic effect of Lidocaine and Ropivacaine on reflex movements of nostrils in Rabbits.

Selection of Animals for the Study

Animal: Rabbits (2.5-3 kgs)

RABBITS (25): Rabbits are very docile animals employed for a variety of studies.

New Zealand white rabbits are widely used for the purpose. Rabbit nostrils are relatively sensitive to irritants, so a great deal of experimental action on topical agent is conducted in rabbit.

The rabbit does not appear to possess adrenergic vasodilator nerve; hence no vasomotor reversal phenomenon is demonstrable in this species. They are employed in the study of local anesthetics

DRUGS:

LIDOCAINE 2 %

ROPIVACAINE 0.2 %

Ethical Clearance

All the experimental procedures and protocols used in this study were reviewed and approved by the Institutional Animal Ethics Committee of MMC, Khammam, Andhrapradesh and were in accordance with the guidelines of the committee for the purpose of control and supervision of experiments on animals (CPCSEA).

Inclusion Criteria

1. Rabbits having the (reflex movements of nostrils) sneezing reflex of less than 4 seconds were included in the study.
2. Both male and female rabbits were eligible.
3. All the rabbits should have weight between 2.5 to 3 Kgs.
4. All the rabbits should be disease free.

Requirements for Performing Experiment

1. Rabbit Holder.
2. Cotton.
3. Beakers.
4. Syringes & needles.
5. Scissors.

Method of the Experiment

- A total of 25 rabbits were taken; they were divided into 5 groups and each group consisting of 5 rabbits were taken.
- The 1st group was used as control. The 2nd, 3rd, 4th & 5th groups were used for finding out the potency of different doses of the local anesthetics used namely lidocaine and Ropivacaine.
- The 2nd & 3rd group was injected with 2.5mcg of lidocaine and Ropivacaine by injecting the drug into the mucosa of anyone of the nostrils on separate animals.
- The 4th & 5th group was injected with 5mcg of lidocaine and Ropivacaine by injecting the drug into the mucosa of anyone of the nostrils on separate animals.
- The anesthetic effect was studied by testing the reflex movements of nostrils when stimulated by using a fine tipped pencil. This procedure was repeated every 5 minutes until the reflex reappeared.
- Various concentrations of Lidocaine and Ropivacaine were injected into different groups as per the table below.

Group	Dose of Lidocaine (in mcg)	Dose of Ropivacaine (in mcg)
1 (5 rabbits)	Control	Control
2 (10 rabbits)	2.5	2.5
3 (10 rabbits)	5	5

Evaluation

By comparing the onset, duration and recovery of two drugs namely Lidocaine and Ropivacaine, some of the pharmacokinetic properties and the potency of these drugs will be evaluated.

OBSERVATIONS

Table I. First Dose In Second Group (Lidocaine (2.5mcg) & Ropivacaine (2.5mcg))

Numbering of Rabbits	Lidocaine (Right nostril)		Ropivacaine (Left nostril)	
	Onset of Action (in minutes)	Duration of Action (in minutes)	Onset of Action (in minutes)	Duration of Action (in minutes)
1	12	48	16	82
2	12	46	18	74
3	10	42	16	76
4	12	44	16	80
5	10	43	17	84

Table II. Second Dose In Third Group (Lidocaine (5 mcg) & Ropivacaine (5mcg))

Numbering of Rabbits	Lidocaine (Right nostril)		Ropivacaine (Left nostril)	
	Onset of Action (in minutes)	Duration of Action (in minutes)	Onset of Action (in minutes)	Duration of Action (in minutes)
1	18	134	40	167
2	17	98	38	164
3	18	102	36	158
4	18	100	40	160
5	17	106	38	164

Table III. Comparison of Lidocaine Vs Ropivacaine With First Dose (2.5mcg)

I Dose	Lidocaine(2.5mcg)		Ropivacaine(2.5mcg)		P-Value
	Mean	Standard Deviation	Mean	Standard Deviation	
Onset of Action	11.2	1.09	16.6	0.89	0.000
Duration of Action	44.6	2.40	79.2	4.14	0.000

Table IV. Comparison Of Lidocaine Vs Ropivacaine With Second Dose (5 mcg)

II Dose	Lidocaine (5 mcg)		Ropivacaine (5 mcg)		P-Value
	Mean	Standard Deviation	Mean	Standard Deviation	
Onset of Action	17.6	0.54	38.4	1.67	0.000
Duration of Action	108	14.83	162.6	3.57	0.000

DISCUSSION

To study the local anesthetic effect of Lidocaine and Ropivacaine on reflex movements of nostrils in rabbits was done.

Rabbits are selected as there nasal mucosal membrane is sensitive and elicit reflex movements of nostrils easily by touching the mucous membrane. This is sensitive and best method to elicit surface anesthesia action of local anesthetics.

In this study we compared the onset and duration of action of Lidocaine and Ropivacaine on reflex movements of nostrils in rabbits.

In this study a total 25 rabbits were taken and they were divided into 5 groups. Before starting the experiment, the normal reflex movements of nostrils in rabbits was elicited in all group of animals. Rabbits having the (reflex movements of nostrils) sneezing reflex of less than 4 seconds were included in the study.

The 1st, 2nd, 3rd, 4th & 5th groups were used to find out the local anesthetic effect of different doses of these drugs.

Different doses of Lidocaine and Ropivacaine (2.5mcg, 5mcg) were prepared.

- The 1st group used as control.
- The 2nd & 3rd group was injected with 2.5mcg of lidocaine and Ropivacaine by injecting the drug into the mucosa of anyone of the nostrils on separate animals.
- The 4th & 5th group was injected with 5mcg of lidocaine and Ropivacaine by injecting the drug into the mucosa of anyone of the nostrils on separate animals.
- After 2minutes mucous membrane is stimulated by fine tipped pencil, loss of reflex movement of nostrils is regarded as indication of complete anesthesia.
- The anesthetic effect was studied by testing the reflex movements of nostrils when stimulated by using a fine tipped pencil. This procedure was repeated every 5 minutes until the reflex reappeared.
- The experiment is repeated with different doses of Lidocaine and Ropivacaine on different groups of animals, and results are tabulated (Table no: I, II) using the loss of the reflex movement of nostrils as parameter after application of different doses, the dose response curves are established and potency ratio verses the standard calculated furthermore the duration of activity is evaluated and the results are tabulated and statistically analysis is done by using ONEWAY ANOVA TEST.
- 1st group used as control.
- In the 2nd and 3rd group with first dose of Lidocaine (2.5mcg) and Ropivacaine is (2.5mcg), the mean onset and duration of action of lidocaine is 11 and 45 minutes, the standard deviation being 1.095 and 2.40 whereas Ropivacaine mean onset and duration of action is 17 and 79 minutes, standard deviation being 0.8944 and 4.14, P-value of onset of action is 0.000 which is highly significant and duration of action is 0.000 which is also highly significant (Table no: III)

- In the 4th and 5th group with dose of Lidocaine (5mcg) and Ropivacaine (5mcg). The mean onset and duration of action of Lidocaine is 18 and 108 minutes, the standard deviation being 0.54 and 14.83, whereas Ropivacaine mean onset and duration of action is 38 and 163 minutes, standard deviation being 1.67 and 3.577, P-value of onset of action is 0.000 which is highly significant and duration of action is 0.000 which is also highly significant (Table no: IV)
- With smallest dose (1st) of Lidocaine (2.5mcg) and Ropivacaine (2.5mcg), the onset of action of lidocaine is 11 and 17 minutes, Ropivacaine duration of action is longer than (79 minutes) lidocaine (45 minutes), P-value being the same for both (0.000).
- With 2nd dose of Lidocaine (5mcg) and Ropivacaine (5mcg), the onset of action is almost same in both that is 18 and 38 minutes, Ropivacaine duration of action is longer than (163 minutes) lidocaine (108 minutes), P-value being the same for both (0.000). (Table-IV).

CONCLUSION

Our observations showed that Lidocaine had quick onset of action when compared to Ropivacaine in all the doses administered. However, Ropivacaine proved to be have longer duration of action both in low and high doses. (27)

Hence, it may be concluded that Ropivacaine is more potent and has longer duration of action in relation to Lidocaine. This information is very helpful for administration of local anesthetics before surgeries and we have found out the drug had quick onset of action and longer duration of action. However, further comparative studies with Lidocaine, Ropivacaine and Bupivacaine should be done to elicit the potency of local anesthetics.

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Pleomorphic Adenoma of Buccal Salivary Gland: A Case Report

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ABSTRACT

The majority of minor salivary gland tumors are malignant. Of the benign tumors, pleomorphic adenomas are most common. The cheeks, lips, and gingiva are rarely sites of occurrence. A case of pleomorphic adenoma of the buccal salivary gland is presented here in 34 year old male patient, who was diagnosed as a pleomorphic adenoma of the minor salivary gland in the upper buccal vestibule. The tumor was a well circumscribed, firm mass, about 1.5cm in diameter, nontender & mobile in nature. Complete excision was performed and the HPR showed pleomorphic adenoma.

