“A HOSPITAL BASED PROSPECTIVE STUDY TO DETERMINE THE EFFICACY OF MODIFIED FAMILY MOTIVATION CARD IN CONTACT TRACING OF LEPROSY PATIENTS IN NORTH KARNATAKA”

Submitted by

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DISSERTATION SUBMITTED TO THE

BLDE (Deemed to be university),

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In partial fulfilment of the requirements for the degree of

M. D

in

DERMATOLOGY, VENEREOLOGY AND LEPROSY

Under the guidance of

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I hereby declare that this dissertation entitled **"A HOSPITAL BASED PROSPECTIVE STUDY TO DETERMINE THE EFFICACY OF MODIFIED FAMILY MOTIVATION CARD IN CONTACT TRACING OF LEPROSY PATIENTS IN NORTH KARNATAKA"** is a bonafide and genuine research work carried out by me under the guidance of **DR. KESHAVMURTHY ADYA** M.D**.,** Associate Professor, Department of Dermatology, Venereology and Leprosy at BLDE (Deemed to be university) Shri B. M. Patil Medical College Hospital and Research Centre, Vijayapur.

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LIST OF ABBREVATIONS

WHO	– World Health Organisation
NLEP	– National Leprosy Eradication Programme
ANCDR	– Annual New Cases New Case Detection Rate
SAP	– Special Activity Plan
FMC	– Family Motivation Card
MFMC	– Modified Family Motivation Card
AFB	– Acid Fast Bacilli
CMI	– Cell mediated immunity
MB	– Multibacillary
PB	– Paucibacillary
TT	– Tuberculoid Leprosy
BT	– Borderline Tuberculoid Leprosy
BB	– Mid-border line Leprosy
BL	– Borderline Lepromatous Leprosy
LL	– Lepromatous Leprosy
KLC	– Known leprosy cases
BLCC	– Block leprosy control campaign
MDT	– Multidrug therapy

S/E class – Socio-economical status

ABSTRACT

Background:

Leprosy is a chronic bacterial infection affecting peripheral nerves and skin caused by *Mycobacterium leprae*. Contact tracing is an important way to reduce the burden of leprosy further in the current scenario. It also helps in early diagnosis and to prevent occurrence of deformity.

Objectives:

The objective of this study was to study the efficacy of "Modified Family Motivation Card" in detecting new leprosy cases in North Karnataka.

Methodology:

One hundred and ten old and new index cases of leprosy were enrolled in the study. Each patient was provided with "Modified Family Motivation Card" after a counselling session. Thereafter patients were motivated to bring their contacts (family members, relatives, neighbours, friends) for screening of leprosy.

Results:

Among 110 cases (MB - 98 patients; PB - 12 cases), 68 (61.8%) patients brought their family members for screening. Among 147 contacts screened, one new leprosy case was detected. Newly detected case was a 50 years old mother of a multibacillary index patient. She had ulnar clawing of left hand and was diagnosed as pure neural leprosy.

Discussion:

A contact of leprosy patients is an individual who is in close proximity with a known leprosy patient. Total 100 new and old cases of leprosy were enrolled in a study done by Padhi *et al*. 23 new intrafamilial cases [Multibacillary – 15 (65%); Paucibacillary – 8 (35%)] were detected by the authors over a period of 9 months. Among them 43.47% were children indicating continuing transmission of the disease in that locality.

Conclusion:

"Modified Family Motivation Card" is efficient, simple and economical method for passive contact tracing and educating leprosy patients.

Key words: Leprosy, Contact screening, Contact tracing

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INTRODUCTION

Leprosy is a chronic bacterial infection caused by *Mycobacterium leprae* affecting peripheral nerves and skin.[1] *Mycobaterium leprae* is an obligate, acid fast, intracellular bacillus affecting macrophages and Schwann cells. Untreated multibacillary patients are the main source of infection.

Incubation period of leprosy varies from few to several years after exposure, this leads to difficulty in identifying high risk patients which in turn leads to difficulty in identifying endemic areas. *Mycobaterium leprae* is a slow grower, takes 12 - 14 days for one bacilli to divide into two. Clinical manifestations of leprosy vary from hypopigmented or erythematous skin lesions with/without sensory impairment to deformities and disabilities. Leprosy patients may also suffer from immunologically mediated reactional states.[2]

Transmission of leprosy is primarily air borne from multibacillary patients.[3] Other modes of transmission include direct inoculation of bacilli from skin to skin contact of abraded skin and following secondary to tattooing or surgery.[4]

It is believed that prolonged physical proximity with leprosy patient and severity of the disease among untreated patients act as risk factors for development of leprosy.[5] The risk of acquiring the disease is 8 to 10 times more among households of lepromatous leprosy cases as compared to the surrounding population and 2 to 4 times for tuberculoid disease.[6]

Contact tracing acts as an important tool for early case detection, effective treatment and control of transmission of leprosy.[7] It also provides information about

transmission, signs and symptoms, thus, helping in early detection as well as reducing the burden of leprosy.

The World health organisation (WHO) strategy for leprosy (2011-2015) recommends contact tracing and the WHO operational guidelines also recommend the counselling of contacts about transmission, signs and symptoms and motivating them to report in case of development of skin lesions, sensory impairment or deformities suggestive of leprosy.[8]

There are various surveillance methods for active and passive case detection in leprosy. However, the existing methods require "man power" as well as funds for implementation. Padhi *et al* have developed a "Family motivation card" as a tool for contact tracing of leprosy patients in western Odisha. This is an information leaflet educating the patient about signs and symptoms of the disease, which was given to known cases of leprosy during their hospital visits. Along with this, the patients were verbally motivated to bring in their family members who would have had such features. The authors have found this method as an efficient way to detect new cases in the family members by spreading knowledge about the disease.[2]

Karnataka is a low-endemic state for leprosy with prevalence rate of less than 1 in all the 30 districts. However, as per NLEP data, Annual New case detection rate (ANCDR) (2014-15) in Karnataka continues to be 10-20 in 3 districts and less than 10 in 27 districts. Under Special Activity Plan (SAP) of NLEP (2014-15), active search has detected total 138 new cases of leprosy of which 16 were children.[9] These data confirms continual transmission of leprosy in the state in spite of low endemicity.

Hence, there is a need for contact tracing of existing leprosy patients, which would help in reducing the burden of the disease in the state even further. “Family Motivation Card” is a passive method to detect familial contacts of leprosy patients. It is inexpensive and involves only few health personnel. Moreover, it is not as hectic a procedure as compared to door to door survey. Above all, it paves a way for sufferers of leprosy themselves to bring in “suspected cases” in their family and, thus, increasing awareness of the disease.

In the present study, “Modified Family Motivation Card” has been used to detect familial contacts of existing leprosy patients in the Vijayapura district of North Karnataka and its adjacent areas.

AIMS AND OBJECTIVE

i. To study the efficacy of "Modified Family Motivation Card" in detecting new leprosy cases in North Karnataka.

REVIEW OF LITERATURE

INTRODUCTION

Leprosy is a chronic infectious disease caused by *Mycobacterium leprae*, an acid fast, rod shaped bacillus. The disease mainly affects the skin, the peripheral nerves, mucosa of upper respiratory tract and eyes.[10] Lepra bacillus was discovered by Sir Gerhard Henrik Armauer Hansen in 1873. *Mycobacterium leprae* grows well in cooler (optimum temperature of 37º C) and trauma prone areas, relatively sparing the warm areas. *Mycobacterium leprae* cannot be cultivated in artificial media as they are slow growers, that is, they requires 12-14 days for one bacilli to divide into two.[11]

DEFINITON OF A CASE OF LEPROSY

As per the eighth meeting of the WHO Expert Committee on leprosy (2010), a case of leprosy is defined as "an individual who has not completed the course of treatment and has one or more of the three cardinal signs":

1) Hypopigmented or erythematous skin lesion(s) with definite loss/impairment of sensation,
2) Involvement of peripheral nerves, as demonstrated by definite thickening with sensory impairment,
3) Slit Skin smear positive for acid fast bacilli (AFB).

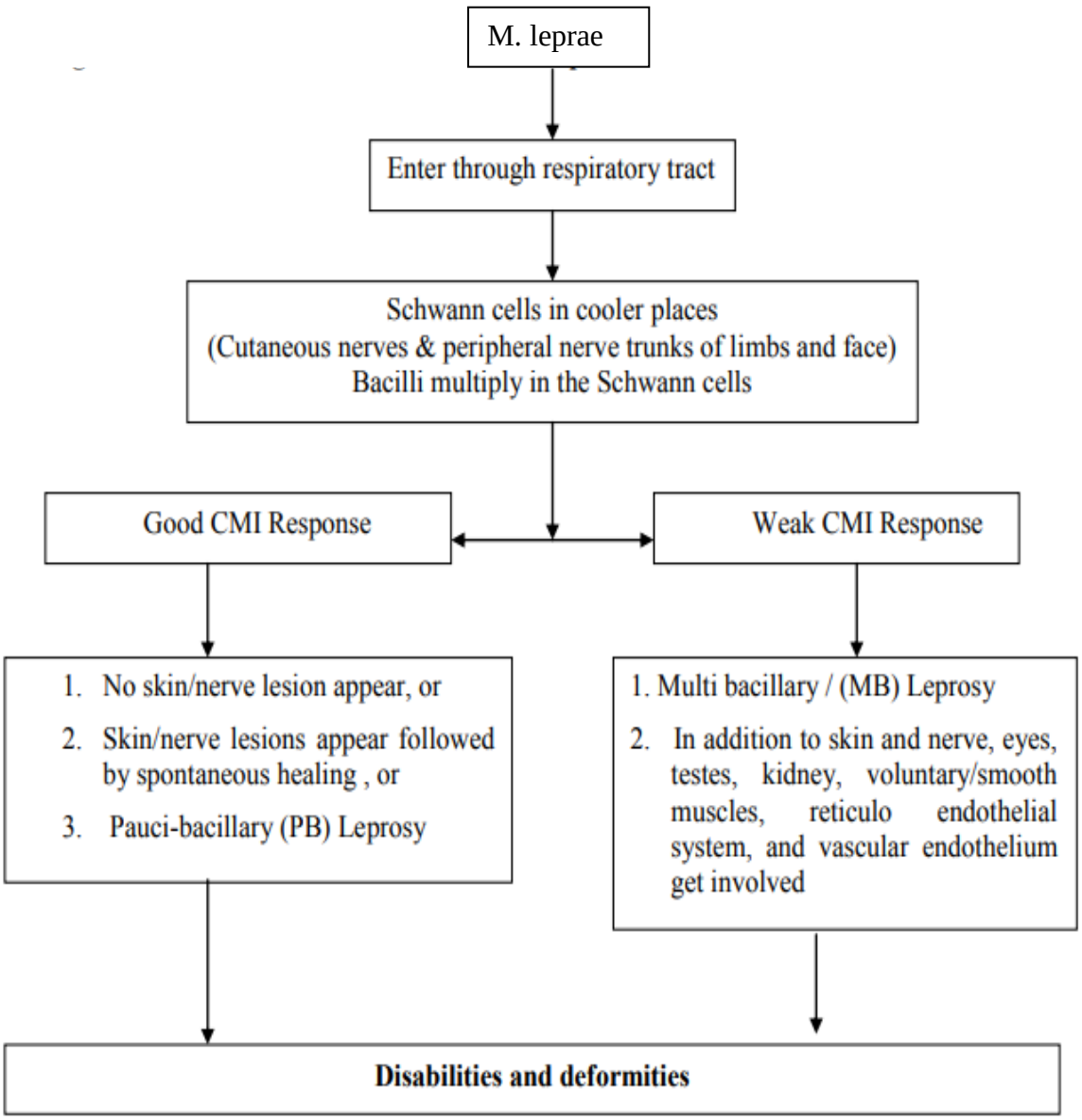
Presence of any one of these signs is sufficient for the diagnosis of leprosy.[12]

PATHOGENESIS

Onset of leprosy is insidious. *Mycobacterium leprae* primarily affects skin, peripheral nerves, mucosa of upper respiratory tract and eyes. It may also involve bones, joint,

muscles, reproductive system, reticulo-endothelial system. Schematic representation of pathogenesis in figure: 1.[13]

Figure 1: Pathogenesis of leprosy[13]



CLASSIFICATION OF LEPROSY

Various classification systems are currently in use for leprosy. The Ridley-Jopling classification is the most commonly used. It is based on immunological, bacteriological status of the patient and clinico-histopathological features, which have been described accordingly. There are six subtypes in Indian classification system. The Indian classification has only one borderline group but accepts that there are great variations within the group.[14] The current WHO classification of leprosy has been done for therapeutic purpose. Various classification systems of leprosy have been presented in Table 1.[15] WHO Classification is tabulated in Table 2.[12]

Table 1: Classification of leprosy[15]

Classification systems	**Sub-types**
Ridley- Jopling classification	• Tuberculoid leprosy (TT) • Borderline tuberculoid leprosy (BT) • Mid borderline leprosy (BB) • Borderline lepromatous leprosy (BL) • Lepromatous leprosy (LL).
Indian classification	• Lepromatous (L) • Tuberculoid (T) • Maculoanesthetic (MA) • Pureneuritic (P) • Borderline (B) • Indeterminate (I).
WHO classification	• Paucibacillary (PB) • Multibacillary (MB)

Table 2: WHO Classification for leprosy[12]

	Criteria
Multibacillary	• 6 or more skin lesions, or • positive bacterial index
Paucibacillary	• 5 or less skin lesions and • negative bacterial index

Current NLEP classification also includes nerve involvement

Multibacillary: No nerve involvement or single nerve involvement

Paucibacillary: involvement of 2 or more nerves.[12]

MODES OF TRANSMISSION OF LEPROSY

Through Droplet: This is the most important mode of transmission of leprosy. This mode of spread of disease is mostly seen in people with poor socio-economic status attributable to overcrowding and unhygienic surroundings. Infected droplets are discharged into the atmosphere by act of talking, sneezing or coughing and inhaled by healthy contacts.

By skin contact: Leprosy can be transmitted from abraded skin of highly bacilliferous cases to breached skin of other individuals. Close skin to skin contact is necessary for this mode of transmission.

By inoculation: Patients may acquire leprosy by inoculation through needles which have been used for tattooing or injecting a patient with multibacillary leprosy and thereafter re-used without sterilization.[16]

Through ingestion: Transmission may occur in infants through ingestion of breast milk from untreated lepromatous mother.

Transmission may occur through flies and other arthropods; flies are capable of transmitting bacilli from nasal secretions and ulcers of multibacillary leprosy patients to their contacts.[4]

CLINICAL PRESENTATIONS IN LEPROSY

Skin lesions

Skin lesions are variable according to the patients immunological response against *Mycobacterium leprae*. Presence of clinical features is based on the host response to the bacilli.

