"A PROSPECTIVE OBSERVATIONAL STUDY OF MATERNAL NEAR-MISS(MNM) CASES AT TERTIARY CARE CENTRE"

By

DR. APARNA. S. PATIL

Dissertation submitted to the

B.L.D.E. (DEEMED TO BE UNIVERSITY)

VIJAYAPURA, KARNATAKA

In Partial fulfilment of requirements for the degree of

MASTER OF SURGERY

In

OBSTETRICS AND GYNAECOLOGY

Under the guidance of

DR.ARUNA M BIRADAR

MBBS, MS,

Professor

Department of OBSTETRICS AND GYNAECOLOGY

B.L.D.E. (DEEMED TO BE UNIVERSITY)

Shri B.M. Patil Medical College Hospital and Research Centre

Vijayapura, Karnataka – 586103-2025

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

Shri B.M. Patil Medical College Hospital and Research Centre

Vijayapura, Karnataka

Declaration by the candidate

I, **DR. APARNA. S. PATIL** , hereby declare that this dissertation/thesis entitled **"A PROSPECTIVE OBSERVATIONAL STUDY OF MATERNAL NEAR-MISS (MNM) CASES AT TERTIARY CARE CENTRE"**is a bonafide and genuine research work carried out by me under the guidance of **Dr. ARUNA M BIRADAR MBBS, MS,** Professor Department of Obstetrics And Gynaecology, B.L.D.E (DU)'s Shri B.M Patil Medical College, Hospital and Research Centre, Vijayapura.

***Dr.* APARNA. S. PATIL**

Postgraduate
Department of Obstetrics and Gynaecology
B.L.D.E. (Deemed to be University)
Shri B.M. Patil Medical College
Hospital and Research Centre
Vijayapura,Karnataka

Date: 24/05/2025

Place: Vijayapura

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

Shri B.M. Patil Medical College Hospital and Research Centre

Vijayapura, Karnataka

CERTIFICATE BY THE GUIDE

This is to certify that the dissertation entitled **"A PROSPECTIVE OBSERVATIONAL STUDY OF MATERNAL NEAR-MISS (MNM) CASES AT TERTIARY CARE CENTRE"** *is a bonafide and genuine research work carried out* by DR Aparna S Patil in partial fulfillment of the requirement for the degree of Doctor in Surgery in Obstetrics and Gynaecology.

DR. ARUNA M BIRADAR
Professor
Department of Obstetrics and Gynaecology
B.L.D.E. (Deemed to be University)
Shri B.M. Patil Medical College
Hospital and Research Centre
Vijayapura,Karnataka

Date: 24/05/2025

Place: Vijayapura

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

Shri B.M. Patil Medical College Hospital and Research Centre

Vijayapura, Karnataka

ENDORSEMENT BY THE HEAD OF THE DEPARTMENT

This is to certify that the dissertation entitled **"A PROSPECTIVE OBSERVATIONAL STUDY OF MATERNAL NEAR-MISS (MNM) CASES AT TERTIARY CARE CENTR***" is a bonafide and genuine research work carried out by* ***DR.Aparna S Patil*** *under the guidance of* ***Dr. ARUNA M BIRADAR MBBS, MS,*** *Professor Department of* Obstetrics And Gynaecology, *B.L.D.E (DU)'s Shri B.M Patil Medical College, Hospital and Research Centre, Vijayapura* Karnataka in partial fulfillment of the requirement for the degree of Doctor in Surgery in Obstetrics and Gynaecology, examination to be held.

Dr. SHAILAJA R BIDRI

Professor and Head of the Department
of Obstetrics and Gynaecology
BLDE (Deemed to be University)
Shri B. M. Patil Medical College, Hospital & Research Centre,

Date: 24/05/2025

Place: Vijayapura

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

Shri B.M. Patil Medical College Hospital and Research Centre

Vijayapura, Karnataka

Endorsement by the Principal / Head of the Institution

This is to certify that the dissertation entitled **"A PROSPECTIVE OBSERVATIONAL STUDY OF MATERNAL NEAR-MISS (MNM) CASES AT TERTIARY CARE CENTRE"***is a bonafide and genuine research work carried out by me under the guidance of* ***Dr. ARUNA M BIRADAR MBBS, MS,*** *Professor Department of* Obstetrics And Gynaecology, *B.L.D.E (DU)'s Shri B.M Patil Medical College, Hospital and Research Centre, Vijayapura.*

Dr. ARAVIND V. PATIL

Professor and Principal
BLDE (Deemed to be University)
Shri B. M. Patil Medical College,

Hospital & Research Centre, Vijayapura

Date: 24/05/2025
Place: Vijayapura

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

Shri B.M. Patil Medical College Hospital and Research Centre

Vijayapura, Karnataka

COPYRIGHT

DECLARATION BY THE CANDIDATE

I hereby declare that SHRI B M Patil Medical College Hospital and Research Centre, B.L.D.E. (DEEMED TO BE) UNIVERSITY, Karnataka shall have the rights to preserve, use, and disseminate this dissertation/Thesis in print/electronic format for research/academic purposes.