Keywords: Pleomorphic Adenoma, Minor Salivary Gland Tumors

INTRODUCTION

The most common salivary gland tumor is Pleomorphic adenoma (PA), which accounts for 60-65% of such diseases. It mainly affects women in their fourth to sixth decade of life, and has a natural history of asymptomatic slow growth over a long period¹. It usually involves major salivary glands, most commonly being the tail of parotid. It also involves minor salivary glands. The lips are commonly affected sites, second only to the palate, and accounting for about 20-40 % of all intraoral Pleomorphic adenoma.^{2,3} The aetiology of PA is unknown. It is epithelial in origin, and clonal chromosome abnormalities with aberrations involving 8q12 and 12q15 have been described.⁴

This paper describes the diagnosis and management of an asymptomatic, slowly growing,

Pleomorphic adenoma in the upper buccal vestibule of middle aged female.

CASE REPORT

A 34-year old male presented to our O.P.D. with a complaint of painless, mobile lump in upper left buccal vestibule. The mass slowly increased in size during the past 3 years. On examination, the mass was circumscribed, mobile, sessile, and firm in consistency and 1.5 cm in diameter. The overlying mucosa was smooth with pinkish purple color showing evidence

of superficial vascularity. Skin over the tumor was not fixed. There was no pain or bleeding on palpation. Head and neck abnormalities were not noted on clinical examination. The medical history was unremarkable, and no other abnormalities were found on clinical examination. Thus, the clinical diagnosis was benign minor salivary gland tumor. FNAC showed the features of pleomorphic adenoma. A small horizontal incision was given over the mass & blunt dissection was performed carefully.(fig:1) During the surgical procedure, the lesion was excised without difficulty with clinically normal margin because the mass was fully encapsulated(fig:2). The mucosa was sutured. Subsequent follow up after one year showed no signs of recurrence.



Fig. 1. Intra oral photograph showing tumor on the upper left buccal vestibule.



Fig. 2. Post surgical defect

Histopathologically, the tumor mass was well encapsulated (fig:3). The epithelial cells were arranged in a duct-like pattern, cystic structures, and anastomosing cords. Delicate collagenous stroma with myxoid and chondroid areas were seen. All features were suggestive of pleomorphic adenoma.



Fig. 3. Specimen after excision

DISCUSSION

Pleomorphic adenomas have constituted the majority of both major salivary gland tumors and minor salivary gland tumor. They are found over a wide age distribution, with a peak frequency in the third decade, which is particularly prominent in females.⁵ Histological findings show a mixture of epithelial tissue intermingled with myxoid, mucoid, or chondroid areas.⁶

Minor salivary gland tumor presents as soft or firm masses, with most having a nodular, exophytic component. Ulceration of the nodular mass may occur,

but the presence of ulcer provides no clue to the invasiveness of the tumor. Those that are soft on palpation usually have large cystic cavities and an abundance of mucin. The more solid tumors, especially pleomorphic adenoma with bone and cartilage formation, are firm on palpation. Differentiation between benign and malignant tumors is not possible without histopathology. However, suspicion of malignancy necessitates a biopsy before surgical treatment. When a lip mass is freely movable and submucosal, an excision of the mass with surrounding tissue may be adequate. On the other hand, a multilobulated mass fixed to the underlying tissue is more likely to be malignant. A wide local excision with a 1.5 cm margin and resection of 1 anatomic barrier beyond the tumor are necessary for surgical clearance.⁷

Some studies have discussed the relationship between the pathological and magnetic resonance signal characteristics of the salivary gland masses, the consensus is that the signal characteristics are not particularly useful in differentiating benign tumors from malignant tumors and inflammatory lesions.^{8,9} Inflammatory lesions are characterized by the presence of edema in the surrounding fat. They have a hypointense signal on T1-weighted images with a striated pattern, and hyperintense signal on fat-suppressed T2-weighted images. Inflammatory lesions encountered in this space commonly originate from odontogenic infections.

The hemangiomas are characterized by very high T2-weighted signal intensity, higher than that of fat and similar to that of cerebrospinal fluid. They can have characteristic features of signal voids, which are thought to represent phleboliths.¹⁰

The lesion was excised intact with its capsule. This is important because the rupture of the capsule and incomplete excision of microscopic pseudopodia¹¹ might seed tumor cells into the surrounding tissues resulting in recurrence.

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Knowledge and Practices Related to Menstruation among Rural Adolescent Girls

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ABSTRACT

Objective: This study was done in adolescent girls to evaluate the knowledge and practices about menstrual hygiene, beliefs and taboos .

Methodology: 70 adolescent post menarcheal girls between 11-15 years of age from a rural school at Doddaballapur (RL Jalappa School) were included in the study. They were evaluated using structured questionnaire and were given proper education after collecting data.

Results: Majority (90%) of them had attained menarche between 12-14 years of age. 81.4% had menstrual cycles between 21-40 days. The duration of menstrual flow was 3 days to 1 week in majority of them (91.7%), 60% had normal amount of menstrual bleeding during their menstrual cycles.66% used sanitary pads, 21% used clothes and 13% used both clothes and sanitary pads for absorbing menstrual blood. Among those who used clothes as pads 88% reused them &71.3% practiced inadequate drying of clothes.Though majority (98.6%) knew the need of daily bathing, 1.4% felt there is no need to bath during menstruation.When enquired about methods of maintaining hygiene during menstruation,44.3% practiced changing clothes/pads often, 8.6% by bathing twice a day, 17.1% by washing private parts and 30% followed all above measures. 40% felt menstrual flow as unclean. 68.6% had myths about not worshipping God and entering kitchen and 74.3% had misconception that they should not play or go to school during menstruation.

Conclusion: We conclude that there are substantial lacunae in knowledge and practices as well as myths and misconceptions about menstruation among adolescent girls from rural area even in this era. This needs to be considered while creating awareness programmes.

Keywords: *Adolescents, Menstruation, Knowledge, Hygiene and Misconceptions*

INTRODUCTION

One fifth of world's population is between 10 years to 19 years old amounting to over a billion young people, 85% of whom live in developing countries¹.

Adolescence in girls has been recognised as a special period which signifies the transition from girlhood to womanhood. This transitional period is

marked with the onset of menarche, an important milestone which is unique to females. In the existing Indian cultural milieu, the society is interwoven into a set of tradition, myths & misconceptions especially about menstruation & related issues.

Menstruation is generally considered unclean in Indian society. Isolation of menstruating girls & restrictions imposed on them in the family have reinforced negative attitude towards this phenomenon in girls.

Several studies have reported restrictions in daily activities such as not being allowed to take bath, change clothes, comb hair, enter holy places & even dietary restrictions are also imposed. Social practices

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about menstruation make girl child feel subnormal and may hamper her development^{2,3,4}. In India problems are more difficult & complicated because of marked socioeconomic diversity.

Social prohibition, negative attitude of the parents for right information, their strong bondage with traditional beliefs, taboos & misconceptions about menstruation has led to many serious health problems⁶, poor personal hygiene & unsafe sanitary conditions result in the girls facing many gynaecological problems⁷.

Repeated use of unclean clothes, improper drying of used cloth before its reuse results in harbouring of microorganisms resulting in genitourinary infections in adolescent girls.

Infections due to lack of hygiene during menstruation have been reported in many studies⁷. Several research studies revealed lacunae in knowledge towards menstruation among adolescent girls⁹. Data about the adolescents level of knowledge & practices related to menstruation is beneficial for planning programmes for improving awareness level regarding their life process & promoting their quality of life. Hence the present study was done among adolescent girls in a rural school.

OBJECTIVE OF THE STUDY

- 1) Collect baseline data about menstrual history in adolescent girls.
- 2) Study the hygienic practices followed by these girls.

METHODOLOGY

This study was conducted in a rural school, (R L J school at Doddaballapur) in 2007-2008. Study group consisted of 70 post menarcheal adolescent girls in the age group of 11-15 years. Written data was collected using structured questionnaire regarding knowledge & practices about menstruation. Correct knowledge was imparted at the end of the data collection.

Major components of the questionnaire were

1. Detailed menstrual history
2. Hygienic practices & beliefs during menstrual cycles.

3. Sources of information & related complication of menstruation.

Written data was collected after explaining the questions & was analysed. **Statistical software:** The Statistical software namely SPSS 9.0 was used for the analysis of the data and Microsoft word and Excel have been used to generate tables and graphs etc.

RESULT ANALYSIS

The Study group consisted of 70 Adolescent girls in the age group of 10-15 Years. All of them had attained menarche.