Tuberculoid leprosy (TT) - Usually solitary or 2 or 3 skin lesions may be seen. These are large, erythematous, well defined plaques. Surface of the lesion is dry and sometimes scaly with sparse hair and total loss of sensation in the lesion.

Borderline Tuberculoid leprosy (BT) - Lesions vary in number from 3 to 10. The lesions are large, hypo pigmented patches with well-defined margins at some areas and poorly defined in other areas. Annular patches may also be seen. Pseudopodia and satellite lesions are usually present along and around the margins. The surface is dry

and there is reduced hair growth over the lesion. There is marked loss of sensation on the lesion.

Mid borderline leprosy (BB) – It is unstable and usually downgrades to lepromatous pole if left untreated. Lesions are multiple varying in number from 10 to 30. The lesions are usually annular plaques with sloping outer border and punched out inner border. Surface appears dull with reduced hair growth over the lesion. There is moderate lesional hypoaesthesia. Presence of dimorphous lesions is a rule.

Borderline lepromatous leprosy (BL) – There are numerous round or oval hypopigmented macules distributed symmetrically. As the disease advances nodules and plaques may be seen. Edges are less well defined with shiny surface due to infiltration. Lesional hypoaesthesia may be minimal.

Lepromatous leprosy (LL) – Skin lesions are multiple and there is bilateral symmetrical distribution. Macules are hypopigmented, erythematous or coppery with ill-defined edges. Skin coloured or erythematous papules and nodules may be present. There may be diffuse infiltration of skin. Thickening and nodulation of both ears, superciliary and ciliary madarosis may be observed. Lesional sensation may be normal.

Indeterminate type – One to two macules varying in size from 1 - 5cms are seen. These are hypopigmented or faintly erythematous patches with ill defined borders. Lesions usually involve face and extremities with no loss of sensation. Children are the common sufferers. Lesional hypoaesthesia may or may not be appreciated.[12,14]

Nerve involvement

Superficially located peripheral nerve trunks are more susceptible to *Mycobacterium leprae* infection. The cooler location of these nerves in close proximity to underlying bone makes them prone to get infected easily.

Tuberculoid leprosy - A thickened nerve trunk may be present near a tuberculoid lesion or feeding nerve to the lesion is present.

Borderline tuberculoid leprosy - Nerve enlargement is observed early as compared to lepromatous patients. Single or multiple nerve trunks may be involved with loss of sensation along its distribution. When affected with type 1 reaction sudden muscle paralysis may be seen.

Mid borderline leprosy - Nerve involvement is variable based on the immunological status and response of treatment. Multiple nerves are enlarged if the patient is downgrading from BT. In patients upgrading from BL, the peripheral nerves will be affected but much neurological deficit may not be seen.

Borderline lepromatous leprosy – Peripheral nerve trunks are enlarged and tend to be symmetrical.

Lepromatous leprosy – There is bilateral symmetrical involvement of peripheral nerves, giving rise to gloves and stockings type of hypoaesthesia over extremities. In untreated cases, muscle paralysis can occur giving rise to wasting of hands and feet.

Pure neural leprosy – No skin lesions. One or more peripheral nerves are thickened with loss of sensation along its distribution and with or without muscle weakness.[12,14]

Leprosy Reactions

Leprosy reactions are immunologically mediated episodes of acute or subacute inflammation which interrupt the relatively uneventful usual chronic course of disease affecting the skin, nerves, mucous membrane and or other sites.

Type 1 lepra reaction: It is a type IV hypersensitivity reaction. Skin lesions become erythematous, more prominent, warm, shiny with signs of neuritis. It is usually seen in borderline patients (BT, BB, BL).

Type 2 lepra reaction: It is a type III hypersensitivity reaction. The skin lesions are termed as erythema nodosum leprosum (ENL). There are recurrent crops of evanescent, erythematous tender nodules which subside after 2-3 days leaving post-inflammatory hyperpigmentation. Lesions are usually distributed bilaterally symmetrically over trunk and extremities. Systemic manifestations like fever, malaise and arthralgia are present. Pneumonitis, glomerulonephritis, epididymoorchitis and iridocyclitis may be present depending upon the severity of reaction.[17]

Deformities and disabilities in leprosy

Deformity in leprosy has been defined as "the visible alteration in the form, shape or appearance of body due to impairment produced by the disease". Disability is "the lack of ability to perform an activity considered normal for a human being of same age, gender and culture".

Deformities of upper limb: Specific deformities of upper limbs are shortening of fingers. Paralytic deformities are partial or complete claw hand, wrist drop. Anaesthtic deformities include fissures and trophic ulcers.

Deformities of lower limb: Specific deformities of feet are shortening of the toes. Paralytic deformities are foot drop and clawing of the toes. Anaesthetic deformities are fissures and trophic ulcer.

Deformities of face: Facial deformities include loss of eyebrows (superciliary madarosis), loss of eyelashes (ciliary madarosis), collapse of nasal bridge (saddle nose) and facial palsy.[18]

Deformities of eye: Specific deformities of eye are lepromata formation, glaucoma, iridocyclitis, anterior or posterior synechiae. Paralytic deformity of eye is lagophthalmos. Anaestetic deformities of eye are corneal anaesthesia, punctuate keratitis and corneal ulcer. Blindness is the ultimate ocular deformity.[19]

Specific and paralytic deformities are examples of primary impairments caused directly by the disease. Anaesthetic deformities are secondary impairments caused due to sensory loss.[18]

WHO (2007) proposed a three grade classification system of deformities/ disability of leprosy patients'. The classification system has been presented in table 3.[20]

Table 3 : Deformity/ disability grading of leprosy patients [20]

Grading	**Hands and Feet**	**Eyes**
Grade 0	No disability found	No disability found
Grade 1	Non visible damage (Loss of sensation)	No grade 1 for eye
Grade 2	Visible damage[Disability, wounds (ulcers), deformity due to muscle weakness, such as foot drop, claw hand, loss or partial resorption of fingers/toes, etc]	Inability to close, obvious redness, visual impairment, blindness

CURRENT STATUS OF LEPROSY IN INDIA

The global prevalence rate of leprosy was 0.23 per 10,000 population as per WHO data as on last day of first quarter of 2016. New case detection rate at global level is 2.9 per 1,00,000 population.[21]

India had entered the elimination phase of leprosy eradication programme in December 2005. At present, the prevalence rate of leprosy in India is 0.66 per 10000 population as on 1st April 2017. Out of 36 States/ Union territories, 34 States are having prevalence rate of <1 per 10,000 population. Incidence rate of leprosy was 10.17 per 1,00,000 population (1,35,485 new cases) during the year 2016-'17. As per NLEP data, ANCDR in India was 10.17 per 1,00,000 population during the year 2016-'17. Out of these, 8.7% of cases were found to be children (11792 child cases). This implies that there is ongoing transmission of leprosy in the country.[22]

Prevalence rate of leprosy in Karnataka is <1 per/10,000 population in 30 districts, 1-2/per 10,000 population in 1 district during the year 2016-17.[22]

CONTACT TRACING IN LEPROSY

A contact of leprosy patients is an individual who is in close proximity with an 'index case'.[23] "An index case is defined as a previously diagnosed leprosy patient living in the same house sharing the same kitchen (intra familial), or is within the social circle of the newly diagnosed leprosy patient".[1] Contacts may be in the household, neighbourhood or in the work places. For children, contacts may be present in schools. Of these, household contacts are the most important source of acquiring infection. Both PB and MB cases in the households may spread the

infection to others. Studies have shown that the risk of acquiring the disease is 8 to 10 times more in households of lepromatous leprosy cases as compared to the surrounding population and 2 to 4 times for tuberculoid disease.[6]

Contact tracing is an important method to detect new cases of leprosy. Although leprosy has been eliminated from India, the ANCDR remains high. This implies that contact tracing would be an effective method to further detect new cases in order for India to progress towards the global aim of leprosy eradication. Contact tracing helps in early case detection, treatment and control of transmission of the disease. By this, occurrence of deformity and disability due to leprosy can be reduced. It also helps in educating the patient and family members about signs and symptoms of leprosy and to remove the stigma associated with it.

There are various methods of contact tracing as follows:

- **Active surveillance:** In this method doctors or health workers are actively involved in detecting new patients of leprosy. Various types of active surveillance are;
  - Door to door survey
  - School survey
  - Contact tracing of leprosaria
  - Health camp
  - Spot survey where neighbourhoods of a known patient is being examined for new cases.

Even though this is an effective way to detect new leprosy cases under the supervision of a health personnel, it requires man power, time and funding.

- **Passive surveillance:** In these method leprosy patients themselves come forward to health care facilities and they are being examined by the doctors and record is being maintained. Various methods of passive surveillance are;
    - Self reporting
    - Referral system; here general practitioners and clinicians from other branches refer suspected cases of leprosy to a specialist.
    - A leprosy patient bringing his/her relatives or friends who has similar symptoms to the health care system.

Passive surveillance does not involve extra cost and man power. Moreover, sometimes leprosy patients themselves are engaged in bringing new patients.

Other types of screening include mass screening, high risk or selective screening, multiphasic screening.

- Mass screening: It includes screening of all people residing at a particular area or a sub group of it.
- High risk or selective screening: Screening of high risk people (household, neighbourhoods) as they are at risk of developing leprosy in future.
- Multiphasic screening: This includes combination of different methods of screening for the detection of leprosy.[24]

There are several active surveillance programme conducted by NLEP in India.

ASHA involvement: Under National rural health mission, Accredited Social Health Activist (ASHA) were involved in leprosy programme since last 8 years. Out of the total 135485 new cases detected during the year 2016 -‘17, 48186 (35.57%) cases were brought in by ASHA.[22]

Block leprosy control campaign (BLCC): It was conducted in 1932 high endemic blocks during the period of 30th January to 28th February 2015. Door to door survey was conducted to diagnose new cases. A total of 11,532 new cases were detected through this method.[9]

Anti leprosy fortnight: It was conducted in 3485 blocks in low endemic areas for leprosy from 30th January to 13th February 2015. A total of 4343 new leprosy cases were detected through this search.[9]

Focused leprosy Campaign: This survey was conducted during the year 2016-'17 in Village/urban areas of 21 states covering 300 households when a Grade 2 disability due to leprosy was detected. 1171 cases have been detected, indicating 0.74 per 10,000 population covered.[22]

Contact examination: Contact examination was conducted in the year 2014-'15 in multibacillary and childhood cases in various states and Union Territories. A total of 5924 (0.49%) new cases were detected out of the 11,99,500 contacts examined.[9]

Brazil is a high endemic country for leprosy and contributes significantly to the global load of new cases every year. In a Brazilian study (2006), Deps *et al*[6] have interviewed 506 index leprosy patients about their "known leprosy contacts (KLC)". Of these 226 (44.7%) patients reported having KLC. Ninety two (40.7%) patients had household contacts, significantly higher in paucibacillary cases. In paucibacillary index cases, siblings constituted household contacts. In multibacillary cases, parents (mother more than father) were the household contacts. Among the KLCs, 73% were

on treatment or released from treatment; the matter of concern was 23.45% of them were yet to start treatment.[6]

In another Brazilian study (2012) Hacker *et al*[7] found that 'contact surveillance' is an effective way of early diagnosis of leprosy. The new cases detected by the authors through contact surveillance had less severe disease, lower bacterial indices (BI), lower disability grades and fewer episodes of reactions.[7]

From these two study results, it is evident that household contacts play an important role in transmission of leprosy. Both paucibacillary and multibacillary cases may transmit the disease among family members. Detection of household contacts help in catching leprosy patients at an early stage and early initiation of multi drug therapy (MDT). Thus episodes of reactions and severe disabilities are also prevented.

In a case control study conducted in two districts of Bangladesh (2013), Feenstra *et al*[3] studied the role of social contacts in the transmission of leprosy. The authors have concluded that in endemic areas of leprosy, not only the household contacts, but also the neighbourhood contacts play an important role in transmission of leprosy. Hence, the neighbourhood of known leprosy patients should also be targeted in contact tracing of leprosy.[3]

In a retrospective data analysis, Li *et al*[25] (2016) found that there was no significant decrease in new leprosy case detection in the Guizhou province of China during the period of 2008-2012. This implies that, even though China is a low endemic country for leprosy, there are pocket areas of new cases. The authors adopted several methods for new case detection; which included suspect survey, self reporting,

household contact examination and spot survey. Total 1274 new cases of leprosy were detected during that period of which 11.5% were diagnosed by household contact examination. This group of newly detected patients had lowest proportion of new cases with WHO disability grade 2. Fifty eight (4.6%) of total newly diagnosed cases were children (0-14 years).[25]

According to WHO data (2014), the registered prevalence of leprosy cases in India was 88,833. Total number of new leprosy cases detected in India was 1,25,785 and 11,365 were new childhood cases. Among the 13 high endemic countries globally, India has contributed highest number of new cases in the year 2014.[26] This is because of hidden leprosy cases in the society, who are mostly the contacts of known leprosy cases. During the year 2014-15 NLEP conducted contact examination in various states/Union Territories. Total of 5924 (0.49%) new cases were detected out of 11,99,500 contacts examined.[9] Hence, it is appropriate to adopt appropriate contact tracing strategies, so that India can step forward towards the elimination of leprosy.

A record based retrospective study was conducted by Anjum *et al*[1] in a leprosy referral centre (The Blue Peter Health and Research center) at Hyderabad, South India. The authors had studied presence of index cases (previously diagnosed leprosy case in the family) in the households of newly registered leprosy patients over five years (2009 - 2013). The study results showed that 27.6% of newly diagnosed leprosy patients in the centre during that period had an index case in the family; either parents or siblings. Seven patients (12.9%) had multiple index cases in the family. Social

contacts were detected in fourteen cases. Of the 257 newly detected cases, 26 (10.12%) were children, indicating continuing transmission of leprosy in that region.[1]

In an institution based study conducted by Ramasamy *et al*[27] at Chhattisgarh, between April 2012 and March 2016, 117 newly diagnosed children with leprosy were enrolled (MB – 56, PB - 61). Authors examined household contacts after educating the patient/guardian and household people on the early signs of the disease and their significance. They also motivated to bring all members for screening. 214 (60%) household members were examined. Ninety three household members had signs of leprosy, among them 17 were newly diagnosed as leprosy, 30 were known cases currently on treatment and 46 were released from treatment patients of leprosy.[27]

Padhi *et al*[2] have invented a new tool meant for intra-familial contact tracing of leprosy patients in a resource poor setting in Western Odisha (2013). The authors provided a "family motivation card" (Figure 2) to all leprosy patients (old and new) attending a tertiary care centre over a period of nine months. The family motivation card was designed by the authors themselves which was a leaflet with basic information regarding various clinical presentations of leprosy which can be spotted easily by the patients themselves. Before handing over the card to the patients, the purpose of giving the card was discussed with each patient in colloquial language. Total 100 new and old cases of leprosy were enrolled in their study. By adopting this method, 23 new intrafamilial cases [Multibacillary – 15 (65%); Paucibacillary – 8 (35%)] were detected by the authors over a period of 9 months. Majority of the newly

detected cases were children (43.47%) indicating continued transmission of the disease in that locality.[2]

From the review of literature it is apparent that in spite of achieving elimination, transmission of leprosy is continuing in India. Contact tracing is an effective way to halt the transmission of leprosy in the community. Hence, this present study is undertaken to detect contacts of leprosy patients in Vijayapura district of Karnataka.