DR Aparna S patil

Post Graduate Resident

Department of Obstetrics and Gynaecology

Shri B M Patil Medical College Hospital & Research Centre

Vijayapura-586103, Karnataka

Date: 24/05/2025

Place: Vijayapura

ACKNOWLEDGEMENT

This dissertation was completed due the blessings of Almighty God. It gives me great pleasure to offer my profound appreciation to everyone who has helped me, directly or indirectly, to study the vast expanse of knowledge. I take this opportunity to extend my sincere gratitude and whole hearted thanks to all those who helped me to complete this dissertation. It is because of their guidance, the valuable lessons that they have taught me, and because of the support that they have given me throughout my post- graduate life, that has led to the completion of this project. It gives me immense pleasure to take the opportunity to thank each one of them for their contribution to my dissertation.

First and foremost, I would like to express my heartfelt gratitude and indebtedness to my respected teacher and guide, DR. ARUNA M BIRADAR MS Obstetrics & Gynaecology, Professor, Department of OBG, SHRI B.M. PATIL MEDICAL COLLEGE, for her invaluable guidance, care, and input in improving this dissertation work and investing time and energy in my personal and professional development. Undoubtedly, this has provided me with a solid understanding of the field of Obstetrics and Gynaecology, allowing me to complete my dissertation.

I am eternally thankful to DR. S.R. BIDRI, M.D. D.G.O., Obstetrics & Gynaecology, Professor and Head of the Department of Obstetrics and Gynaecology, for imparting a wealth of information and life lessons that I will keep with me in all parts of my personal and professional life. Thank you, Madam, for the invaluable lessons in patient care and hospital procedures that have helped to complete this project.

I am grateful to all of my wonderful teachers who have patiently conveyed their knowledge and clinical lessons to me. There are no words to convey my thanks to Dr. Rajasri Yaliwal ,Dr.

S.R. Mudanur, Dr. Neelamma Patil, Dr.Shobha Shiragur, Dr. Shreedevi S Kori, Dr. Laxmi Sangoli, Dr. Basavaraj Patil, Dr. Ekta Chabbra, Dr. Preeti Malapure without their invaluable experience, this project would have been difficult to execute.

I would like to express my heartfelt gratitude to Dr. Aravind Patil, Principal, and Dr. R.M. Honnutgi, Medical Superintendent of B.L.D.E. (DEEMED TO BE UNIVERSITY) Shri B. M. Patil Medical College in Vijayapura, Karnataka, India, for their encouragement and assistance. I would like to thank my seniors, CO-PGS and all Junior Postgraduate colleagues from the Department of Obstetrics and Gynaecology at B.L.D.E. (DEEMED TO BE UNIVERSITY) Shri B.M. Patil Medical College in Vijayapura, Karnataka, India, for their support, guidance, and assistance with data collecting.

I thank my statistician, Mr.Murugesh & Mr.Ajay, for their aid and invaluable help concerning the statistical work for this study.

With the blessings of My grandparents Late Shivasangappagouda Patil Late Laxmibai Patil ,Late Dr .S.S.Narasanagi, Laxmibai Narasanagi

My parents Shri Sanganagouda S Patil ,Smt Bharati S Patil , Late Dr Veerbaswant Reddy Mudnal, Dr Sangamma V Reddy Mudnal ,Dr Basawaraj Narasanagi , Smt Shakuntala Narasanagi ,Late Channabasavaraj Narasanagi

Dr Sharanamma C Narasanagi .

My Husband Dr Amogh Narasanagi ,My siblings Chetana S Patil ,Sharan S Patil ,Dr Kshiteej Narasanagi,Dr Uma Narasanagi,Roopa lingadalli My dear friends Bhargavi,Anusha , Renukanandan, Nagraj

Dr APARNA S PATIL

List of tables

List of figures

List of graph

List of Abbreviations

Full forms	Abbreviations
Antenatal care	ANC
Diabetes mellitus	DM
Gestational Diabetes mellitus	GDM
Iron and Folic Acid	IFA
Janani Suraksha Yojana	JSY
MATERNAL NEAR-MISS	MNM
maternal mortality ratio	MMR
Maternal mortality	MM
Maternal Near Miss-Review	MNMR
Millennium Development Goals	MDG
Neonatal intensive care unit	NICU
postnatal care	PNC
Postpartum hemorrhage	PPH
Severe acute maternal morbidity	SAMM
Sustainable Development Goals	SDG
Tuberculosis	TB
United Nations	UN
World Health Organization	WHO