Of the 70 girls majority (90%) attained menarche between 12-14 year. 5.7% & 4.3% attained menarche at 11 year and 15 years respectively. Out of 70 girls about 81.4% had menstrual cycle once in 21 - 40 days, 5.7% had their menstrual Cycles as late as once in 40-60 days. 2.86% had cycles once in 20 days. 10% had irregular cycles. 91.7% reported duration of menstruation between 3 to 7 days to 1 week while 8.6% reported duration > 7 days. 60% had normal amount of bleeding during menstruation. 17.1% had excessive bleeding & 22.9% had scanty bleeding. 60% knew menarche to be a normal process whereas 40% felt it unclean.

66% used sanitary pads whereas as 21% used cloth & 13% used both. 88% reused cloth after washing it with soap & water where as 8% threw them. 4% burnt them. 71.3% practiced inadequate drying method whereas only 28.6% dried it in adequate sunlight. Majority (98.6%) knew that they need bath during periods. however 1.4% opined no need of bathing during periods. 8.6% practiced bathing twice daily, 44.3% changing sanitary pads/clothes often, 17.1% washing private parts often & 30% followed all the above mentioned hygienic practices.

68.6% felt they should not worship god & enter the kitchen during menstruation. 74.3% felt that they should avoid playing & going to school during menstruation. Majority (74.3%) had dysmenorrhoea. 45.7% had dysmenorrhoea a day before periods. 11.4% had dysmenorrhoea on the first day of periods whereas 17.1% had dysmenorrhoea throughout the periods. Majority (51.4%) did not have any symptoms whereas 18.6% felt angry, 14.3% felt depressed, 12.9% felt irritable & 2.9% felt weepy. Out of 70 cases 64.3% did not have any symptoms, 14.3%

had headache, 10% had loss of appetite, 4.3% had loose motion, 1.4% had vomiting, 1.4% had fainting spells & 4.3% had more than 2 symptoms. Majority (71.4%) had no symptoms, 11.4% had curd like vaginal discharge, 4.3% had itching in private parts, 2.9% had foul smelling discharge, 1.4% had burning sensation while passing urine, 8.6% had more than 2.

DISCUSSION

There are substantial lacunae in the knowledge towards menstruation among adolescent girls especially those from rural background. Hence in depth studies are badly needed to know and to fulfil the reproductive health needs of adolescents. A three tier grid approach to improve adolescent reproductive health care is proposed¹.

Grid I: Identify the problem of adolescents in India.

Grid II: Identify existing facilities catering to teenage reproductive health program.

Grid III: Formulate project plan, research and training program.

The present study is an attempt to fill lacunae in grid I. This study was undertaken to assess the knowledge & practices related to menstruation among adolescent girls from rural background

Study group consisted of 70 post menarcheal girls

Age at menarche

Majority (90%) had attained menarche between 12-14 yrs of age.

Similar results were found in the study done by Dr. Parvathy et al⁸, Dr. Terrvill et al¹³ and Dr. SC Chan et al¹⁴ in which the mean age of menarche was 13.6 years, 12.8 years and 12.3 years respectively.

However in the study done by Dr. Rajani Dhingra et al⁵ and Dr. Adhikari et al⁶ majority had attained menarche between 10-12 years and 10-14 years respectively.

Frequency of periods

According to this study majority (81.4%) had menstrual cycles once in 21 to 40 days. However few of them (5.7%) had longer than usual cycles that could be attributed to some medical reason which needs further workup.

Similar results were found in the study done by Dhingra et al⁵, SC Chan et al¹⁴ and Adhikar et al⁶ in which majority were having their menstrual cycles between 30-45 days, 21 to 35 days and 26-30 days respectively.

Duration of bleeding

In our study majority (91.7%) reported duration of menstruation between 3 days to 7 days.

Similar results were found in the study done by Dr. Dhingra et al⁵, SC Chan et al¹⁴ and Adhikari et al⁶ in which 78.6% subjects reported their duration of menstruation between 0 to 6 days, 5.4 days and 3-5 days respectively.

Amount of blood loss during menstruation

In our study majority (60%) had normal amount of bleeding during menstruation whereas 17.1% had excessive bleeding and 22.9% had scanty bleeding. According to the study done by Dr. Dhingra et al⁵ 45% subjects reported normal bleeding, 26.7% reported excessive bleeding and 28.2% reported scanty bleeding.

Beliefs and practices during menstrual cycles

In our study majority of adolescent girls (66%) used sanitary pads. 21% used cloth and 13% used both for absorbing menstrual blood. Among those who used clothes 88% reused the cloths and 71.3% practiced inadequate drying methods.

In the study done by Dr. Adhikari et al⁶ 98% used cloth, among them 88.7% reused it. In another study by Dr. Dhingra et al⁵ 87.5% girls reused the cloths and in majority of girls (96.9%) management of menstruation was very poor. In these two studies management of menstruation was very poor compared to our study probably as these studies were done in tribal girls and girls from lower socio economic class.

Majority (98.6%) of adolescents in our study felt the need of bathing during periods. Similar results were found in study done by Dr. Nair et al⁸ in which only 1.6% avoiding bath during periods. In contrast in the study done by Dr. Dhingra et al⁵ majority (98%) did not take regular bath and in study done by Dr. Adhikar et al⁶ only 4% took bath. This is because those studies were done in girls of lower socio economic and tribal class.

In our study to keep personal hygiene during menstrual cycles 8.6% adolescents practiced bath twice a day, changing sanitary pad/clothes often (44.3%), washing private parts often (7.1%) and 30% followed all these practices. Whereas in the study done by Dr. Dhingra et al⁵. Majority (96.9%) did not follow proper hygienic practices.

Belief about menstrual flow

Majority in our study knew it to be a physical process and felt that flow is clean, whereas 40% did feel it as unclean. In the study done by Dr. Adhikari et al⁶ only 6% thought of it as a physiological process, 12% considered it as a pathological process whereas majority 82% considered it as a curse.

Myths about menstrual cycle regarding worshipping god and entering kitchen.

In this study majority (68.6%) felt they should not worship god and enter the kitchen.

Similarly in this study done by Dr. Dhingra et al⁵ and Dr. Parvathy et al⁸ 100% and 92% respectively were restricted from worshipping.

Restriction of activities like playing or going to school

In this study majority (74.3%) felt they should not play and go to school.

In the study done by Dr. Dhingra et al⁵ 23% were not allowed to go out and in the study done by Dr. SC Chan et al¹⁴ 12.1% reported absentism from school and 33.6% reported reduced daily activities.

Problems Associated With Menstrual Cycle

According to this study majority (74.3%) had dysmenorrhoea. Which is similar to study done by Hillard et al¹³, Chan¹⁴ and Parvathy et al⁸ in which dysmenorrhoea is reported in 60%, 68.7% and 63.75% subjects respectively.

Premenstrual psychological symptoms occurred 48.6% adolescents, 18.6% felt angry, 14.3% felt depressed, 12.9% felt irritable and 2.9% felt weepy whereas in the study done by Parvathy et al⁸ and Adhikari et al⁶ irritability was reported in 62.9% and 96.7% respectively.

Premenstrual general symptoms occurred in 35.7%, 14.3% had headache, 10% had loss of appetite. Whereas in the study done by Parvathy et al⁸ 49.6% had headache, 24% had malaise. In the study done by Dhingra et al⁵ 62.5% had pain abdomen, 41.5% had

nausea, 7.5% had headache and 24% had loss of appetite.

Genito-urinary infections

According to this study 29.6% had symptoms of genitourinary infection. This can be attributed to poor hygienic practices.

CONCLUSION

This Study reveals that though majority of adolescent girls knew that menstruation is a normal process still they had many myths and misconceptions. This can affect their school performance and should be considered while creating awareness programmes.

The practice of maintaining menstrual hygiene is unsatisfactory among these girls, who practiced reuse of cloth pads which were dried inadequately (88%) which may predispose of Genitourinary infections.

Hence we conclude that there is substantial lacunae in knowledge and practices about menstruation among adolescent girls from rural area even in this era. This needs to be considered while creating awareness programmes.

Table 1: Age At Menarche

Age	Number(%)
11	4(5.7)
12	21(30)
13	28(40)
14	14(20)
15	3(4.3)
Total	70

Table 2: Frequency of Periods

Day	Number(%)
20	2(2.86)
25	1(1.43)
30	51(72.9)
40	5(7.1)
60	4(5.7)
IRREGULAR	7(10)
TOTAL	70

Table 3 : Duration of Menstruation

Response	Number	Percentage
1 DAY	0	0
3 DAYS	20	28.6
3 to 7 DAYS	44	62.9
>7 DAYS	6	8.6
Total	70	100

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Ethical clearance certificate from Sri Devraj Urs Medical College institutional Ethical committee

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Case of HPV Vaccine: An Epidemiological Assessment

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ABSTRACT

HPV vaccines have stirred the bee's hornet as no other vaccine has in the recent past on account of the controversies involving the HPV vaccine trials in India. The prescriptions of the recent draft 'National Vaccine Policy' have further complicated the decision making regarding the introduction of HPV vaccine in India on a regular basis. Under these difficult circumstances this paper seeks to present a clear epidemiological understanding of the issues involved to facilitate a scientific decision regarding the use of HPV vaccine in tackling the public health problem of carcinoma cervix.