Figure 2: Family Motivation card

FACTS ABOUT LEPROSY

କୁଷ୍ଠ ରୋଗ ବିଷୟରେ କେତେକ ଜାଣିବା କଥା

Leprosy is a bacterial infection

କୁଷ୍ଠ ଏକ ଜୀବାଣୁ ଜନିତ ରୋଗ

It is not caused by God's curse neither it is inherited.

ଏହା ଦୈବୀ ଅଭିଶାପ ପାଇଁ ହୁଏନାହିଁ- ଏହା ବଂଶଗତ ମଧ୍ୟ ନୁହେଁ ।

Early diagnosis & treatment can cure the disease completely.

ନିରୂପଣ ଓ ଚିକିତ୍ସା ଶୀଘ୍ର ଆରମ୍ଭ ହେଲେ ଏହା ସମ୍ପୂର୍ଣ୍ଣ ଆରୋଗ୍ୟ ହୁଏ ।

Diagnosis & Treatment facilities are available free of cost at Government Hospital.

ମାଗଣା ରୋଗ ନିରୂପଣ ଓ ଚିକିତ୍ସା ସୁବିଧା ସମସ୍ତ ସରକାରୀ ଡାକ୍ତରଖାନାରେ ଉପଲବ୍ଧ ।

Family members of an affected person are more prone to develop the disease.

ଆକ୍ରାନ୍ତ ବ୍ୟକ୍ତିର ପରିବାର ସଦସ୍ୟଙ୍କୁ ରୋଗ ହେବାର ବେଶୀ ସମ୍ଭାବନା ଥାଏ ।

Untreated family members suffer and continue to transmit infection to others.

ଆକ୍ରାନ୍ତ ବ୍ୟକ୍ତିର ପରିବାର ସଦସ୍ୟ ଚିକିତ୍ସିତ ନହେଲେ ଅନ୍ୟମାନଙ୍କୁ ସଂକ୍ରମିତ କରିବାର ସମ୍ଭାବନା ଥାଏ ।

DOES ANY OF YOUR FAMILY MEMBER HAVE ANY OF THE FOLLOWING...

ଆପଣଙ୍କ ପରିବାରର କୌଣସି ସଦସ୍ୟଙ୍କ ନିମ୍ନଲିଖିତ ଲକ୍ଷଣ ଅଛି କି ?

If yes, then bring them today for consulation

ଯଦି ହଁ, ତେବେ ସେମାନଙ୍କୁ ଆଜି ହିଁ ପରାମର୍ଶ ପାଇଁ ଆଣନ୍ତୁ

Coppery - white patch

ତମ୍ବାଳିଆ-ଇଷତ୍ ଧଳା ଛଉ

Loss of sensation

ବଧିରା/କାଲୁଆ ଲାଗିବା

Loss of hair & sweating

ଛଉ ଦାଗ ଉପରୁ ବାଳ ଉପୁଡିବା / ଝାଳ ନ ବାହାରିବା

Tingling sensation

ଝିମ୍ ଝିମ୍ ଲାଗିବା

Thinning and weakness of muscles

ମାଂଶପେଶୀ ପତଳା ହୋଇଯିବା ବା ଦୁର୍ବଳ ଲାଗିବା

Non healing ulcer

ଦୀର୍ଘ ଦିନ ଧରି ହାତ ପାଦରେ ଘା ନଶୁଖିବା

Spontaneous blister

ଆପେ ଆପେ ହାତପାଦରେ ଫୋଟକା ହେବା

Shortening or loss of fingers & toes

ହାତ ପାଦର ଆଙ୍ଗୁଠି ଛୋଟ ହୋଇଯିବା

Dryness & Icthyosis

ଚର୍ମ ଶୁଖିଲା ଦେଖାଯିବା

Swelling of ear lobes

କାନ ଫୁଲିବା ବା ମୋଟା ଲାଗିବା

Stuffiness of nose/bleeding

ନାକ ବନ୍ଦ ହେଲା ଭଳିଆ ଲାଗିବା ବା ରକ୍ତ ବାହାରିବା

ENSURING BETTER HEALTH OF FAMILY MEMBERS IS YOUR RESPONSIBILITY

ପରିବାର ସଦସ୍ୟଙ୍କ ସ୍ୱାସ୍ଥ୍ୟରକ୍ଷା ଆପଣଙ୍କ ଦାୟିତ୍ୱ

Avail free consultation & Treatment for yourself & persuade your family members to step forward

ମାଗଣାରେ କୁଷ୍ଠରୋଗ ସମ୍ବନ୍ଧୀୟ ପରାମର୍ଶ ଓ ଚିକିତ୍ସାର ସୁଯୋଗ ନିଅନ୍ତୁ ଓ ନିଜ ପରିବାର ସଦସ୍ୟଙ୍କ ଏଥିପାଇଁ ପ୍ରୋତ୍ସାହିତ କରନ୍ତୁ ।

Motivate Today For a safe Tomorrow

ସୁରକ୍ଷିତ ଭବିଷ୍ୟତ ପାଇଁ ଆଜି ପ୍ରୋତ୍ସାହିତ କରନ୍ତୁ

METHODOLOGY

SOURCE OF DATA:

A Hospital based prospective study was conducted to detect new cases among contacts of patients suffering from leprosy (new and old) attending the Department of Dermatology, Venereology and Leprosy of B.L.D.E. (Deemed to be university)'s Shri. B. M. Patil Medical College Hospital and Research Centre, Vijaypur, Karnataka. One hundred and ten patients were included in the study. The study was conducted between September 2016 and August 2018.

METHOD OF COLLECTION OF DATA:

Inclusion criteria:

All known cases of leprosy on and off treatment, were included in the study.

METHOD

A "Modified Family Motivation Card" had been developed by the investigators (Figure 3). The original family motivation card developed by Padhi *et al*[2] was in Oriya language. This was translated in regional language (Kannada). We also included pictorial illustration of the disease which was not in the card devised by Padhi *et al*[2]. Total seven pictures depicting various symptoms of leprosy were added in the card for better understanding by the patients.

Detailed history of the patient (index case) was taken with respect to duration of disease and deformity, history of contact, number of people residing in the same house, educational status, episodes of reactions if any, and treatment. Each patient and contacts were subjected to complete cutaneous examination, palpation of peripheral nerves, and sensory testing. Presence or absence of deformities were also recorded.

Modified family motivation card was handed over to all the index cases. Before handing over the card, each index case was counselled in detail using a PowerPoint presentation (Figure 4) (Kannada and Hindi language). If patient was a child or adolescent, his/her parents/guardians were included during the counselling session.

Counselling session included the following aspects:

1) Facts about leprosy
2) Modes of transmission of leprosy
3) Necessity for early detection of leprosy
4) Signs and symptoms of leprosy
5) Consequences of late detection of leprosy
6) Do's and dont's for prevention of deformities
7) Importance of early case detection
8) Availabilities of facilities by the Government

Thereafter patients were motivated to bring the contacts (family members, relatives, neighbours, and friends) from their area for screening and those who had signs and symptoms of leprosy after examination were regarded as new case.

INVESTIGATIONS:

Slit skin smear and skin biopsy was performed in the newly detected cases.

STATISTICAL ANALYSIS

All characteristics were summarized descriptively. For continuous variables, the summary statistics of mean, standard deviation (SD) were used. For categorical data, the number and percentage were used in the data summaries. Chi-square (χ^2)/ Freeman-Halton Fisher exact test was employed to determine the significance of differences between groups for categorical data. The difference of the means of analysis variables between two independent groups was tested by unpaired t test. The t test (also called Student's T Test) compares two averages (means) and tells if they are different from each other. If the p-value was < 0.05, then the results were considered to be statistically significant. Data were analyzed using SPSS software v.23.0. and Microsoft office.

ETHICAL CLEARANCE:

Institutional ethical committee clearance was attained.

Figure 3: "Modified Family Motivation card"

DOES ANY OF YOUR FAMILY MEMBER HAVE ANY OF THE FOLLOWING...

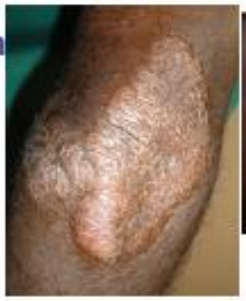
ನಿಮ್ಮ ಕುಟುಂಬದ ಯಾವುದೇ ಸದಸ್ಯರು ಈ ಕೆಳಗಿನ ಯಾವುದೇ ಲಕ್ಷಣಗಳನ್ನು ಹೊಂದಿರುವರೇ...

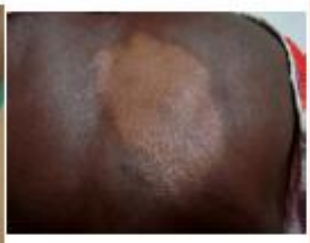
If yes, then bring them today for consultation

ಹೌದು ಎಂದಾದರೆ, ಅವರನ್ನು ಇಂದೇ ತಪಾಸಣೆಗೆ ಕರೆತನ್ನಿ

Coppery - white patch

ತಾಮ್ರ ಬಳುಪು ಮಚ್ಚೆ





Loss of sensation

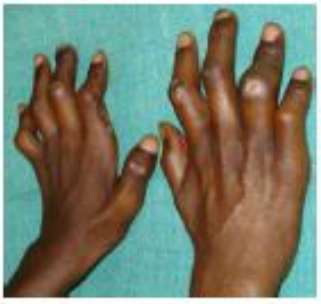
ಅರಿವು ಇಲ್ಲದ ಮಚ್ಚೆ

Loss of hair & sweating

ಮಚ್ಚೆ ಮೇಲೆ ಕೂದಲು ಕಡಿಮೆಯಾಗುವುದು ಮತ್ತು ಬೆವರು ಬರದೇ ಇರುವದು

Tingling sensation

ಜುಮ್ಮೆನ್ನಿಸುವ ಸಂವೇದನ

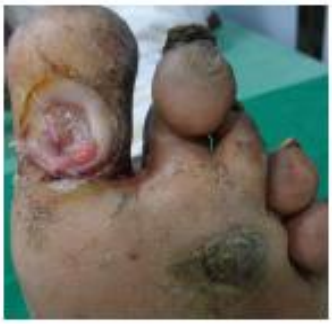


Thinning and weakness of muscles

ಮಾಂಸಖಂಡ ತೆಳ್ಳಗಾಗುವುದು ಮತ್ತು ದುರ್ಬಲವಾಗುವದು

Non healing ulcer

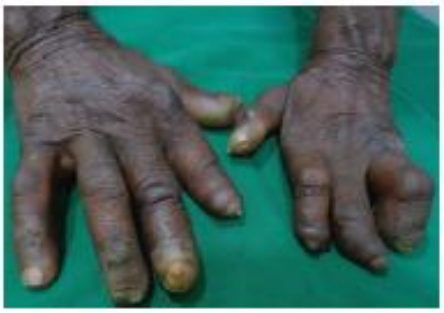
ಗುಣವಾಗದ ಹುಣ್ಣು

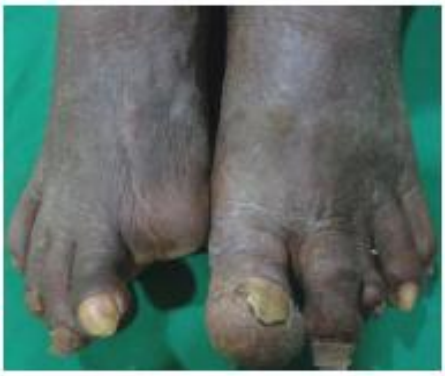


2

Spontaneous blister
ತನ್ನಿಂದ ತಾನೆ ನೀರುಗುಳ್ಳೆಗಳಾಗುವುದು

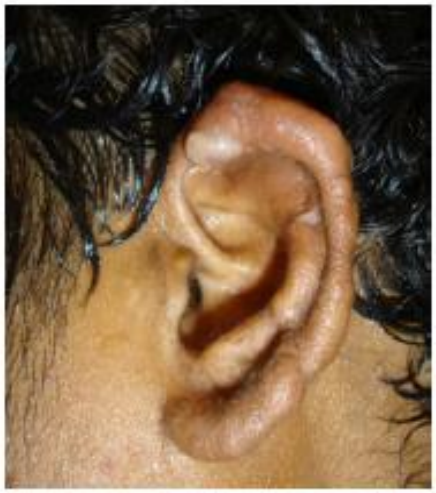
Shortening or loss of fingers & toes
ಕೈಬೆರಳು ಮತ್ತು ಕಾಲ್ಬೆರಳುಗಳು ಮೊಂಡ ಆಗುವುದು





Dryness & Icthyosis
ಒಣಚರ್ಮ

Swelling of ear lobes
ಕಿವಿ ಬಾವು ಆಗುವುದು



Stuffiness of nose/bleeding
ಮೂಗು ಕಟ್ಟುವುದು (ಬಂದ ಆಗುವುದು) ಮತ್ತು ಮೂಗಿಂದ ರಕ್ತ ಸ್ರಾವವಾಗುವದು

ENSURING BETTER HEALTH OF FAMILY MEMBERS IS YOUR RESPONSIBILITY

ನಿಮ್ಮ ಕುಟುಂಬದ ಸದಸ್ಯರ ಉತ್ತಮ
ಆರೋಗ್ಯ ಖಾತರಿ ನಿಮ್ಮ ಜವಾಬ್ದಾರಿ

Avail free consultation & Treatment for yourself & persuade your family members to step forward

ನಿಮಗಾಗಿ ಉಚಿತ ಸಲಹೆ ಮತ್ತು ಚಿಕಿತ್ಸೆ
ಪಡೆಯಿರಿ ಮತ್ತು ನಿಮ್ಮ ಕುಟುಂಬದ
ಸದಸ್ಯರ ಮನವೊಲಿಸಲು
ಮುಂದೆ ಹೆಜ್ಜೆ ಇಡಿ.

Motivate Today For a safe Tomorrow

'ಇಂದಿನ ಪ್ರೇರಣೆ ನಾಳಿನ ಸುರಕ್ಷತೆಗೆ'

Contact (ಸಂಪರ್ಕಿಸಿ):

Department of Dermatology (Room No. 9)
Shri. B. M. Patil Medical College and Hospital, Bijapur.