List of Content

Abstract

Background:

A maternal near-miss, according to the World Health Organization (WHO), is when a woman presents with potentially fatal complications during pregnancy, childbirth, or within 42 days of ending her pregnancy but survives by chance or because she receives medical attention at a facility. Thus, maternal near-miss criteria for organ failure were proposed by WHO. i) Clinical Laboratory ii) Management are included in this criterion. Concept of "Three delays model" given by Thaddeus and Maine[6] helps in better understanding of these various factors and their relation with the time. Even though maternal mortality is still a major public health issue, it is difficult to evaluate the impact of care because maternal fatalities are uncommon, particularly withinacommunity. The concept of severe acute maternal morbidity (SAMM) and near-miss events was created in maternal health care to address this issue and supplement data gathered from reviews of mother fatalities. So, this study is being done to evaluate the avoidable factors and to study causes responsible for maternal near miss morbidity and mortality.

Objectives :

1.To analyze the clinical and socio demographic aspects in severe acute maternal morbidity(SAMM) cases at tertiary care hospital

Methodology

It's a Prospective observational study Done on a patients attending the labor ward of the Department of Obstetrics and Gynecology, BLDE(DU) Shri. B.M.Patil Medical College, Hospital and Research Centre, Vijayapura will be included after obtaining informed written

consent. All pregnant women and women 42 days following termination of pregnancy with a sample size of 100 for a duration of 1 years.

Results:

All the patients attending the labour ward of the Department of Obstetrics and Gynecology, for a period of 1 year. Those who met the inclusion criteria was considered for the study and we found 100 SAMM cases. 48%(n-48) were in the age group of 21-25 years followed by 25-30 years having 37%.The mean and SD of age is 25.2 years and 3.71 years , majority were housewife with 92% highest were residing in rural with 65% and with urban 35%,31% (n-31) were primigravida and 69% were multigravida with varying gravida and parity status.75% with booked cases .Out of this 25% were delivered in labour room via vaginal delivery and 73% had elective LSCS,2% had abortion. 71% got delivered in BLDE, 63.6% got reffered from the district hospital

Conclusion

This Study underlines that the cases of maternal near-miss represent a major public health issue and are usually associated with the preventable reasons like hemorrhage, hypertensive disorders, and lapses of time for adequate treatment. Many cases of MNM needed intensive interventions like shedding of blood, ICU support and emergency surgical procedures

"A PROSPECTIVE OBSERVATIONAL STUDY OF MATERNAL NEAR-MISS(MNM) CASES AT TERTIARY CARE CENTRE"

Introduction:

A maternal near-miss, according to the World Health Organization (WHO), is when a woman presents with very fatal during pregnancy, childbirth, or within 42 days of ending her pregnancy but survives by chance or because she receives medical attention at a facility. Improving maternal health is still a key component of the Sustainable Development Goals (SDG), which aimed to lower the global maternal mortality ratio (MMR) to less than 70 per 100,000 live births by 2030.Maternal mortality is still too high, nevertheless, especially in low-income nations where 99% of maternal deaths take place.[1]

Since maternal mortality does not accurately reflect a woman's health, As a result, MNM becomes a crucial metric for assessing maternal health and the standard of obstetric treatment.[2]

Obstetrical and delivery complications are leading sources of maternal morbidity and mortality in developing nations such as India. India has a wide range of maternal near-miss (MNM) rates, from 3.9 to 379.5 per 1000 live births and 7.6 to 60.4 per 1000 deliveries. MNM: Maternal mortality rates ranged from 1.7 to 21.8.18.67 MNM cases per 1000 individuals are reported worldwide.[3] By 2030, the maternal mortality ratio (MMR) is to be lowered to less than 70 maternal deaths for every 100,000 live births.[4]Women face serious issues during pregnancy, childbirth, and the postpartum period, with varying degrees of

consequences.

Still, deaths among mothers are only a small part of the big problem at hand. Many more women who came close to dying because of life-threatening issues exist on the base of this iceberg.

Maternal mortality (MM) and maternal near-miss (MNM) causes can be assessed as part of the baseline assessment in individual healthcare facilities[5]. Thus, maternal near-miss criteria for organ failure were proposed by WHO. i) Clinical Laboratory ii) Management are included in this criterion. Concept of "Three delays model" given by Thaddeus and Maine[6] helps in better understanding of these various factors and their relation with the time. Factors that caused the delay in case management were looked at at three different levels and efforts to improve healthcare were analyzed.

Phase 1 delay: Delay in deciding when to visit a doctor.

Delay in phase 2 occurs when discovering and accessing the needed medical care is delayed.

Phase 3: Problems in getting the right treatment inside the hospital.