INTRODUCTION

HPV vaccines have stirred the bee's hornet as no other vaccine has in the recent past on account of the controversies involving the HPV vaccine trials in India. The situation has gained in complexity with the prescriptions of the draft 'National Vaccine Policy.' It queers the pitch for vaccines with proposal to make it "mandatory for Government to support developments with Advance Market Commitments and honor the commitments.....and setting up a Vaccine Fund through 'innovative financing mechanisms'....., for introducing new vaccines..." Some of the bodies that have been in the thick of the HPV vaccine controversy find a pride of place in the policy that calls for exploring the linkages with international institutions such as the Gates Foundation, GAVI and PATH.¹ These developments emphasize the need for a sound epidemiological approach for a decision regarding the use of HPV vaccines in India to tackle the public health problem of carcinoma cervix (Ca Cx).

Features of Ca Cx epidemiology

Carcinoma of the cervix is a major problem from the perspective of women's health in India. Figure 1 clearly shows that Ca Cx is the most common cancer among women in India.² PBCR (population based cancer registry) data shows that there were 90,708 new cases of Ca Cx in India in 2007.³ The five year survival rate is only 48.7%,⁴ while the number of deaths due to Ca Cx is approximately 72,825 every year.² Much of the cancer related morbidity and mortality is

concentrated in the poorer segments of the society. According to hospital based cancer registry data between 63 to 89 percent of the patients present in more advanced stages of the disease.⁵ Despite there being no organized screening program in the country, all the urban PBCRs have shown a statistically significant decline in the age adjusted rates (AAR) of Ca Cx in India.⁵

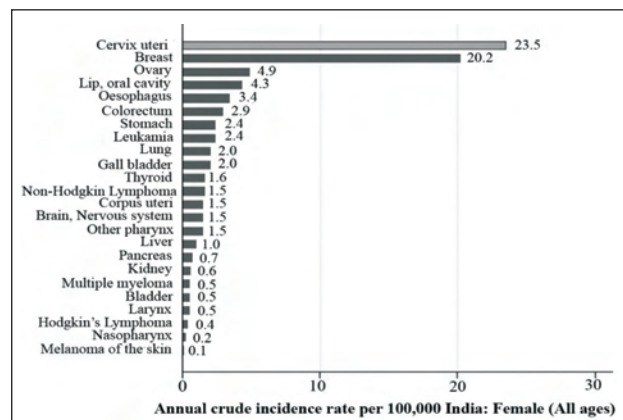


Fig. 1. Incidence of cervical cancer compared to other cancers in

Ca Cx is largely preventable and has a long gestation time during which the cervical lesions pass through distinctly recognizable stages before developing into the invasive cancer of the uterine cervix.^{6, 7, 8, 9, 10, 11, 12} In its early stages Ca Cx is readily managed with surgery. Radiotherapy and chemoradiotherapy are reserved for high risk early stages or advanced disease.¹³

Various etiological factors associated with Ca Cx are summarized in table 1. Relative proportion of Ca Cx cases associated with the respective causative factor is mentioned against each factor.

Table 1: Etiological factors associated with carcinoma cervix in India.

Burden of cervical HPV infection	
HPV prevalence (%) in the general population (among women with normal cytology).	7.9
Prevalence (%) of HPV 16 and / or HPV 18 among women with:	
Normal cytology	6
Low grade cervical lesions (LSIL/CIN-1)	29.4
High grade cervical lesions (HSIL/CIN-2 / CIN-3 / CIS)	56
Cervical cancer	82.5
Other factors contributing to cervical cancer	
Smoking prevalence (%) women	2.8
Total fertility rate (live births per woman)	2.8
Oral contraceptive use (%)	3.1
HIV prevalence (%), adults (15-49 years)	0.3
Sexual behavior	
Median age at first sexual intercourse among women (25-49 yrs)	17.6
% of young women (15-24) who had sex before the age of 15	-
Cervical screening practices and recommendations	
Cervical cancer screening	2.6 % (All women aged 15-69 yrs screened every 3 yrs; WHS India)
Coverage, % (age and screening)	4.9 % (Urban women aged 18-69 yrs screened every 3 yrs; WHS India)
Interval, reference)	2.3 % (Rural women aged 18-69 yrs screened every 3 yrs; WHS India)
Screening ages (years)	-
Screening interval (years) or frequency of screens	-

Source: WHO/ICO Information Centre on HPV and Cervical Cancer.² Notes: LSIL = Low grade squamous intraepithelial lesion, CIN = Cervical intraepithelial lesion, HSIL = High grade squamous intraepithelial lesion, CIS = Carcinoma in situ, WHS = World health surveys.

These salient features of the epidemiology of Ca Cx enable us to figure out the thrust areas for reducing the burden of disease due to Ca Cx. One obvious observation is that an overwhelming number (82.5%) of Ca Cx cases have association with HPV (Human Papilloma Virus), of which types 16 and 18 are most commonly associated with Ca Cx. Etiologies like total fertility rate, oral contraceptive use and sexual behavior are impacted by far too many socioeconomic factors to offer any straightforward remedies for controlling them. Even otherwise these account for only a small fraction of the total cases. The obvious choice then is to target the infection caused by HPV and its consequences. Among the important risk factors for HPV infection is early age at first intercourse (16 yrs or younger), multiple sexual partners or male partner having multiple sexual partners.¹⁴

Conventional wisdom until recently advocated a strategy targeted at effective screening of at risk women to detect cases of Ca Cx in the incipient stages wherein they could be easily treated on OPD basis without incurring the cost of treating more advanced disease. The mortality due to Ca Cx world over has declined sharply since the 1960s and 70s due to institution of effective screening programs to detect the cervical cancer early. These have been successful in detecting early the in situ squamous cell carcinoma and thereby reducing the mortality rates.^{15, 16, 17} In fact CDC states that “never or rarely being screened for cervical cancer” is the single most important factor associated with invasive cervical cancer.¹⁴

HPV vaccines: the proposed game changer

The availability of vaccines against HPV infection of late has been projected as a game changer to the conventional approach to tackling Ca Cx. Health planners are being offered a possibility of bringing down the morbidity and mortality due to Ca Cx by preventing the HPV infection in females by giving three doses of HPV vaccine to a girl in her pre-pubertal years. Indeed, license was granted for two vaccines in

India in 2009 – a bivalent vaccine Cervarix manufactured by GSK and a quadrivalent vaccine manufactured by Merck.

One may bear in mind that effective screening for Ca Cx has virtually been non-functional in India with just about 5 % of urban and 2.3 % rural women being covered by screening programs.² The question then is – do we use the vaccine; or do we institute comprehensive screening program; or else do we need to do both?

These questions may not have any straightforward answers yet, but there surely are enough pointers to enable a broad assessment.

Effectiveness of HPV vaccines

The effectiveness of HPV vaccines in bringing down the burden of Ca Cx shall depend on following factors:

- Overall incidence of Ca Cx in the country – the higher the incidence, the greater the need for wider coverage.
- The proportion of Ca Cx caused by HPV 16 and 18 viruses.
- Long term efficacy of the vaccine in preventing the HPV infection – whether immunogenicity due to vaccine wanes while women are still at risk of HPV infection.
- Extent of coverage attained in the pre-pubertal girls.
- Effectiveness decreases if older girls who may already have contracted an infection are immunized.¹⁸
- In India's context an important consideration is the presence of co-morbidities like HIV, anemia and malnutrition.
- Impact that the vaccine has on the herd immunity to afford protection to those not immunized.
- Long term impact of the vaccine on the epidemiology of other subtypes of HPV viruses, i.e. does HPV vaccine against types 6, 11, 16 and 18 offer cross-protection against other subtypes as well or what consequences elimination of these subtypes will have on the activity of other subtypes.

- Question of economic affordability is a paramount concern in determining cost effectiveness of HPV vaccines.
- Does HPV vaccination replace the need for Ca Cx screening?
- Last but not the least; the incidence of adverse effects – this shall have a direct bearing on the coverage.