4

Figure 4: PowerPoint presentation that was used for counseling (Kannada language)

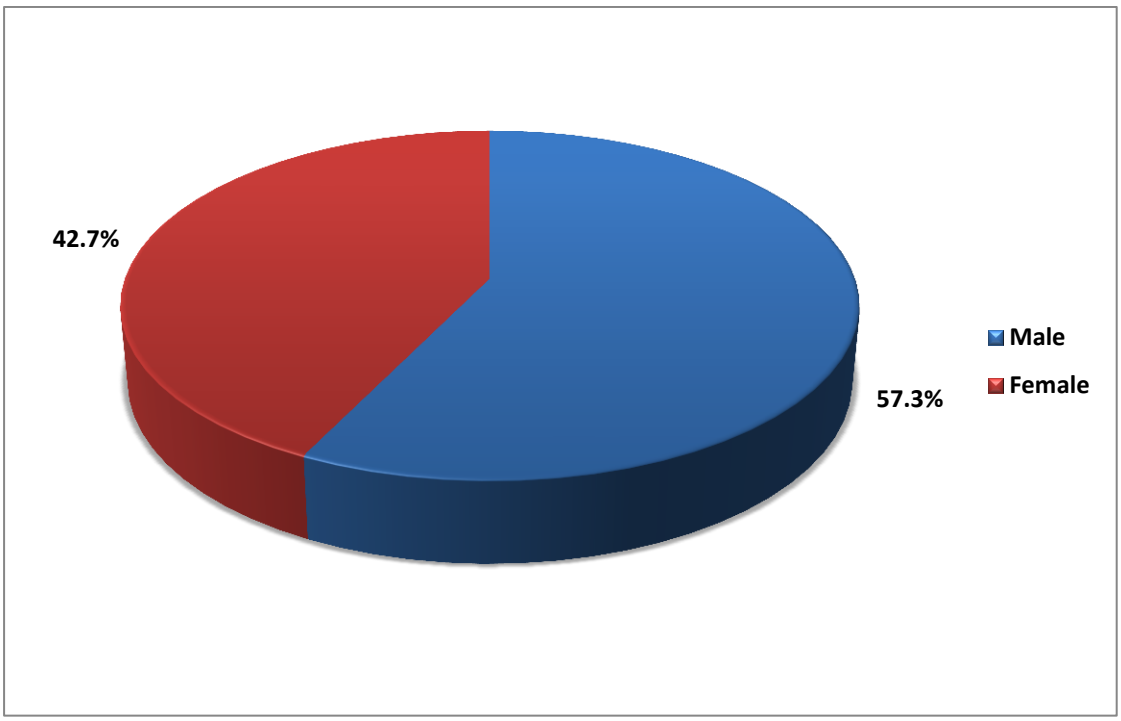
RESULTS

A hospital based prospective study was conducted from September 2016 to August 2018. A total of 110 patients suffering from leprosy were included in the study.

Gender distribution

Among 110 index patients, 63 were males (57.3%) and 47 were females (42.7%). Figure 5 presents the gender distribution of the patients included in the study.

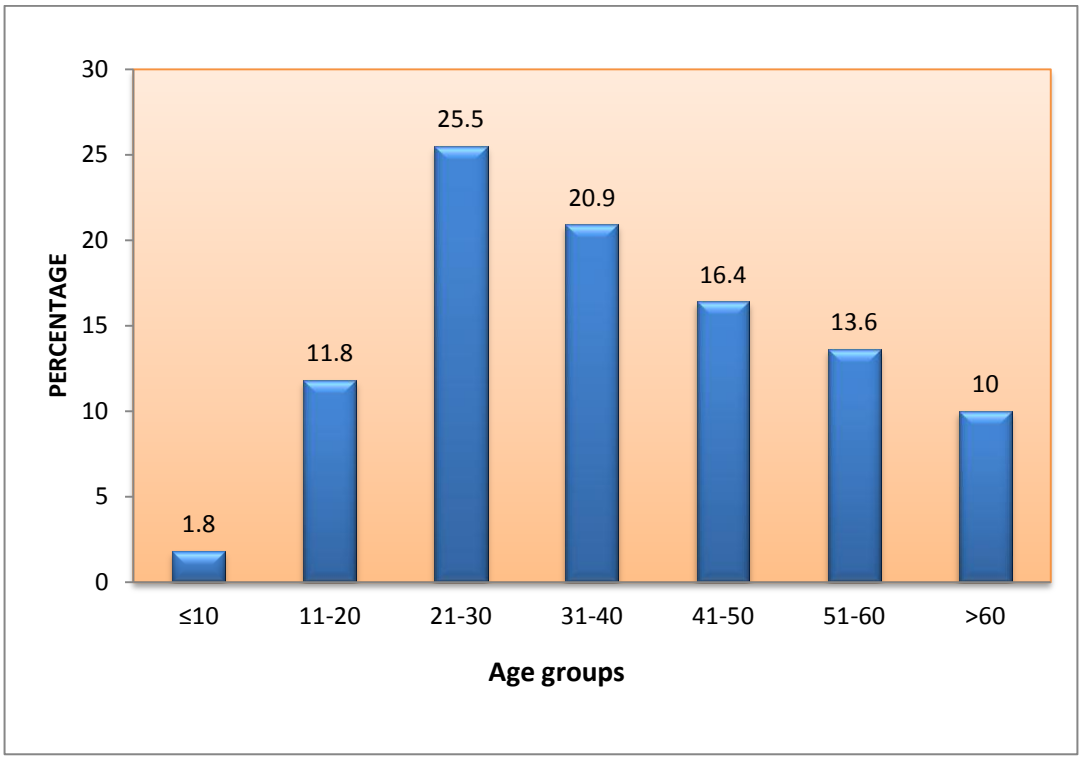
Figure 5: Gender distribution of patients with leprosy



Age distribution of Index patients

The age of the patients enrolled in the study ranged from 7 to 86 years. The mean age (± SD) of the study population was 39.1 ± 17.06 years. Figure 6 presents the age distribution of the patients.

Figure 6: Age distribution of patients with leprosy

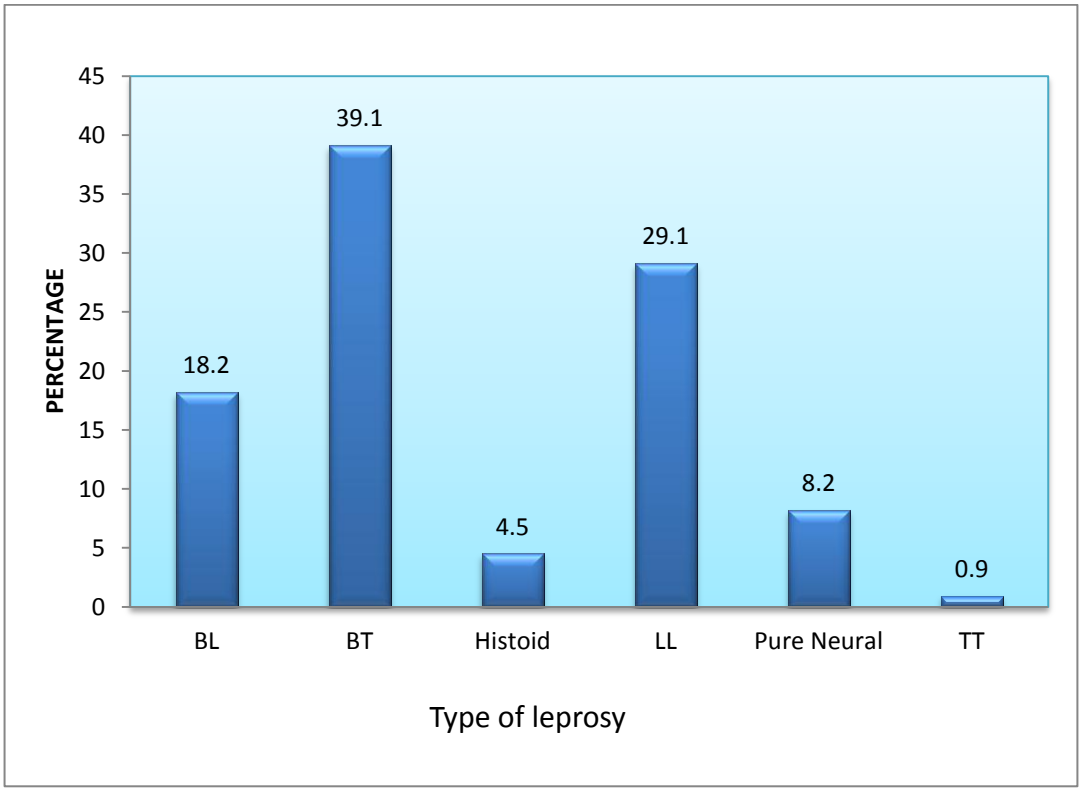


Clinical types of leprosy

Most prevalent clinical type was borderline tuberculoid leprosy in 43 (39.1%) patients, followed by lepromatous leprosy in 32 (29.1%), borderline lepromatous leprosy in 20 (18.2%), pure neural leprosy in 9 (8.2%), histoid leprosy in 5 (4.5%),

and tuberculoid type in 1 (0.9%) patient. The percentage distribution of clinical types of leprosy has been presented in figure7.

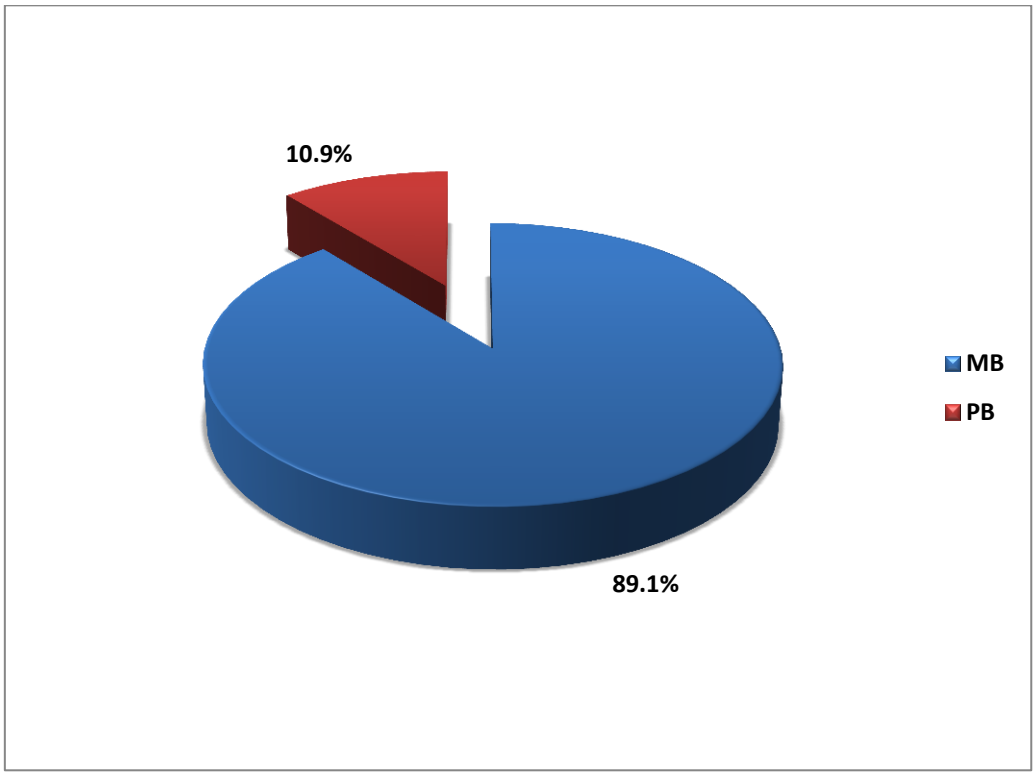
Figure 7: Clinical types of leprosy among the study subjects



Distribution based on WHO classification of disease

Most common type was multibacillary in 98 (89.1%) patients followed by paucibacillary in 12 (10.9%) patients. The percentage distribution of the patients according to WHO classification of disease has been presented in figure 8.

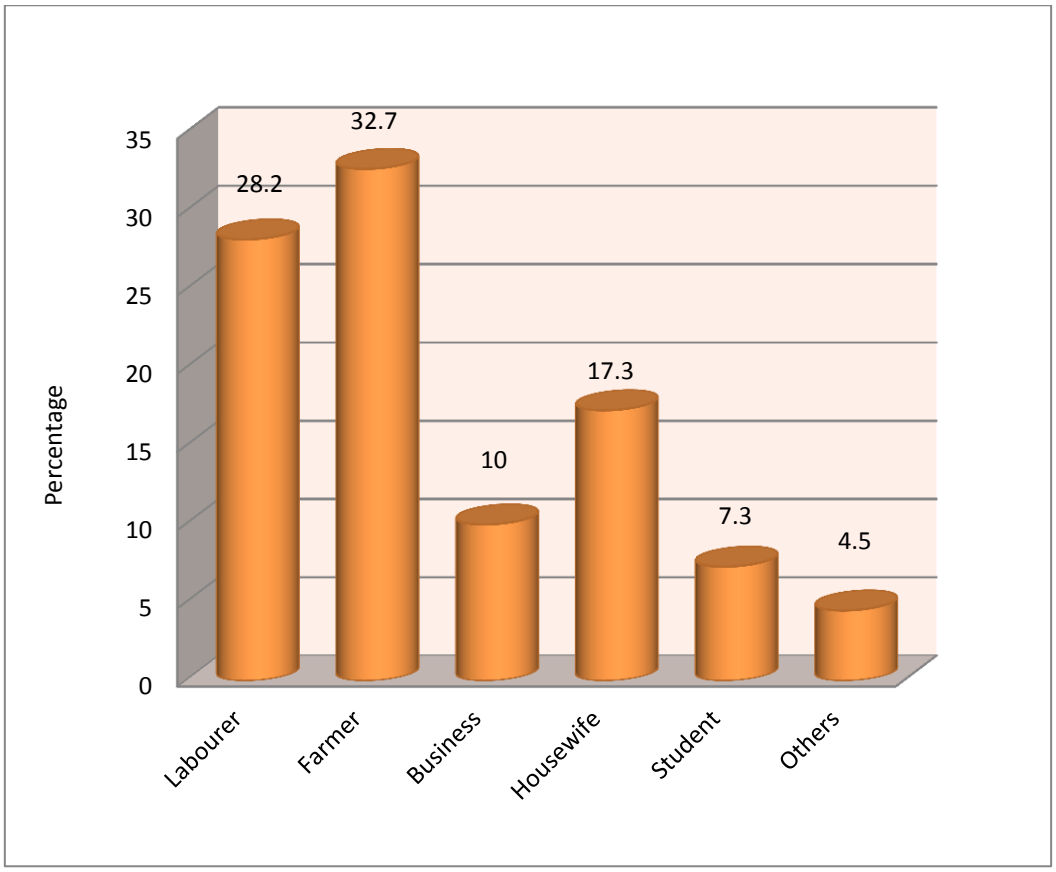
Figure 8: Distribution of patients based on WHO classification



Occupation of study subjects

Among 110 index patients, majority were farmers (n=36; 32.7%), next common being labourers (n=31; 28.2%), housewives (n=19; 17.3%), Businessmen (n=11; 10.0%) and students (n=8; 7.3%). Remaining 5 (4.5%) patients had other occupations (3 had other occupation; 2 were retired clerks). The percentage distribution of the patients based on occupation has been presented in figure 9.

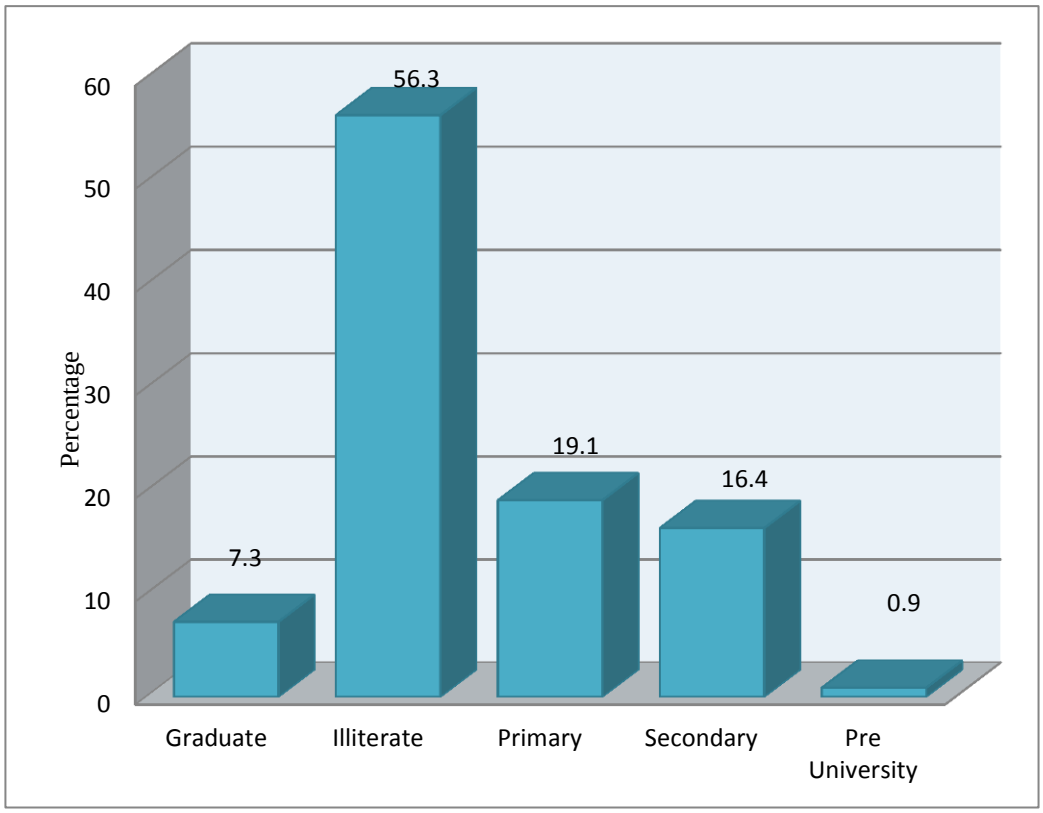
Figure 9: Occupation-wise distribution of patients



Distribution of patients based on education

Majority of the patients were illiterate (n=62; 56.3%), followed by 21, 18 and 8 patients had primary education, secondary education, graduation respectively. The distribution of patients based on education is presented in figure 10.

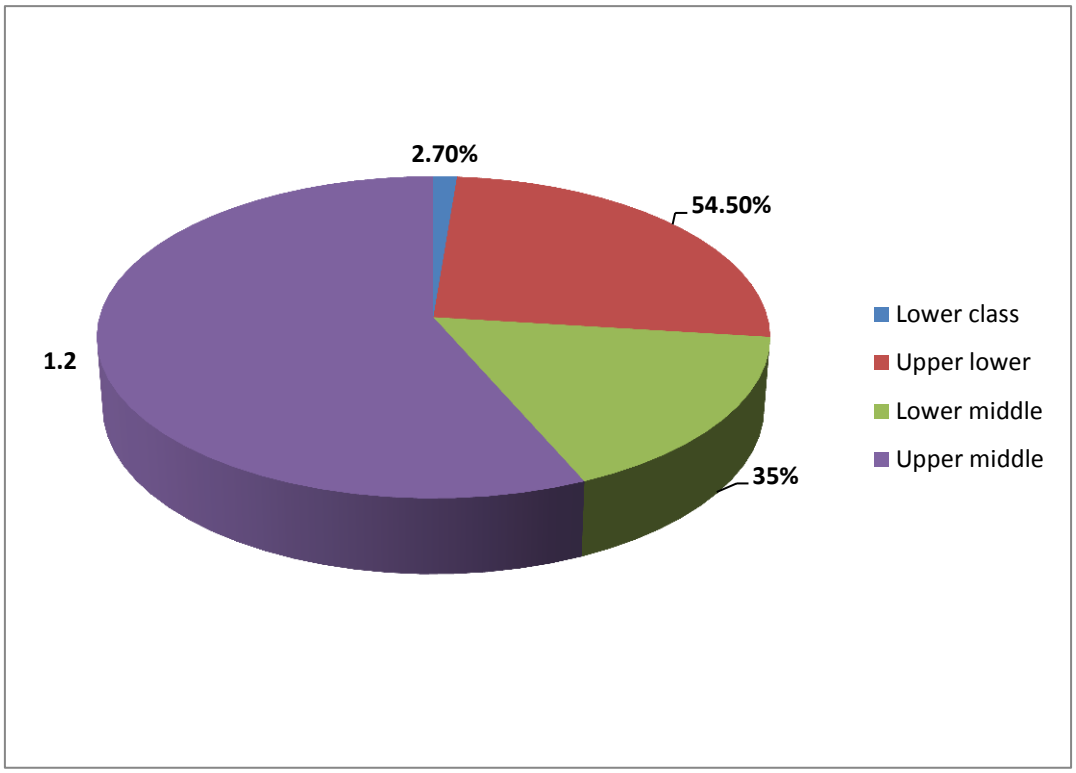
Figure 10: Distribution of patients based on education



Distribution of patients based on Socio-economic status

Majority of the patients belonged to lower socioeconomic (S/E) status (n=63; 57.3 %) followed by middle class (n=47; 42.7%). The socio-economic status-wise distribution of the patients has been shown in figure 11. Majority of study subjects are resident in kutcha houses (n=80; 72.7%) and remaining 30 (27.3%) patients in pacca house.

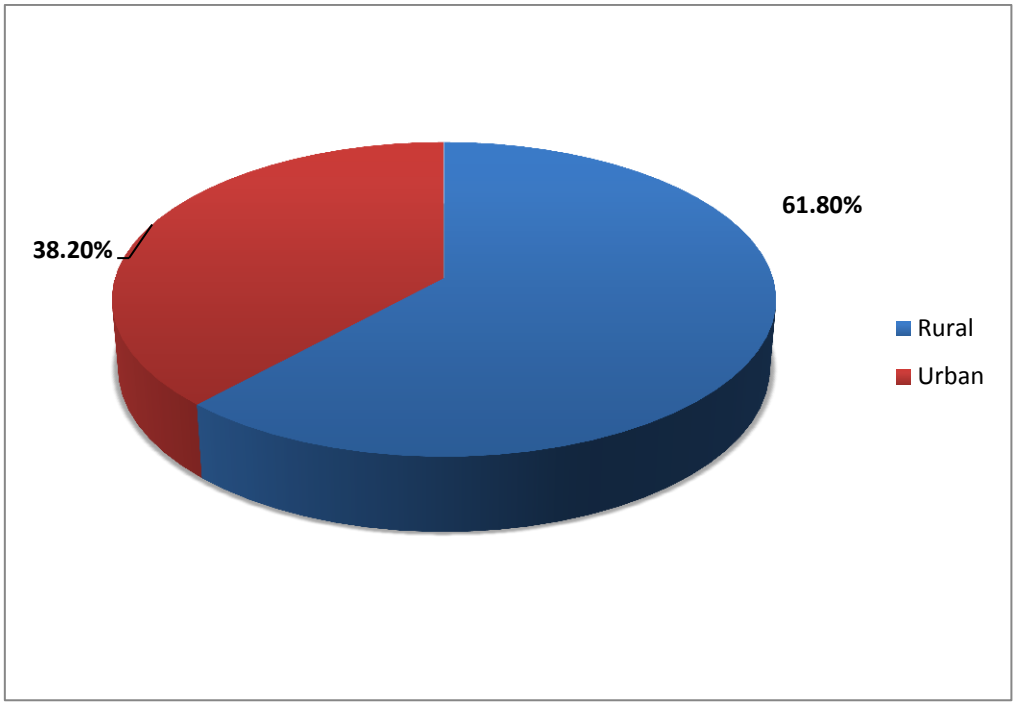
Figure 11: Socio-economic status-wise distribution of patients



Distribution of cases based on locality

Majority of patients belong to rural area (n=68; 61.8%) and remaining 42 patients belong to urban area (n=42; 38.2%). The distribution of cases based on locality is presented in figure 12.

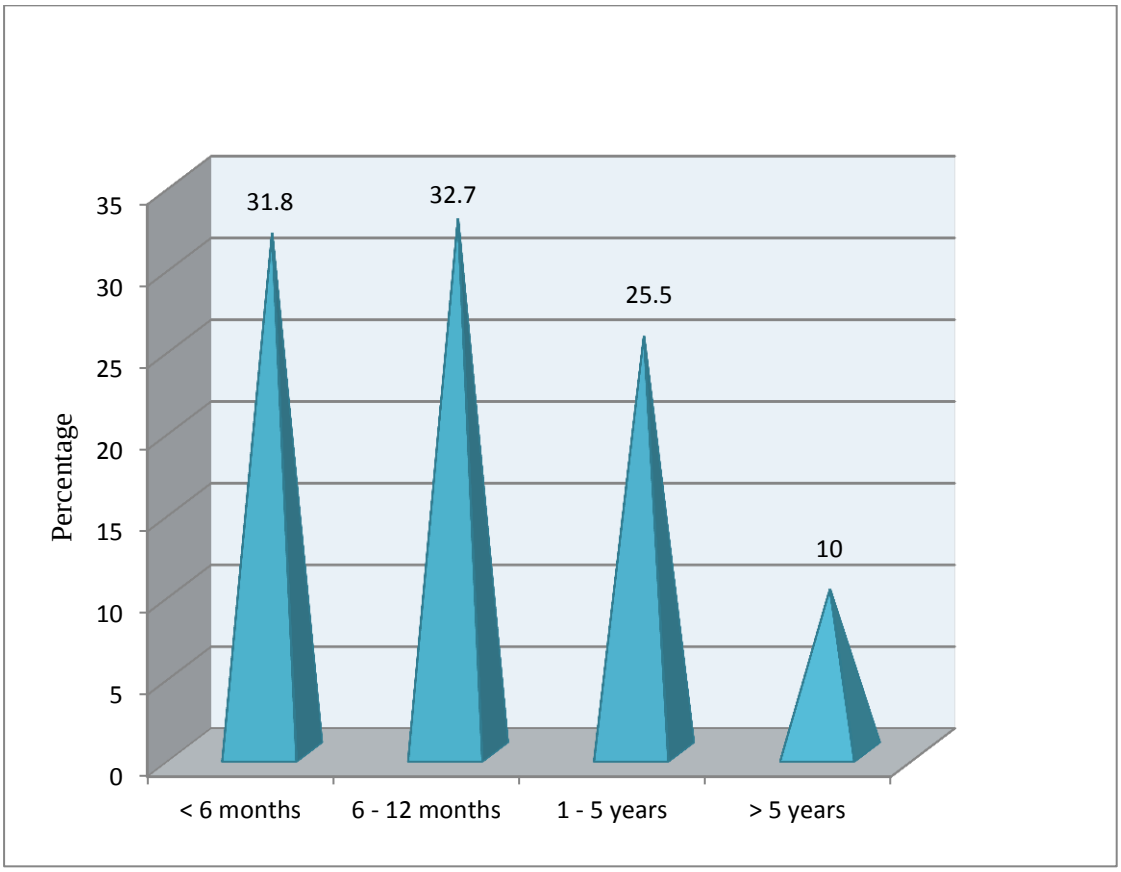
Figure 12: Distribution of cases based on locality



Duration of disease

Out of 110 patients, 36 (32.7%) had the disease for 6 months to 1 year, followed by 35 (31.8%) patients, whose disease duration was less than one year. Twenty eight (25.5%) patients had the disease for 1 - 5years, and 11 (10.0%) patients had disease duration for more than 5 years. The distribution of patients based on duration of disease has been presented in figure 13. Among 110 patients, 15 (13.6%) patients had type 1 and type 2 reaction each.

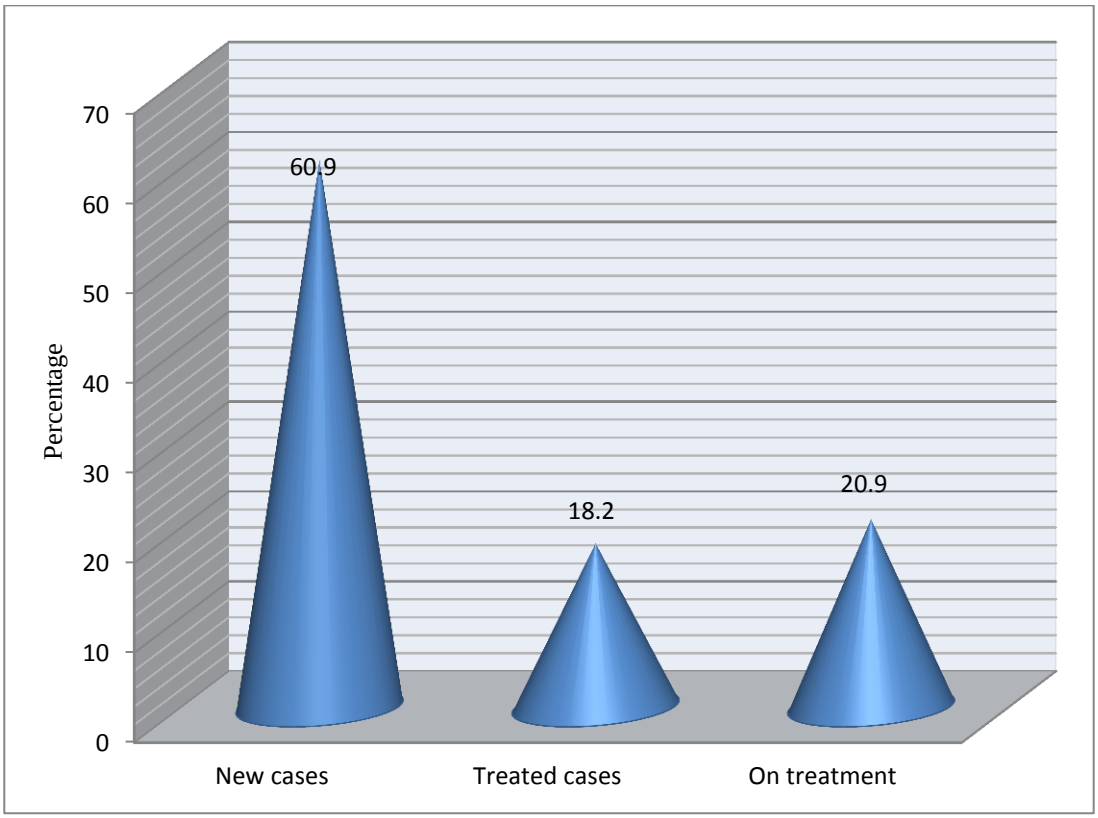
Figure 13: Percentage distribution of duration of disease in years



Distribution of patients based on treatment

Among 110 patients, 67(60.9%) were newly detected cases, 20 (18.2%) were treated cases, and 23 (20.9%) were on treatment. The distribution of patients based on treatment has been presented in figure 14.