Studies on efficacy of HPV vaccines

In a systematic review and meta-analysis of the studies examining the efficacy of HPV vaccines in preventing persistent cervical HPV infection Torre et al found that even though the efficacy in preventing persistent infection with HPV was high, there was need for further studies to test prolonged immunogenicity and long term vaccine efficacy.¹⁹ Another study found quadrivalent HPV vaccine to be efficacious in preventing infection due to type 6, 11, 16 and 18 HPV viruses in women aged 24–45 years who were not infected with the relevant HPV types at enrolment.²⁰ Likewise, the GSK bivalent vaccine was found to be efficacious in preventing cervical intraepithelial neoplasia associated with HPV 16 and 18 and other non-vaccine oncogenic types of HPV virus along with other benefits in vaccine cohorts that are relevant to mass vaccination programs.²¹ In larger scale FUTURE II trials, HPV vaccine had a protective efficacy of only 17 % in the vaccinated women against grade 2 or 3 CIN and adenocarcinoma in situ compared to unvaccinated women.²²

These successes notwithstanding, some of the most critical questions still remain unanswered– is the vaccine capable of preventing cervical cancer and its mortality^{23,24} and not just the pre-cancerous lesions, that have been used as surrogate end points in the trials for which results are currently available.⁹⁰ Even though the vaccine had been licensed for use in USA in 2006, the first results of vaccine trials with clinically relevant end points were not available until May 2007.^{22,25,26}

There are as many as 15 types of oncogenic HPV strains.²⁷ Nothing is known about the impact that vaccine will have on the non-vaccine oncogenic strains once the vaccine suppresses the more commonly associated vaccine strains.²⁸ Most of the HPV infections get cleared out by the natural immunity in the body against the infection. Little is known how the vaccine might impact on the natural immunity against the

papillomaviruses. Infection with papillomavirus takes a very long time before converting to invasive carcinoma. Little is known of weather the immunogenic response of the vaccine shall last so long as to afford any protection against carcinoma cervix.²⁸ It has been found that the cost-effectiveness of the vaccine depends heavily on the length of time for which the vaccine imparts immunity against papillomaviruses – answer to which remains pretty much open ended.²⁹

The biggest disappointment is that HPV vaccines do not obviate the need for comprehensive screening programs. Additionally, there is little information about how the belief of protection against cervical cancer upon vaccination shall impact on the motivation of women to opt for screening.

The mathematical models for cost-benefit analysis are fraught with weaknesses unless all the factors are adequately accounted for in the model. With so many aspects of the impact of HPV vaccines remaining unanswered, one has to resort to wide ranging assumptions in doing a cost-benefit analysis, which puts a question mark on their practical value, especially as the costs of the adverse effects, of the distortion in health priorities etc are never taken into account. Diaz et al have calculated that in India, if high coverage (70 %) of preadolescent girls with a low-cost HPV vaccine (costing international \$ 10 for three vaccinations) that provides long-term protection is achievable, then subsequent screening three times per lifetime is expected to reduce cancer deaths by half, and be cost-effective.¹⁸ Judging by the present prices of HPV vaccines - Rs 3299 per dose for Cervarix (by GSK) and Rs 2800 per dose for Gardasil (by Merc) and the fact that coverage for routine immunization for children is just about 50 %, figures of \$ 10 per vaccinated girl and a coverage of 70 % with HPV are a way too optimistic for India. But regardless of these facts, a high cost is already being extracted from tens of thousands of girls across the country through the vaccine demonstration projects being conducted by PATH (Program for appropriate technologies in health) in collaboration with the Indian Council for Medical Research (ICMR).

Of stealth and human guinea pigs; HPV trials in India

Ethical field trials of vaccines with a sincere purpose of addressing the burden of disease at times appear as a simplistic notion in the context of a third world

country like in India where least empowered people are ranged against the powerful confluence of interests, between the drug industry, private philanthropic foundations and the pliant governments.

An international NGO – PATH; an acolyte of GAVI, in which Gates Foundation has enormous stake, has been involved with the Ministry of health and ICMR to “prepare the health systems and communities to accept and embrace” the new vaccine technology against HPV. PATH states that through its “HPV Vaccines: Evidence for Impact project, in close collaboration with ministries of health and other partners, it is piloting vaccine introduction in four countries: India, Peru, Uganda, and Vietnam.” It carried out its “Formative Research” by the name of “Demonstration Projects” in the states of Gujarat and Andhra Pradesh to “to guide development of a vaccine delivery strategy, a communications strategy (for outreach to communities), and an advocacy strategy (for outreach to policymakers).”³⁰ However, there is no information available in the public domain on the protocol of this research, which ethics committee cleared the research and other relevant details.³⁰ A team of women and health activists from, SAMA, Jan Swasthya Abhiyan and Antra brought out a detailed report on the conduct of the ‘demonstration project’ in the Bhadrachalam block of Khammam district of Andhra Pradesh. The ‘project’ targeted poor tribal, scheduled castes, Muslims or other backward communities and ‘demonstrated’ utter disregard for all ethical practices that go with such research. At least four deaths and adverse effects in scores of girls have been documented.³⁰ The high handedness involved in the conduct of the project is shown from the statement of the district immunization officer of Khammam who said “I don’t know why the HPV vaccine is being introduced here. We did what the Commissioner of Family Welfare told us.”³¹ This project is a quintessential exposition of the pusillanimity and complicity of the official research bodies in rendering India’s poor as subservient guinea pigs to the interests of the Western multinationals.

The virtually non-existent surveillance for Ca Cx in India and the role surveillance has played in bringing down the mortality due to Ca Cx in the developed countries has already been noted. Experts opine that surveillance through techniques like Visual inspection with acetic acid (VIA) costing just Rs 4 per screening, with the backing of more sophisticated techniques on need, administered through functional

peripheral health services can be much more cost-effective.⁹⁷ Moreover, surveillance remains necessary even with HPV vaccination. We can reassess the vaccine, when the world is on a surer footing regarding its benefits. But there is a long history in India of such simple yet scientific rationales losing out to brute force of 'techno-centricism' backed by the muscle of pharmaceutical industry and the powers that be.

CONCLUSION

There is a need to delineate an epidemiologically guided approach from the muddled science being propagated by donor agencies and vested interests in taking decisions about emerging vaccine technologies. It need be remembered that the global vaccine manufacturers have not hesitated in manipulating public regulators and governments for serving their business interests even in their home countries. Even as the experience of the HPV vaccine demonstration projects have left us with a bitter taste, the new draft vaccine policy seeks to institutionalize conflicts of interest in the vaccine policy itself. Under the circumstances a clear epidemiological understanding of Ca Cx and HPV vaccine could prove vital in confronting this challenge.

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Intrathecal Clonidine with Hyperbaric Bupivacaine and Hyperbaric Bupivacaine Alone in Gynaecological Surgeries - A Comparative Study

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ABSTRACT

Objective: To increase the duration of analgesia produced by local anaesthetics a number of adjuvant has been added to centrineuraxial block. Administration of intrathecal clonidine has shown to improve the quality of spinal anaesthesia and without neurotoxicity. With these considerations, present clinical study was undertaken to assess the behavior and feasibility of administration of intrathecal clonidine as an adjuvant to bupivacaine in augmenting sensory block in patients undergoing gynaecological surgeries.

Method: A 100 ASA physical status I and II patients randomly selected and divided into 2 groups 50 of each. Group I received 0.5% hyperbaric bupivacaine 3ml (15mg). Group II received 0.5% hyperbaric bupivacaine 2.5ml (12.5mg) + clonidine 0.5ml (75µg) to keep the volume constant. The onset of sensory block, onset of motor block, time taken for two segment regression of sensory block, intraoperative hemodynamic stability and total duration of analgesia were studied. Patients were observed for 24 hours post operatively to look for any complications

Results: Addition of 75µg clonidine to hyperbaric bupivacaine resulted in a statistically significant faster onset of sensory block (Group I - 4.03min; Group II - 1.74min) and motor block (Group I - 4.81min; Group II - 2.70min). The time taken for two segment regression was significantly prolonged in Group II (Group I - 133.58min; Group II - 207.60min). The duration of analgesia was also longer in group II (Group I - 211.70min; Group II - 316.40min). Patients in group II experienced a relative hemodynamic stability with minimum side effects like dry mouth and sedation (16% and 28% respectively).

Conclusion: The results suggest that the use of 75µg clonidine provides relative intraoperative hemodynamic stability and prolonged post operative analgesia with minimal side effects.

Keywords: Spinalanaesthesia, Intraoperative, Postoperative, Bupivacaine, Clonidine, Gynaecological Surgery

INTRODUCTION

Gynaecological surgery is a dynamic field of medicine, always changing to benefit the health of women by curing or alleviating the symptoms of gynaecological disease. These procedures are often associated with severe postoperative pain. The need of the hour is a minimally invasive technique that offers good intra operative and postoperative analgesia using minimal concentration of drugs with minimal or no side effects.

New trends in subarachnoid block are use of adjuvant with local anesthetics, which reduce the nature of complications as well as improve the anesthesia and analgesia effect.

Central neuraxial opioids, offer the perceived benefit of selective analgesia without sensory or motor blockade. However respiratory depression prompted further research on non opioid analgesics.¹ Intrathecal clonidine is being extensively evaluated as an alternative to neuraxial opioids for control of pain and

has proven to be a potent analgesic, free of at least some of the opioid related side effects.²

Clonidine has the ability to potentiate the effects of local anaesthetics without producing pruritis and respiratory depression and prolongs the necessary blockade^{3,4} and reduces the amount or concentration of local anaesthetic required to produce postoperative analgesia.^{5,6}

The present study is aimed at evaluating the efficacy of the use of intrathecal clonidine as an adjuvant to hyperbaric bupivacaine in providing better intra operative and post operative analgesia and hemodynamic stability

MATERIALS AND METHOD

The hospital ethics committee of JSS medical college approved the study and obtained written consent from all patients. A hundred patients of aged 30-65years with ASA I and II were randomly selected and divided into two equal groups.

Group I: Received 3ml of 0.5% bupivacaine (hyperbaric)

Group II: Received 2.5ml of 0.5% bupivacaine (hyperbaric) + 0.5ml of clonidine (75µg)

- Patients with a history of known sensitivity to the drugs, gross spinal deformity, and peripheral neuropathy or with contraindications to neuraxial block- local/systemic infections, coagulation disorders, hypovolemia, signs of raised intracranial tension, uncontrolled hypertension are excluded from study.

Preanaesthetic evaluation done a day before the surgery and routine blood, serum, urine routine investigations ECG, Chest X-ray are done according to the requirement. Written informed consent was taken.

All patients were premedicated with tab 0.5 mg of alprazolam and tab ranitidine 150 mg orally on the previous night and kept fasting from 10pm. On the day of surgery intravenous access was secured with 18 gauge venous canula. NIBP, ECG, Pulse oximeter monitors were connected and base line of all were recorded. All patients were preloaded with 500ml of Ringer's lactate or normal saline before to spinal anesthesia

Under strict aseptic precaution lumbar spinal anesthesia is performed in left lateral position and in the sitting position when the patient couldn't be placed in lateral position with midline approach between L3-L4 space using 23 or 25G Quincke's spinal needle after local infiltration using 2ml of 2% lignocaine. Patients were made to lie supine immediately after the completion of injection. The time of injection of the drug was recorded as 0 minute. During surgery, all patients were given intravenous fluids- Isotonic saline and Ringer lactate solution. NIBP, ECG, Pulse oximeter monitors were used intraoperatively and monitored.

Blood pressure was recorded every 2 minutes for the first 20 minutes, every 5 minutes for the rest of the operation. Time intervals at which hypotension, bradycardia or other complications occurred were noted.

- Sensory blockade was assessed by pinprick and time noted for block to reach different dermatomal level
- Onset of sensory block
- Maximum level reached
- Duration of analgesia
- Assessment of onset of motor blockade by bromage scale.

The patients were carefully monitored for any untoward effects like inadequate block, hypotension, bradycardia, respiratory distress, nausea, vomiting, restlessness, shivering, dry mouth, drowsiness and anaphylactic reaction intraoperatively.

Patients were shifted to the postoperative ward and observed till the administration of rescue analgesic (Diclofenac sodium 1.5mg/kg, intramuscularly as per the patient demanded) and for the next 24 hours post operatively for delayed complications or any side effects like post dural puncture headache, nausea, vomiting, shivering, respiratory depression, dry mouth, drowsiness.

OBSERVATIONS AND RESULTS

Data was collected and statistical analysis was performed as explained in the methodology of the study. The results and interpretations are as explained below.

Table 1: Results of the Present Study

		Group I	Group II	P Value
i	Mean Duration of surgery (Mins)	84	85	<0.757
ii	Mean Onset of Sensory Block (mins)	4.03	1.74	<0.000
iii	Mean Onset of Motor blockade (Mins)	4.81	2.7	< 0.000
iv	Mean Time for two segment regression (Mins)	133.58	207.6	<0.000
v	Mean Time of Post operative analgesia (Mins)	211.7	316.4	< 0.000
vi	Intra operative complications			<0.057
	Hypotension (%)	4	6	
	Bradycardia (%)	6	8	
	Hypotension + Bradycardia (%)	6	22	
	Shivering (%)	8	0	
	Nausea + Vomiting (%)	6	8	
vii	Postoperative side effects			<0.000
	Dry mouth	0	16	
	Sedation	0	28	<0.000
	Dry mouth + sedation	0	14	

There was no statistical difference in age, ASA, type of surgery, duration of surgery and level of segmental analgesia. The mean time for the onset of sensory block (Group I 4.03 min, Group II 1.74 min $P < 0.000$), The mean time for the onset of motor block (Group I 4.81 min, Group II 2.7 min and P value < 0.000), the mean time taken for 2 segment regression of sensory block (Group I 133.58 min, Group II 207.6 min P value < 0.000), the mean duration of analgesia (Group I-211.7 minutes, Group II-316.4 minutes, P value < 0.000) found to be statistically significant between the two groups.

The decrease in mean pulse rate from 20 to 30 minutes until the end of surgery was greater in Group II than in Group I.

Systolic BP, mean arterial pressure (30-120 minutes) and diastolic BP (15-120 minutes) was significantly lower after spinal injection in Group II than in Group I.

In Group I, hypotension was observed in 4% of patients (2 patients), while in Group II

6% (3 patients) had hypotension. Bradycardia was observed in 6% in (3 patients) Group I and in 8% (4 patients) in Group II. Hypotension and Bradycardia as observed in 6% (3 patients) in Group I and 22% (11 patients) in Group II. Shivering was noted in 8% (4 patients) in Group

I and none were observed in Group II. Nausea and vomiting was recorded in 6% (3 patients) in Group I and in 8% (4 patients) in Group II.

There was statistically significant P value < 0.000 regarding dry mouth, sedation and both dry mouth and sedation in Group II compared with Group I.

DISCUSSION

Spinal anaesthesia with bupivacaine is administered routinely for lower abdominal and lower limb surgeries. The ensuring sensory block with motor block ensures the patient's well being and surgeon's work. It also provides effective pain relief in the initial postoperative period.

To address the problem of limited duration of action and to improve the quality of analgesia both intraoperative and postoperative, intrathecal opiates used as adjuvant to bupivacaine. However, this was tempered off due to opioid side effects.

Although the endorphin system is well recognized, there are many other mechanisms involved in spinal antinociception and α_2 adrenergic agonists such as clonidine, calcitonin, adenosine and somatostatin have been shown to possess spinally mediated analgesic properties.^{3,5}

Clonidine is a selective partial agonist for α_2 adrenoreceptors and increases both sensory and motor block of local anaesthetic.³ The analgesic effect following its intrathecal administration is mediated through activation of post synaptic α_2 receptors in substantia gelatinosa of spinal cord and increases potassium conductance in isolated neurons in vitro and intensifies conduction block of local anaesthetic.⁴ Roh

et al⁵ recently suggested that one of the mechanisms for the enhanced potency of intrathecal clonidine administration in a rat model of neuropathic pain is its ability to modulate spinal cord NMDAR activation. Several studies have been done using different doses of clonidine (15-300µg) in order to determine the most effective intrathecal administration with minimal side effects. In our study, 75µg of clonidine was used and found that side effects increases with larger doses.

In our study, the first characteristic studied was the duration of onset of sensory block. Time in minutes was noted from the deposition of drug to the feeling of tingling sensation in the legs. In the present study, patients receiving clonidine had a faster onset of action, which was found to be statistically significant.

In the present study, the onset time of sensory block varied from 3-6 mins in Group I, with a mean of 4.03 min and 1-3 min in Group II with a mean of 1.74 mins.

Table 2: Comparison of Onset of Sensory Block

Authors	Group I	Group II
H.Saxena ⁷	3.95 ± 1.76	0.92 ± 0.08
Present study	4.03 ± 0.76	1.74 ± 0.72

* Group II received 37.5 µg of clonidine

Our present study concurs with the studies by H.Saxena et al⁷ who observed 0.92± 0.08 mins as the onset time for sensory block for those patients receiving 37.5µg of clonidine in addition to bupivacaine.

Maximum level T6-66% in Group I and 68% in Group II is achieved in present study and is comparable with the studies conducted by Dan Benhamou,⁸ G.E.Kanazi,⁹ and H.Saxena.⁷

The mean time of onset of motor block between two groups is statistically significant. (Group I 4.81 mins, Group II 2.7 mins).

Table 3: Comparison of Onset of Motor Block

Authors	Group I	Group II
H.Saxena ⁷	7.41	2.2
Present study	4.81	2.7

Our study can be compared almost with the study conducted by H.Saxena et al.⁷ The other authors have not mentioned this variable in their study.

In our study the time taken for sensory regression in Group II was 207.6 mins while in Group I was 133.58 mins.

From the below table it is clear that in all the studies conducted by different authors the mean time taken for 2 segment regression has been longer with clonidine group than control group.

Table 4: Comparison of Time for Two Segment Regression

Authors	Group I	Group II
H.Saxena ⁷	89±14.48	267±21.90
B.S.Sethi	136	218
I.Dobrydnjov ^{**}	95±32	126±17
Dan Benhamou	70±33	95±56
Present study	133.58	207.6

* Group I received 37.5 µg of clonidine

**Group II received 30µg of clonidine

I. Dobrydnjov et al,¹⁰ study concluded that time taken for 2 segment regression is dose dependent. B.S.Sethi et al¹¹ study shown duration for 2 segment regression with clonidine (218 mins) and was comparable to our study (207.6 mins).