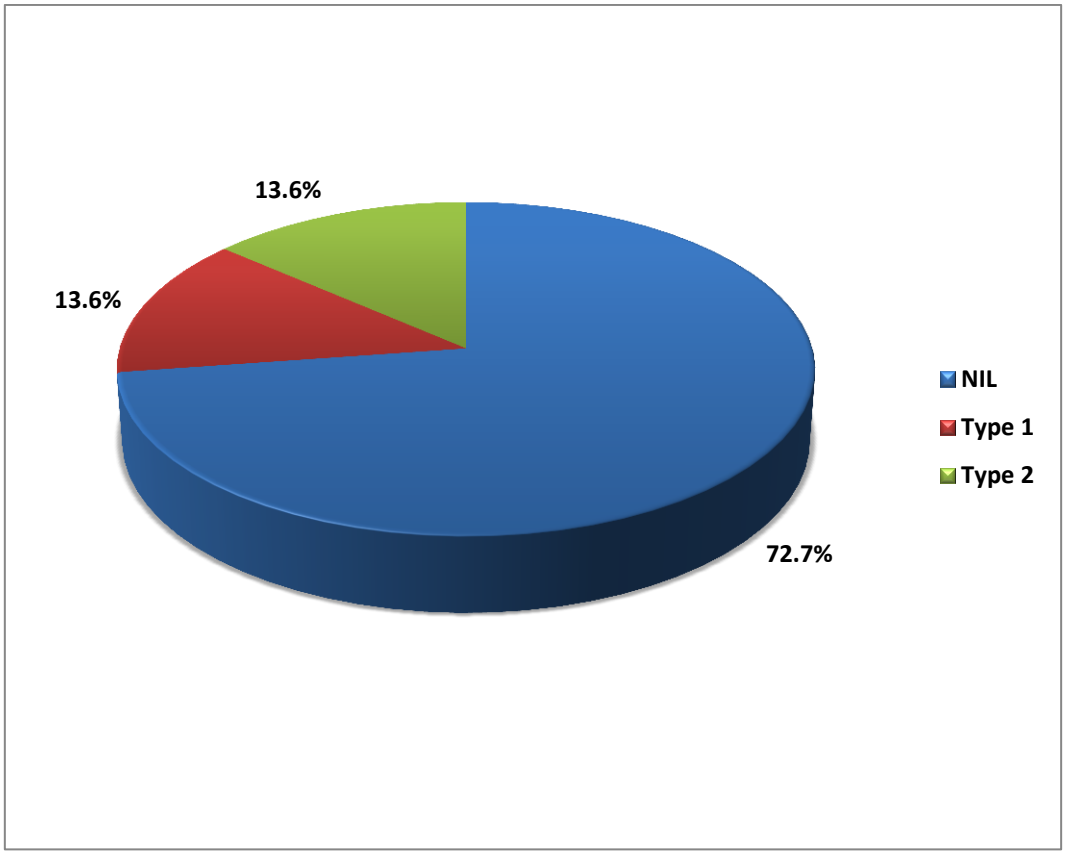
Figure 14: Percentage distribution of cases based on treatment



Distribution of cases based on type of lepra reaction

Among 110 patients, 30 patients had lepra reactions. 15 (13.6%) patients each had type 1 lepra reaction and type 2 lepra reaction. Remaining 80 patients did not have lepra reaction. The distribution of cases based on lepra reaction is presented in figure 15.

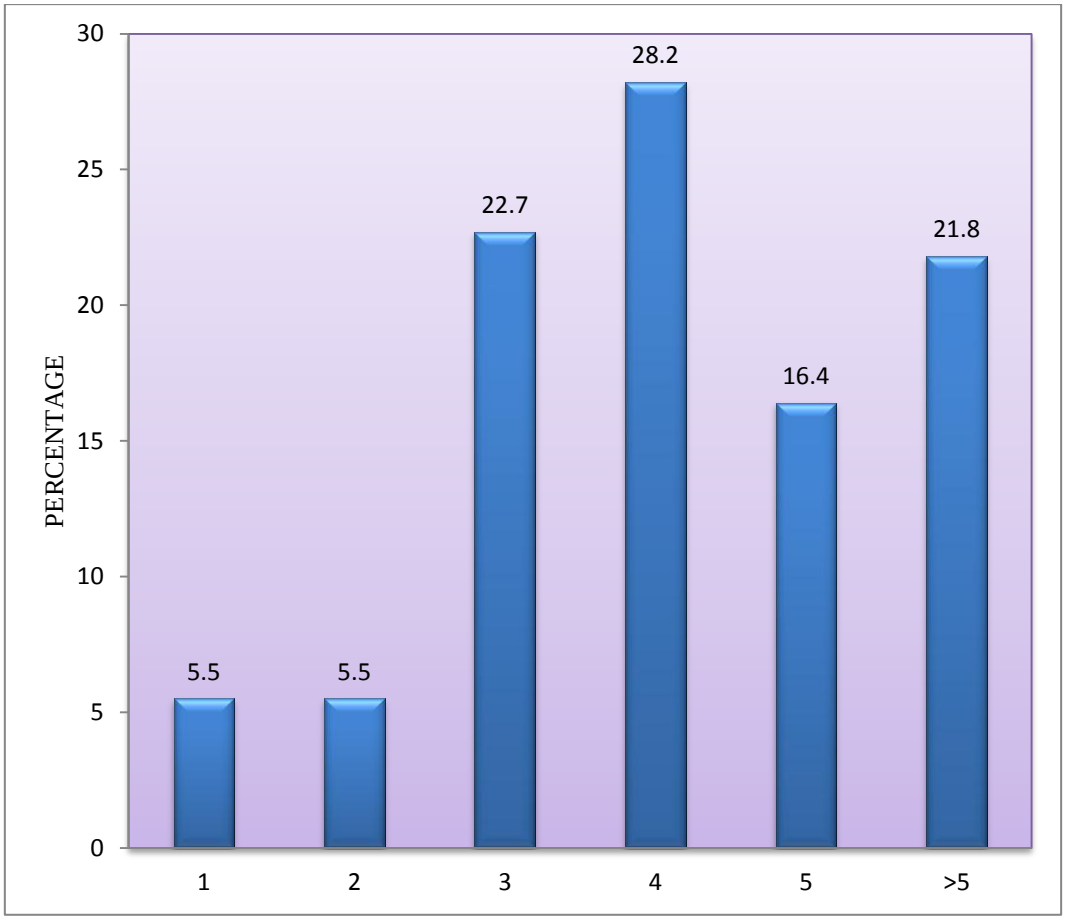
Figure 15: Distribution of cases based on lepra reaction



Distribution of cases according to number of family members

Majority of patients belonged to family members of 4 people (n=31;28.2%), followed by 3 family members (n=25;22.7%), more than 5 family members (n=24;21.8%), 5 family members (n=18;16.4%), one and two family members in 6 patients each (5.5%). The distribution of cases according to number of family members in presented in figure 16.

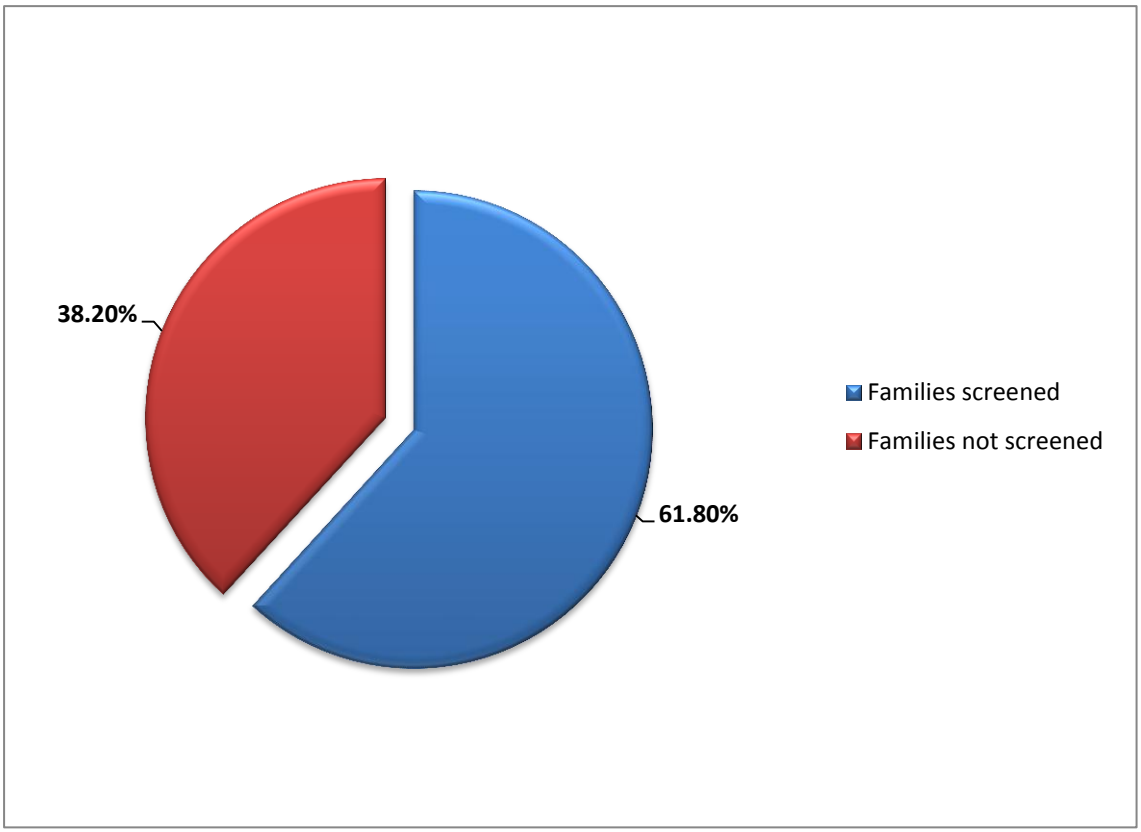
Figure 16: Distribution of cases according to number of family members (Excluding patient)



Distribution of cases based on number of families screened

Among 110 patients, 68 (61.8%) families of index patients were examined for evidence of leprosy. The distribution of cases based on number of families screened is presented in figure 17. Total 147 contacts were screened.

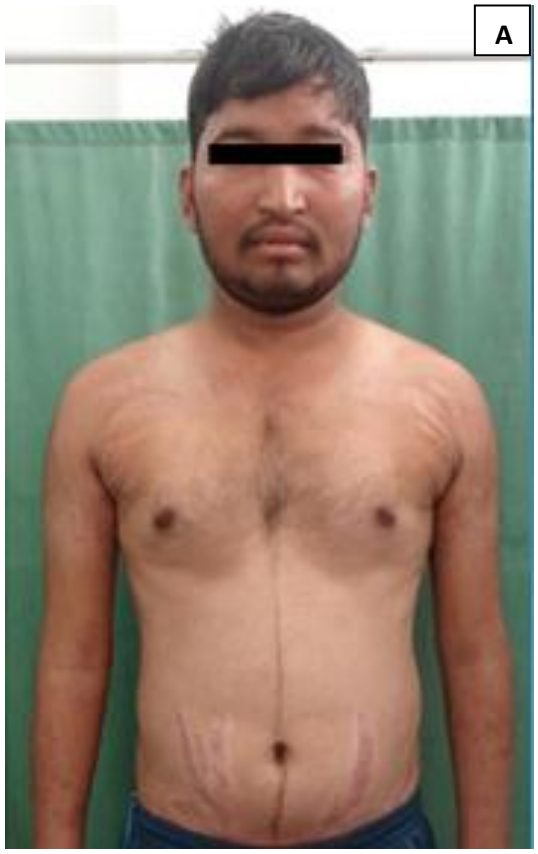
Figure 17: Distribution of cases based on number of families screened

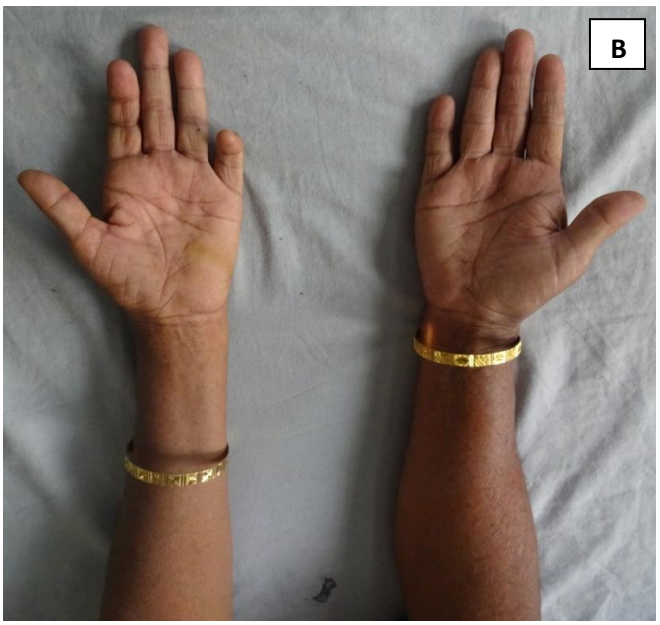


Distribution of cases based on new case detection

Among 147 contacts screened, 1 new case was detected. The newly detected case was a 50 years old mother of a multibacillary (LL HD) patient with a history of deformity of left hand from the past 20 years. She did not have any skin lesions, ulnar clawing of left hand was seen along with atrophy of thenar and hypothenar eminences. Patient was diagnosed as pure neural leprosy. Index patient and new case detected (mother) are depicted in figure 18.