In our study the mean time for rescue analgesia was 211.7 mins in Group I, while patients in Group II did not require analgesics for about 316.4 mins.

Table 5: Comparison of Duration of Analgesia

Authors	Group I	Group II
Dan Benhamou	137 ± 35	183 ± 80
I.Dobrydnjov *	171± 65	253 ± 71
Stephen Strebel	295 ± 80	381 ± 117
B.S.Sethi	223	614
Patricia M **	135 ± 29	246 ± 55
H Saxena	99.75 ± 21.91	285.60 ± 36.59
Present study	211.7±39.90	316.4±53.36

* Used Bupivacaine 6 mg

**Group II – Sufentanil 2µg + 75 µg Clonidine

From the above table it is clear that in almost all the studies conducted by different authors, the mean duration of analgesia has been longer than 250 mins with 75 µg of clonidine.. It was concluded that duration of analgesia is dose dependent.

Total analgesia time was prolonged in our study similar to Strebel et al,¹² H.Saxena⁷ and lesser than B.S.Sethi et al.¹¹ It was higher than Dobrydnjov et al¹⁰ which is as expected considering the different doses of clonidine or bupivacaine used.

Monitoring of heart rate, blood pressure, SpO₂ and respiratory rate were done to assess the hemodynamic

stability and respiratory effects of intrathecal clonidine. In our study it was observed that patients in Group II had 15% fall in the mean pulse rate from the base line compared to 4% in Group I, 30 minutes after the injection. Mean arterial pressure was significantly lower during the first 30-120 minutes after spinal injection in Group II than in Group I. Maximum changes from the base line values in mean arterial pressure during this time varied from 12-18% for patients in Group II compared with 6-10% in Group I.

I. Dobrydnjov et al,¹⁰ (30µg of clonidine), H.Saxena⁷ (37.5µg of clonidine), observed the patients receiving had similar pulse rate and mean arterial pressure changes from the base line values. In our study, findings are in consonance with study by B.S.Sethi et al¹¹ and L.Neimi et al.⁴

In our study there was no statistical difference between two groups regarding hypotension, bradycardia and hypotension with bradycardia during intraoperative period.

Incidence of shivering (4 patients in Group I 0 in Group II) and nausea and vomiting (Group I- 3 patients, Group II -4 patient) in present study was comparable with Tuijl et al,¹³ and D.J.Fogarty et al¹⁴

Patients were observed for hypotension, bradycardia, respiratory depression, dry mouth, and others in post operative period for 24 hours. In Group II, 16% (8 patients) had dry mouth, 28% (14 patients) had sedation and 14% (7 patients) had both (dry mouth and sedation) in our study. In Group I none had these side effects.

The side effects of our study is comparable with B.S.Sethi et al,¹¹ H.Saxena et al,⁷ D.J.Fogarty et al¹⁴ regarding dry mouth and sedation.

In conclusion, this study shows that the addition of clonidine 75 µg to hyperbaric bupivacaine, hastens the onset of sensory and motor blockade of bupivacaine, provides excellent surgical analgesia, prolongs the duration of post operative analgesia and offers relative hemodynamic stability and can be advocated as an adjuvant to bupivacaine in spinal anaesthesia for gynaecological surgeries.

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An Exploratory Study on Eye Healthcare Seeking Behavior of the Rural Elderly in Mayurbhanj District of Odisha

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ABSTRACT

Despite national blindness prevalence of 1.4%, the burden in Odisha state is not known. Ophthalmic care seeking behavior among rural elderly is a non-priority. Health belief model is a recognized framework for studies on human behavior. A qualitative study was undertaken to have an in-depth understanding of current eye health seeking behavior of rural elderly (> 50 years) people in Mayurbhanj district, Odisha. Male and female respondents from the sample area were included in the study. Semi-structured questionnaires, In-Depth Interviews (IDI), Focused Group Discussions (FGD) were used for data collection. Elderly people in Mayurbhanj district perceived that they were susceptible to eye problems and felt that eye ailments could occur to any person, anytime. They considered eye care as "serious", which could hamper the family income, but had difficulties in accessing eye care facility and approaching eye doctor. Majority of respondents had fair knowledge on the benefit of treating eye problems early. Lack of timely information about availability of eye care services in their local areas was a programmatic gap. Distance, non-availability of any accompanying person, lack of monetary support, lack of information and fear of losing eye sight after surgery were found to be the main barriers behind delayed eye-care seeking behavior. Timely filling of vacancy of ophthalmic assistants at PHC level and effective participation of community through mobilization of link workers, such as ASHAs, would strengthen the national blindness control programme and improve rural healthcare system.

Keywords: Accessibility, Eye-care Seeking Behavior, Elderly, Perception, Quality of Care

INTRODUCTION

Understanding human behavior is prerequisite to change behavior and improve health practices. Experts in health interventions and health policy became increasingly aware of factors related to human behavior and seeking health care.¹ In order to respond to the needs of community, health systems need to adapt or modify strategies on the basis of findings of behavioral studies.²

This study draws on the conceptual framework (Figure-1) of Health Belief Model (HBM)³ and subsequent extension model of HBM, which is based

on the understanding that a person will take a health-related action (e.g. seek advice or volunteer for undergoing a surgery) if that person: a) feels that a negative health condition (i.e. eye problem) can be avoided; b) has a positive expectation that by taking a recommended action, he/she will avoid a negative health condition (blindness); and c) believes that he/she can successfully take a recommended health action. (i.e., he/she can access and afford cataract surgery with confidence).

About 284 million people are visually impaired worldwide of which 39 million are blind and 245 million have low vision. About 90% of the world's visually impaired live in developing countries. Globally, uncorrected refractive error is the main cause of visual impairment but in middle and low-income countries cataracts remain the leading cause of blindness. 80% of all visual impairments can be avoided or cured.⁴

In India, the prevalence of blindness is 1.4% among general population.⁴ The current estimate of avoidable

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blindness (prevalence, all ages) is 1.1%. In absolute terms, the number of blind persons in India in year 2000 was estimated to be 18.7 million, of which 9.5 million were cataract-related and 3 million were related to refractive error. If there is no change in the current trend of blindness, the number of blind persons in India would increase to 24.1 million in 2010, and to 31.6 million in 2020.⁴

A study from rural south India has shown that barriers to seeking treatment despite noticing a decrease in vision were personal in 52%, economic in 37% and social in 21% of respondents.⁵ Another study found that, the most common barriers to using eye services were: (i) Fear, (ii) Able to maintain with present vision, (iii) Treatment cost, (iv) Time and difficulty involved in leaving day-to-day responsibilities, (v) Negative attitude to treatment in old age, both by elderly persons and by their families, as if the treatment in old age was not worthwhile.⁶

Susan L, et al (2000) found that the main barriers to cataract surgery in the developing countries were cost, distance, cultural and social factors, lack of knowledge of services, and lack of trust in a good outcome.⁷ Another study in Africa showed that transportation was the main barrier to accessing eye care, followed by high cost, lack of trust and insurance.⁸

The National Programme for Control of Blindness (NPCB) was launched in the Country in 1976. During last 35 years of its implementation, many initiatives have been taken up by the Government of India and State Governments to strengthen the programme. However, as per the NPCB Report of 2006, the CSR was 4491 per million population in 2004-2005, 88% of which was performed with the insertion of an intra-ocular lens (IOL). During the same reference period the CSR for Odisha state was 2610 per million populations – almost half of the national average.

Evidently, Odisha is one of the high focused states in the country (NFHS II categorization) that needs drastic improvement in eye care seeking behavior and performance indicators. Availability of eye care infrastructure and trained human resources are the major concerns. Districts, geographically far from the State capital, are tribal dominated, deprived of essential health infrastructure and services. District Mayurbhanj is the geographically largest and most populous district that is dominated by tribal population 57.67%.⁹ There is no authentic district specific data about prevalence and causes of blindness. However, from the available district reports, it was found that despite multi-pronged efforts of District Blindness Control Society (DBCS), people are not accessing the services effectively, indicating poor eye care seeking behavior.

In order to understand eye health seeking behavior of rural people of Mayurbhanj district and to analyze the barriers and enablers, the present study was conducted using the Health Belief Model framework.

MATERIALS & METHOD

Mayurbhanj district has a total geographical area of 10,418 sq.km and is situated in the Northern boundary of the state with district head-quarters at Baripada. The total population of the district is about 2.5 million with an average literacy rate of 64 percent.¹⁰

This qualitative study was conducted to identify the factors that motivate / prevent/ delay the eye health seeking behavior of users. The specific objectives of the study were: (i) To understand the demographic and psychological characteristics at individual level; (ii) To understand the type and pattern of eye healthcare seeking behavior and to analyze the barriers and enablers.

As a first step, the district was stratified into two categories of Blocks based on their distance from the district headquarters. All (12 Nos) blocks within the radius of 50 km from Baripada were mapped and all (8 Nos) blocks above 100 kms were enlisted. Saraskana block from the first category and Raruan block from the second category were randomly selected. The villages of these two blocks were enumerated from census 2001 report. One village was selected at random from each block for the study purpose. Respondents from each village were selected randomly. Both male and female respondents aged 50 years and above were included in the Study. Separate respondents were considered for Focused Group Discussions from the same village.