Figure 18: A - Index Patient (LL HD) ; B - Left Ulnar clawing of newly detected case





DISCUSSION

Leprosy is a communicable disease with a variable incubation period. Leprosy remains a public health problem in India even in the post elimination era. Infectious cases in endemic pockets lead to ongoing transmission contributing to high annual new case detection rate (ANCDR). Active and passive case detection remains important measure to bring down ANCDR. World Health Organisation (WHO) operational guidelines recommends counselling of contacts about transmission, signs and symptoms, and motivating them to report in case of development of skin lesions, sensory impairment or deformities suggestive of leprosy.[8]

In this hospital based prospective study on contact tracing of leprosy patients, a total 110 patients were enrolled. The age of the patients ranged from 7 years to 86 years with mean age of 39.1 (±17.06) years. Most common age group affected was 21 – 30 years followed by 31 – 40 years. In a study by Padhi *et al*[2], mean age of sufferers was 38 years. In another study conducted by Anjum *et al*[1], the age range of leprosy patients was between 4 – 75 years. This age group is more prone for development of leprosy as they tend to come out of home to seek occupation or for social reasons.

Male patients were the common sufferers (M:F = 1.3:1, males – 57.3% , females – 42.7%). Padhi *et al*[2] and Anjum *et al*[1] also observed male predominance. Forty two male patients bought contacts for screening, which was more when compared to females (26 patients). Association of gender with families screened was not statistically significant (p value = 0.226).

Although leprosy affects both the genders, in most parts of the world males are predominantly affected than females, often in the ratio of 2:1. This predominance of leprosy among males has been observed in various countries such as India, Philippines, Hawaii, Venezuela and Cameron.[28] Among the females, prevalence of leprosy is relatively low which may be due to environmental or biological factors. Epidemiological characteristics of leprosy appears to be like many other communicable diseases where males are more frequently affected than females.[29] Indian culture is male dominated as they take up occupation and responsibility of family and hence more exposed to external environment. This makes them susceptible by getting exposed to the environment and other leprosy sufferers more closely compared to females. As males are the working members of the family in India, they are considered special and they seek consultation and treatment more often.[11]

In this study, majority of patients belonged to lower socio-economic status (57.3%). The likely reasons for increased prevalence of leprosy among lower socio - economic status people may be related to their large family size and small less ventilated households, where overcrowding is unavoidable, making them susceptible to acquire the disease, if there is a leprosy patient in the family.[30] Moreover, they have a low education level, making delayed observation of signs and symptoms of leprosy and hence more occurrence of deformities.[31]

In our study, 1 new case of leprosy was detected. Newly detected case was a mother of a multibacillary index patient and had not received any treatment. She was 50 years old, having ulnar clawing of left hand since 20 years without any skin

lesions, and was diagnosed as pure neural Hansen's disease. Overcrowding was also seen in their family. The index patient was a 20 year old male with disease duration of 2 years and was on irregular treatment. He was diagnosed as lepromatous leprosy with grade 2 deformity of right hand along with type 2 reaction and was restarted on multibacillary multi drug therapy and oral prednisolone for control of reactional status.

This study proves that passive case detection may result in delayed diagnosis. This finding confirms the fact that household contacts are the most important source of acquiring infection. Studies have shown that the risk of acquiring the disease is 8 to 10 times more in households of lepromatous leprosy cases as compared to the surrounding population and 2 to 4 times for tuberculoid disease.[1,3] Padhi *et al*[2] have detected 23 new cases of leprosy among family members of the primary cases. In a study by Anjum *et al*[1], 6% of the newly diagnosed leprosy patients had an index case in the family; either parents or siblings. Seven patients (12.9%) had multiple index cases in the family and social contacts were detected in fourteen cases. Early case detection and treatment not only helps the termination of leprosy transmission but also helps for the prevention of the disabilities of leprosy.

Screening the family contacts incorporates the relatives, as well as reach out to the neighbours and other individuals in the area, wherever possible. Increased prevalence of leprosy among household contacts stresses on the need to screen and follow up the asymptomatic contacts of newly diagnosed leprosy patients.[33]

Moreover, a study conducted by Ramasamy *et al*[27], suggests that special attention should be given for screening the siblings of the index child cases.

In our study two index patients gave history of contact among family member who shared a same roof. Of these, both patients gave history of leprosy in their fathers. First patient took treatment for leprosy 20 years back, in another patient, father and son presented together with leprosy and father had developed the signs and symptoms of leprosy prior to son. This proves that contacts inside a closed room or building were more prone for infection than contacts in an open outside area.

In our study majority of patient were multibacillary patients (98 patients; 89.1%). Among them, borderline tuberculoid leprosy was more common (n=43; 39.1%) and paucibacillary patients (12 patients) constituted 10.9% of cases. Similar finding were by Padhi *et al*[2]. Multibacillary patients are more infectious as compared to paucibacillary patients as mentioned earlier and hence screening of contacts of multibacillary patients helps in early case detection.

In the present study, majority of patients belonged to rural area (61.8%). 43 patients from rural area bought family members for screening whereas only 25 patients from urban areas bought family members for screening. Association of families screened with resinding locality of patients was not statistically significant (p value = 0.697). In a study conducted by Padhi *et al*[2], majority of patients belonged to rural area.

In our study, majority of patients were illiterates (n=62; 56.4%), whereas literates were 43.6%. Out of 68 families of leprosy patients screened, 39 families were brought by illiterate patients (57.4%) and 29 families were brought by literate patients (42.6%). In a study conducted by Padhi *et al*[2], stated that majority of patients were iliiterate.

Lack of education and rural background are not barriers to pursue health care for the patient themselves or for their family members if the patient is made to understand that leprosy is curable. Majority of the patients were from rural locality in our study. This could be due to unavailability of proper health care facilities in rural areas.

Counselling session was attended by all the 110 index patients and 68 (61.8%) families. Forty two (38.2%) patients did not bring family members for screening even after repeated counselling. Continued counselling and motivation was provided to all the participant parents/ guardians in every visit. The probable causes for not bringing family members for screening could be the associated social stigma in the community and illiteracy among majority of leprosy patients.

Acceptance of MFMC was 97.3% in the present study. Three patients refused to take MFMC to home because of social stigma. The probable causes for refusal to accept the card was the written word leprosy, clinical pictures of leprosy in the card.

In our study we found that using modified FMC in passive contact tracing helps in

- Detection of new cases
- Helps in educating a patient
- Dispels myths about leprosy & reveals the truths
- Encourage patients to bring people from weaker sections of society (children, females and elderly members) whom are often not brought to the hospital for various reasons for screening
- Pictorial illustration depicting various symptoms of leprosy that have been added to the card helped in better understanding by the patients.

However, inclusion of the word ‘leprosy’ may appear stigmatizing to some literate patients, clinical images of leprosy may not be acceptable by some patients.

CONCLUSION

Early detection of new leprosy case is a challenge in low endemic areas even where pocket areas have been identified.

Identifying the contacts of leprosy patients who are at high risk of disease is of utmost importance for the leprosy control programme to break the chain of transmission of disease. Continued health education and motivation of leprosy patients and household contacts will enhance the voluntary reporting for screening and reduces the social stigma about the disease.

This study was effective in motivating index cases. “Modified Family Motivation Card” is efficient, simple and economical method for passive contact tracing and educating leprosy patients.

Leprosy-sufferers themselves are involved to bring contacts for screening. In future these patients may help in motivating other leprosy sufferers to come forward for seeking treatment

SUMMARY

A hospital-based, prospective study to determine the efficacy of "Modified Family Motivation Card" (MFMC) in detecting new leprosy cases was conducted between September 2016 and August 2018. All leprosy patients irrespective of treatment status were included in the study. Detailed history of the patient (index case) was taken. Each patient and contacts were subjected to complete cutaneous examination, palpation of peripheral nerves, and sensory testing. Presence or absence of deformities was also recorded. Modified family motivation card was handed over to all the index case, after conducting counselling session using PowerPoint presentation.

Following were the salient features of this study:

- Male to Female ratio was 1.3:1
- The mean age (± SD) of the study population was 39.1 (± 17.06) years.
- Majority of the patients belonged to lower socioeconomic (S/E) status (n=63; 57.3 %).
- Majority of the patients were illiterate (n=62; 56.4%) and belonged to rural area (n=68; 61.8%).
- Most prevalent clinical type of leprosy was borderline tuberculoid leprosy in 43 (39.1%) patients, followed by lepromatous leprosy in 32 (29.1%).
- Multibacillary patients were 98 (89.1%) and Paucibacillary were 12 (10.9%) patients.
- Total leprosy cases: 110

- New leprosy cases: 67(60.9%)
- History of prior exposure to leprosy patients among family member was seen in 2 index patients.
- Counselling session about leprosy was attended by all 110 patients & 68 (61.8%) families.
- 42 (38.2%) index cases did not bring family members for screening even after repeated counselling.
- Among 147 contacts screened, 1 new case was detected.
- Acceptance of modified family motivation card: 97.3%
- Refusal to take the card to home was seen among 3 patients.

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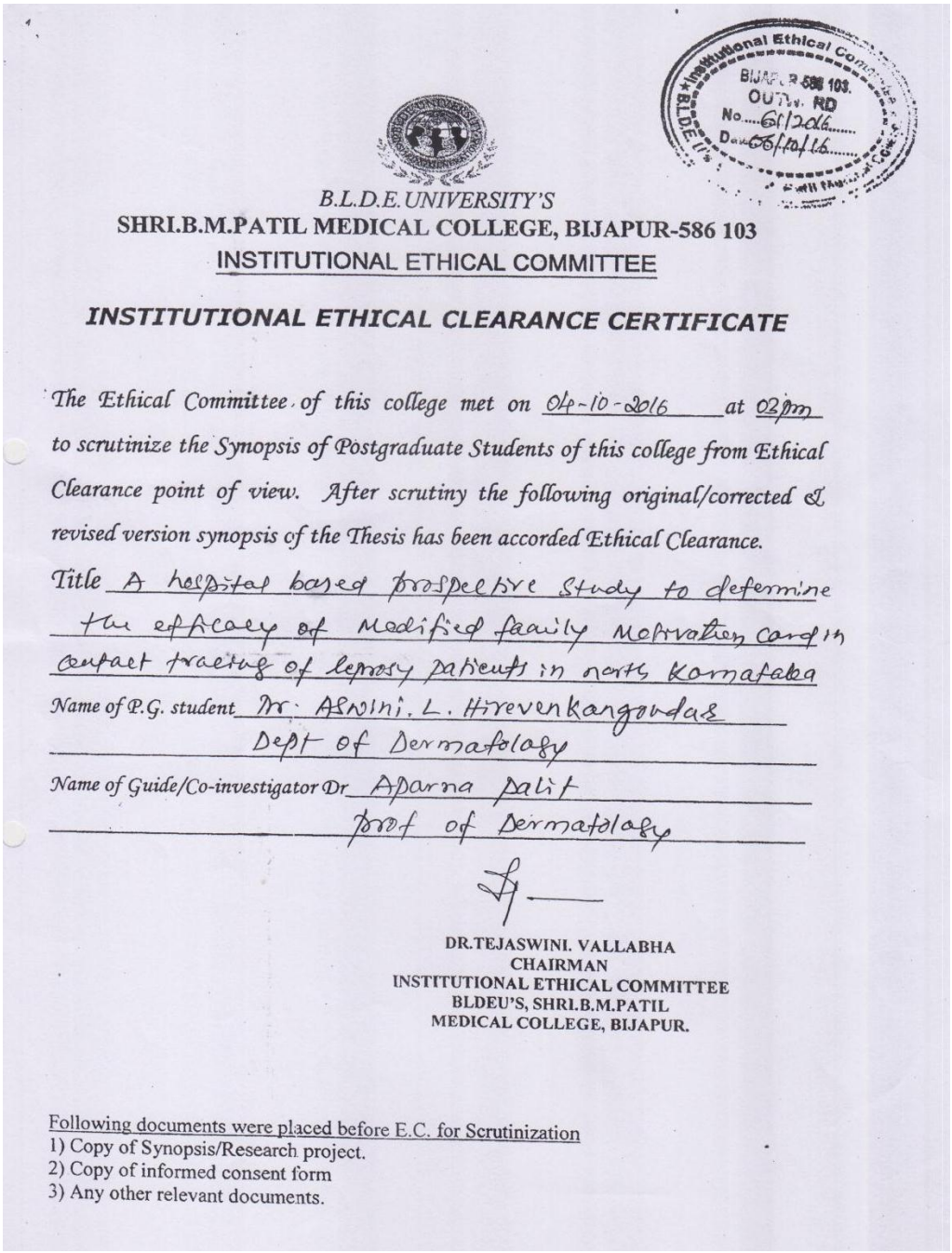
ANNEXURE

ETHICAL CLEARANCE CERTIFICATE



B.L.D.E. UNIVERSITY'S
SHRI.B.M.PATIL MEDICAL COLLEGE, BIJAPUR-586 103
INSTITUTIONAL ETHICAL COMMITTEE

INSTITUTIONAL ETHICAL CLEARANCE CERTIFICATE

The Ethical Committee of this college met on 04-10-2016 at 02pm to scrutinize the Synopsis of Postgraduate Students of this college from Ethical Clearance point of view. After scrutiny the following original/corrected & revised version synopsis of the Thesis has been accorded Ethical Clearance.

Title A hospital based prospective study to determine the efficacy of Modified family Motivation card in contact tracing of leprosy patients in north Karnataka

Name of P.G. student Mr. Aswini. L. Hirevenkangoudar
Dept of Dermatology

Name of Guide/Co-investigator Dr Aparna Palit
Prof of Dermatology

DR.TEJASWINI. VALLABHA
CHAIRMAN
INSTITUTIONAL ETHICAL COMMITTEE
BLDEU'S, SHRI.B.M.PATIL
MEDICAL COLLEGE, BIJAPUR.

Following documents were placed before E.C. for Scrutinization
1) Copy of Synopsis/Research project.
2) Copy of informed consent form
3) Any other relevant documents.

BLDE
(DEEMED TO BE UNIVERSITY)
Declared as Deemed-to-be-University u/s 3 of UGC Act, 1956

The Constituent College

SHRI. B. M. PATIL MEDICAL COLLEGE, HOSPITAL & RESEARCH CENTRE, VIJAYAPURA

BLDE(DU)/REG/PG/2018-19/1189 August 30, 2018

To,
The Professor and HOD
Department of Dermatology, Venereology and Leprosy,
BLDE (DU)'s Shri B. M. Patil Medical College,
Hospital and Research Centre,
Vijayapura

Sir,

Sub: Regarding change of PG Guide.
Ref: Your letter no. 173 dated 7th August, 2018.

With reference to the subject and letter cited above, on approval of the Hon'ble Vice-Chancellor, the change of PG Guide is permitted in respect of PG Student of your department:

Sl. No.	Name of the Student	Previous Guide	New Guide
1.	Dr. Ashwini L. H.	Dr. Aparna Palit	Dr. Keshavamurthy Adya

This is for your information.

REGISTRAR
REGISTRAR
BLDE (Deemed to be University)
Vijayapura-586103. Karnataka

Copy to:
- The Dean, Faculty of Medicine and Principal
- The Controller of Examinations
- Dr. Keshavamurthy Adya, Guide
- Dr. Ashwini L. H., PG Student

Smt. Bangaramma Sajjan Campus, B. M. Patil Road (Sholapur Road), Vijayapura - 586103, Karnataka, India.
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PROFORMA

B.L.D.E. (Deemed to be university) SHRI B. M. PATIL MEDICAL COLLEGE HOSPITAL AND RESEARCH CENTRE, BIJAPUR.

Department of Dermatology, Venereology and Leprosy.

INDEX CASE PROFORMA

PERSONAL PARTICULARS:

Name:

Age: Educational Status:

Gender: Religion:

Income: day / month/ year: House:

Occupation: No. of family members with age:

OPD/IPD NO:

Address with phone no.:

HISTORY:

- Duration of disease-
- Duration of deformity-
- H/O contact: In family-

  In the locality-
- Habits: Alcohol-

  Tobacco (smoking / chewing)-

- Episodes of reactions:
    - Type 1
    - Type 2

CLINICAL EXAMINATION:

Skin- Type of lesions: } Body chart

Distribution of lesions: } Body chart

Nerves- Peripheral nerves involved } Body chart

Deformity-

Upper limb-

Lower limb-

Face-

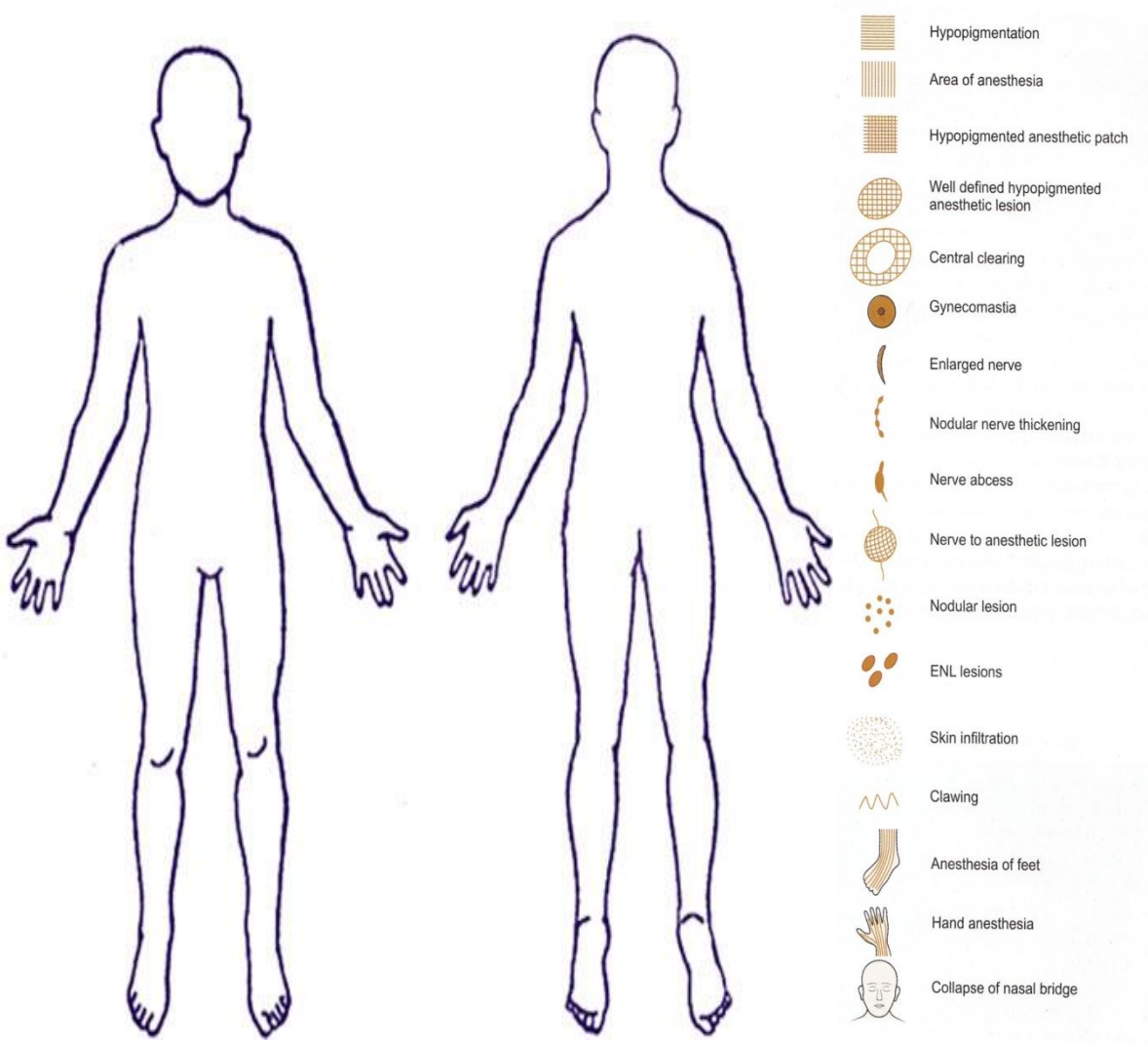
FINAL DIAGNOSIS:

TREATMENT:

- MDT
- Treatment for reaction
- Treatment for deformity

-

1: Body chart


Hypopigmentation
Area of anesthesia
Hypopigmented anesthetic patch
Well defined hypopigmented anesthetic lesion
Central clearing
Gynecomastia
Enlarged nerve
Nodular nerve thickening
Nerve abcess
Nerve to anesthetic lesion
Nodular lesion
ENL lesions
Skin infiltration
Clawing
Anesthesia of feet
Hand anesthesia
Collapse of nasal bridge

SCHEME OF CASE TAKING

B.L.D.E. (Deemed to be university)

SHRI B. M. PATIL MEDICAL COLLEGE HOSPITAL AND RESEARCH CENTRE, BIJAPUR.

Department of Dermatology, Venereology and Leprosy.

NEW CASE PROFORMA

PERSONAL PARTICULARS:

Name:

Age: Educational Status:

Gender: Religion:

Income: day / month/ year: House:

Occupation: No. of family members with age:

OPD/IPD NO: Relation with index case: Son/Daughter -

Address with phone no.: Wife/Husband -

Father/Mother -

Brother/Sister -

HISTORY:

- Duration of disease-
- Duration of deformity-
- H/O contact: In family-

  In the locality-
- Habits: Alcohol-

  Tobacco (smoking / chewing)-

- Episodes of reactions:
    - Type 1

    - Type 2

CLINICAL EXAMINATION:

Skin- Type of lesions: } Body chart

Distribution of lesions: } Body chart

Nerves- Peripheral nerves involved } Body chart

Deformity-

Upper limb-

Lower limb-

Face-

FINAL DIAGNOSIS:

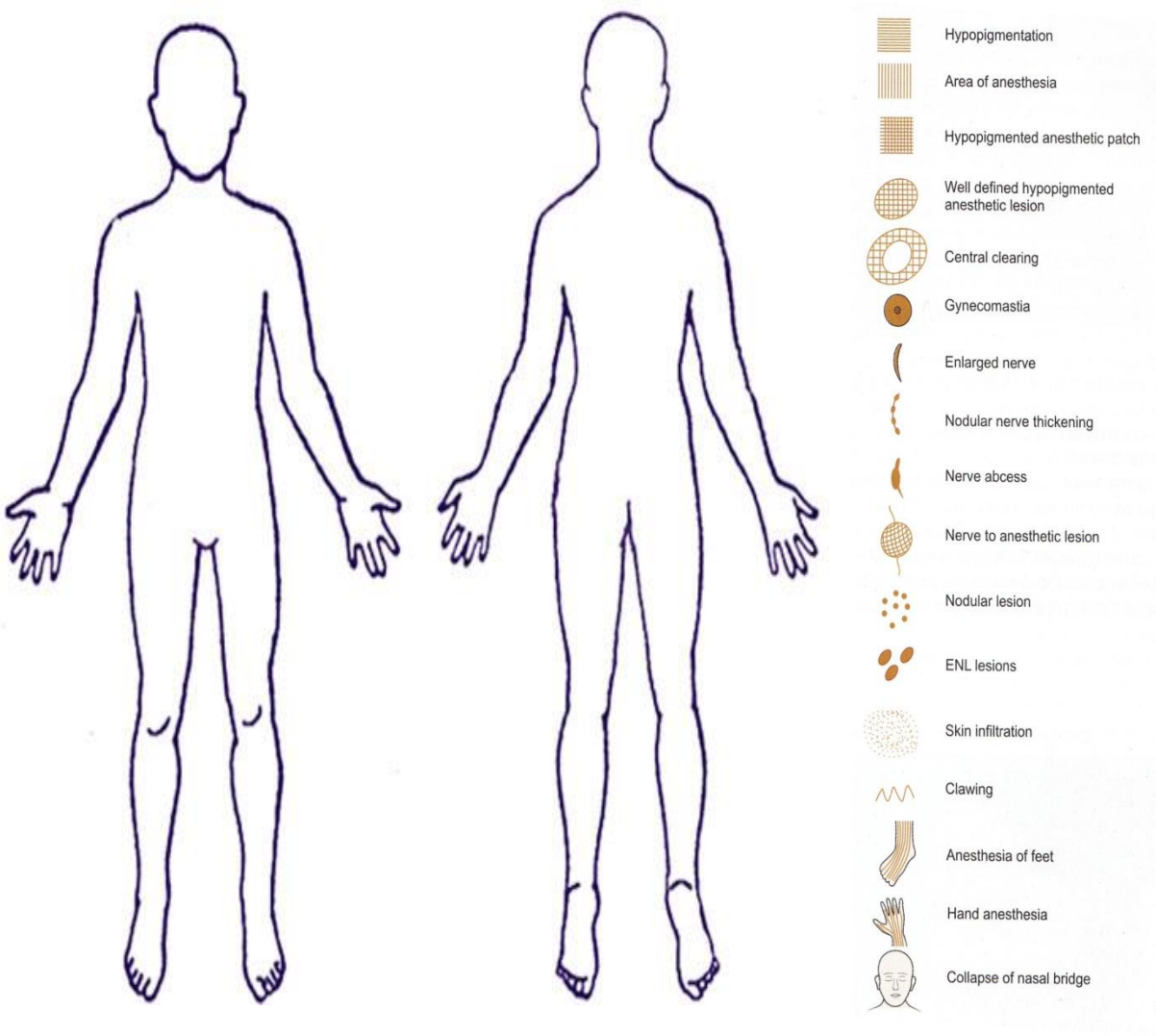
TREATMENT:

- MDT

- Treatment for reaction

- Treatment for deformity

1: Body chart


Hypopigmentation
Area of anesthesia
Hypopigmented anesthetic patch
Well defined hypopigmented anesthetic lesion
Central clearing
Gynecomastia
Enlarged nerve
Nodular nerve thickening
Nerve abcess
Nerve to anesthetic lesion
Nodular lesion
ENL lesions
Skin infiltration
Clawing
Anesthesia of feet
Hand anesthesia
Collapse of nasal bridge

SAMPLE INFORMED CONSENT FORM

B.L.D.E. (Deemed to be university) SHRI B. M. PATIL MEDICAL COLLEGE HOSPITAL AND RESEARCH CENTRE, BIJAPUR-586 103

RESEARCH INFORMED CONSENT FORM

TITLE OF THE PROJECT :- A HOSPITAL BASED PROSPECTIVE STUDY TO DETERMINE THE EFFICACY OF "MODIFIED FAMILY MOTIVATION CARD" IN CONTACT TRACING OF LEPROSY PATIENTS IN NORTH KARNATAKA

PG GUIDE :- DR. KESHAVMURTHY ADYA

PG STUDENT :- DR. ASHWINI L HIREVENKANGOUDAR

PURPOSE OF RESEARCH:-

I have been informed that this project will determine the efficacy of "Family Motivation Card" in detecting new leprosy cases in North Karnataka.

BENEFITS:-

I understand that my participation in this study will help the investigator in early identification of new leprosy patients.

PROCEDURE:-

I understand that relevant history will be taken and I will undergo detailed clinical examination.

RISK AND DISCOMFORTS:-

I understand there is no risk involved and I will experience no discomfort during the clinical examination.

CONFIDENTIALITY:-

I understand that medical information produced by this study will become a part of my hospital records and will be subjected to the confidentiality and privacy regulation of the said hospital. Information of a sensitive personal nature will not be a part of the medical records, but will be stored in the investigator's research file.

If the data are used for publication in the medical literature or for teaching purposes no names will be used and other identifiers such as photographs and audio or videotapes will be used only with my special written permission. I understand I may see the photographs, videotapes and hear the audiotapes before giving this permission.

REQUEST FOR MORE INFORMATION:-

I understand that I may ask more questions about the study at any time concerned. Dr.Ashwini L. Hirevenkangoudar is available to answer my questions or concerns. I understand that I will be informed of any significant new findings discovered during my participation.

REFUSAL OR WITHDRAWAL OF PARTICIPATION:-

I understand that my participation is voluntary and I may refuse to participate or may withdraw consent and discontinue participation in this study at any time without prejudice.

INJURY STATEMENT:-

I understand that in the unlikely event of injury to me resulting directly from my participation in this study and if such injury were reported promptly, then medical treatment will be available to me, but no further compensation will be provided. I understand that by my agreement for my participation in this study, I am not waiving any of my legal rights.

I have explained to (patient's / relevant guardian's name) the purpose of the study, the procedures required, and the possible outcome to the best of my ability in patient's own language.

_____ _____

Investigator / P. G. Guide Date

I confirm that …….(Name of the PG guide / chief researcher) has explained to me the research, the study procedures that I undergo and the possible risks and discomforts as well as benefits that I may experience. I have read and I understand this consent form. Therefore, I agree to give my consent for my participation as a subject in this research project.

_____ _____

Participant / guardian Date

_____ _____

Witness to signature Date

KEY TO MASTER CHART

Sl. No. – Serial number

M – Male

F – Female

TT – Tuberculoid leprosy

BT – Borderline tuberculoid leprosy

BL – Borderline lepromatous leprosy

LL – Lepromatous leprosy

L - Lower class

LM - Lower middle

UL - Upper lower class

UM - Upper middle

MB - Multibacillary

PB – Paucibacillary

RFT – Release from treatment