For objective I and II, a semi-structured questionnaire was used to understand the demographic, psychological characteristics, type and pattern of eye health seeking behavior. Questions were framed as per HBM under four major categories of perceived susceptibility, severity, benefits, beliefs and practices. Questionnaires were administered to 32 respondents (block I-18, block II-14) and two separate focused group discussions (first FGD-8, second FGD-6) were conducted.

Focused Group Discussions and In-depth interviews were analyzed using thematic framework approach. The in-depth interviews and FGDs were voice recorded, transcribed verbatim and translated to English. By going through the transcripts, the most relevant responses were coded and then major themes were identified. Based on the themes findings were summarized. Informed consent was taken from all the respondents and institutional ethical clearance was obtained.

FINDINGS

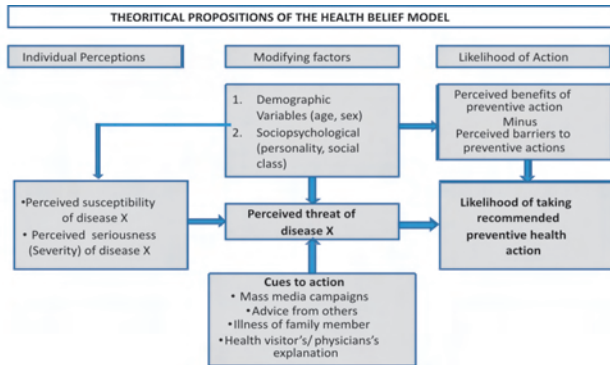


Fig. 1. HBM Framework, Rosenstock, 1974

Almost all respondents recognized that eye sight (vision) is important for them and they are susceptible to eye problems. When asked about their present eye sight condition, nearly half of the respondents perceived that their sight is good. Some of them perceived they would have eye problems in coming years and majority perceived their eye sight would deteriorate in future. 20 out of 32 respondents considered that the eye problems are serious problems and 26 felt that eye problem would hamper income of a person/ family. (Table 1 A)

Table 1 A. Component wise response on HBM

Items	Strongly agree (%)	Agree (%)	Disagree (%)	Strongly disagree (%)
Perceived Susceptibility				
I believe that eye problems are common now a days	22 (69)	9 (28)	1 (3)	0
It can happen to anybody any time	18 (56)	14 (44)	0	0
It is likely that I will have eye problem in the coming years	15 (47)	16 (50)	1 (3)	0
Perceived Severity				
I consider eye problems are serious	20 (62)	11 (35)	1 (3)	0
Eye problem will hamper income of a person	26 (81)	6 (19)	0	0
Perceived Barriers				
Eye problems are easily treatable	6 (19)	21 (66)	4 (12)	1 (3)
Blindness can be avoided with timely treatment	14 (44)	18 (56)	0	0
Eye testing services are available at no cost	3 (10)	26 (81)	2 (6)	1 (1)
Eye surgeries are free of cost at Govt. hospital	3 (10)	25 (78)	4 (12)	0
I believe that routine checkup would prevent many eye problem	10 (31)	22 (69)	0	0
Accessibility				
How accessible are the eye camps	2 (6)	13 (40)	14 (44)	3 (10)
How accessible are the eye check up centers	12 (37)	15 (47)	5 (16)	0
How difficult is to consult an eye doctor	0	7 (22)	13 (41)	12 (37)

With regard to knowledge and information on eye treatment and its benefits, most of the respondents agreed that eye problems were easily treatable and blindness could be avoided with timely treatment. Majority had knowledge that eye testing services (26) and surgeries (25) were available free of cost in

government facilities. Mixed responses were found on questions related to accessibility to eye care services. 44 percent respondents mentioned that they faced difficulties in accessing eye camps. Most (25) of the respondents also expressed that there were difficulties in consulting an eye doctor at the time of need.

Table 1 B: Component wise response on HBM

	Very good (%)	Good (%)	Poor (%)	Very Poor (%)
Perceived Susceptibility				
What do you think about your eye sight condition now	0	18 (56)	14 (44)	0
Perceived Severity				
What do you think about your eye sight conditions in coming days	0	14 (44)	17 (53)	1 (3)
Accessibility				
	Very Expensive (%)	Expensive (%)	Less expensive (%)	No cost (%)
How expensive is the eye treatment	4 (13)	8 (25)	19 (59)	1 (3)

About beliefs and practices on eye care seeking behavior, participants had mixed responses. 19 respondents who had eye problems in the last one year had not sought treatment. The primary reason cited for this was distant location of the eye care facility. Those who sought treatment faced problems in

consulting an eye doctor at the time of need. Lack of awareness about availability of services was found to be one of the reasons for not seeking eye care, as it was pointed out that only during eye camps, people received messages from camp organizers.

Fig. 2. Charting, Focused Group Discussion

Thematic issues	Responses
Availability	• Non availability of eye care facility
	• non availability of doctors
	• Treatment from general physicians
Outreach services	• Some time eye check up camps are conducted in our area
Financial problem	• Monetary problem
Family problem	• Accompanying problem for older people. Not getting service at the time of need
Awareness	• No information on eye care. We get the information during camp time only
Belief	• if one feels little better, we stay in the home
Fear	• Fear to undergo eye operation
	• Before eye operation one was able to see with spectacle but post-surgery, he could not

From most significant to least significant, barriers to accessing eye care as cited by the respondents were: (i) Distance of the eye health care facility (ii) No one in the family to accompany (iii) Monetary problem (iv) Fear of losing eyesight further (v) Lack of information. Most of the respondents informed that there were no services available in the nearby vicinity, not even at Sub-divisional level. Only the district head quarters hospital, which was about 130 KM away from the sample village, had the eye care services.

DISCUSSION

Provision of eye care services through outreach activities (eye camps) has been an important strategy by the District Blindness Control Society (DBCS) to increase the cataract surgery coverage at facility level. The DBCS report revealed that partnership with local Non Government Organizations (NGOs) would improve the eye care coverage in the district. It also reiterated that involvement of local bodies like village club members and panchayati raj institutions could increase the eye care coverage in the district.

Majority of the people accessed eye care services during eye camps; however the camps were not held regularly. Some elderly people could not attend those camps as there were no family members to accompany. Some of the respondents expressed their dissatisfaction with the behavior of the camp members. Though eye surgeries were free of cost, people had to buy their own medicines, more so people had monetary

problems to purchase medicines. There was no private eye care facility in their locality.

People aged 50 years and above of Mayurbhanj district perceived that they were susceptible to eye problems as they expressed that it could happen to anybody anytime. They considered eye problem as “serious” which could hamper the income of a household. Accessibility to eye care facilities was an important issue, especially amongst female respondents of low socio-economic and literacy status.

With regard to the outcome of eye surgeries being conducted through camp approach at the district headquarters hospital, the respondents had mixed opinions, as one of the respondents put it, “Some people were able to see after surgery and some could not.” ... Female/ 53 age respondent in FGD said.

“Son of Mr. ‘M’ could not see after eye operation. He was able to see with spectacle before surgery but now he cannot.”..... female/ 60 age respondent in FGD said.

People of the two blocks under study had fair knowledge on the benefit of treating eye problem early. With regard to barriers in accessing eye treatment, the findings of interview & focused group discussion cited the following as significant in the order of preference: distance to the eye care facility. In the earlier studies this particular barrier was mentioned as one of the barriers but not as the main barrier.^{6,8} The other barriers were: no one in the family to accompany, monetary

problem, lack of information at right time, and fear of losing sight further. These findings are in congruence with the earlier studies conducted in this regard.^{7,8} Non-availability of eye doctor in nearby vicinity and unfriendly behavior of eye care providers were also important reasons for delayed health seeking behavior.

The main strengths of this study have been the usage of Health Belief Model framework for data collection. Some of the weaknesses of the study are (i) some respondents participated in the study did not have any experience of any eye problem (ii) No information gathered in the study about general health status of the participants, and (iii) the role of insurance in health seeking behavior. This may affect the generalizability of these findings outside the study district.

CONCLUSION

Accessibility to eye care services was found to be a major challenge in the eye care seeking behavior of rural elderly. There is a need to ensure regular eye check-up outreach camps. The Information Education & Communication (IEC) wing of the district needs to give more emphasis on generating mass awareness about availability of services in the district. Non-government organizations could play an important role in reaching out to the remote locations which could address the issue of non-availability of accompanying person. Link workers such as ASHAs may be given thematic training and orientation to facilitate community mobilization for improved eye care seeking behavior of the elderly.

This paper has examined the user's perspective on accessibility of eye healthcare services, reflective of health seeking behavior. In order to obtain a holistic understanding, further analyses of identified barriers from the providers' perspective is necessary.

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