You may call the first two kinds of delay "delay in demand." "Delay in supply" comes as the third issue. One reason for the first and second delays is society and culture, but the main reason for the third delay is a lack of resources on the supply side. The difficulties with using medical care services are what lead to people waiting the first phase. Other difficulties still have to be handled before someone can reach a medical facility after deciding they need care. The major issues to consider are price, distance, transportation and how people are linked together by referrals.

The vast majority of severe cases among underdeveloped nation's women who experience obstetric morbidity are already in serious condition when they first arrive. Even though women are usually past most broad setbacks at this point, actual treatment may need to wait for a while. Slowing down might be brought on by factors such as problems within institutions, costs or procedural anxiety. These delays are all connected to one another.[8]

Tracking these near-miss incidents will reveal information about the standard of obstetric care provided in a facility, including the availability of therapeutic interventions and the strengths and weaknesses of the referral system, which may indicate changes to lessen serious maternal problems.[9]

Even though maternal mortality is still a major public health issue, it is difficult to evaluate the impact of care because maternal fatalities are uncommon, particularly within a community. The concept of severe acute maternal morbidity (SAMM) and near-miss events was created in maternal health care to address this issue and supplement data gathered from reviews of mother fatalities.[10]

Examining such cases will give access to information on obstetric care, the security of referrals and available interventions which may help improve the support that prevents severe complications for mothers. A suitable system or set of criteria to identify maternal near miss should be (i) easy for all hospitals to use, (ii) capture those near miss cases with the highest risk of death from these events and (iii) be similar enough to existing maternal mortality reporting to allow comparison worldwide. Near-miss events are often identified in high-income nations using the ICD codes in electronic health records, whereas lower income nations depend on clinical and administrative methods.[11]

Anytime during pregnancy and child birth, there can be complications, so all basic and emergency obstetric care centers must have the equipment, staff and facilities needed for fast management. If these conditions go untreated, they could cause death. With help from the guidelines, health managers and policy makers at all levels can assess the health system, spot shortcomings and begin improving it by combining actions. A big issue with MDR is that health professionals and similar stakeholders think that the serious unfortunate events affecting the pregnant mother just to blame them and they believe the process is used to target them to the public. In addition, the mother who took part in the system was unable to share what it was like to use it. The accounts from pregnant women who endured complications, yet thanks to early intervention, pulled through, provide a lot to learn for both doctors and nurses. Performing Maternal Near Miss-Review (MNM-R) comes with many benefits.

Learning from women who suffer from severe morbidities during pregnancy, labor, and the postpartum period will help us better understand the variety of situations and preventable factors that contribute to maternal mortality. Comprehensive studies on MNMs are very beneficial for clinical audit and quality improvement. In order to ascertain the underlying reasons of these Near-Miss cases and the best treatments to lower maternal morbidity and death, we are therefore interested in doing research on these cases.

Therefore, the purpose of this study is to assess preventable factors and investigate the factors that contribute to maternal near-miss morbidity and mortality.

Objectives :

To analyze the clinical and socio demographic aspects in severe acute maternal morbidity(SAMM) cases at tertiary care hospital

Review of literature

Maternal mortality is the term used to describe a woman's death during pregnancy or puerperium from any cause that is connected to or made worse by the pregnancy or its treatment. One of the health metrics that most clearly distinguishes industrialized from poor nations and is still a global concern is maternal mortality. [12.]The obstetric risk associated with each pregnancy is represented by the maternal mortality rate (MMR), which is one metric now used to evaluate the caliber of the healthcare system.[13] The definition of severe acute maternal morbidity, sometimes referred to as maternal near miss, is "a woman who survived severe life-threatening obstetric condition that occurred during pregnancy, labor, or within 42 days after delivery." If immediate medical attention had been given to these women, they might have died.

The following categories provide a summary of methods for determining what constitutes a near miss:

a) By describing clinical circumstances associated with a certain condition (e.g. hypertensive disorder).
b) By demonstrating a particular course of action necessary to address the incident (e.g. admittance to critical care unit).
c) By characterizing the failure of organ systems (e.g. respiratory distress syndrome).

Table 1: WHO Criteria for maternal near miss

Clinical criteria	Laboratory criteria	Management criteria
Acute cyanosis	SO_2 <90% for >60 minutes	Continuous use of vasoactive drugs
Oliguria unresponsive to fluids or diuretics	LOC with glucosuria and ketoacidosis	Puerperal hysterectomy due to infection or hemorrhage
Jaundice with Pre-eclampsia	Bilirubin > 6.0mg/dl	Transfusion of > 5 red pack cells
Respiratory Rate > 40 - <6 /min	PaO2/FiO2 < 200 mmHg	Dialysis for acute kidney failure
LOC and Stroke	pH < 7.1	Cardio-pulmonary resuscitation
Gasping Shock	Acute thrombocytopenia Platelets < 50 000	Intubation for > 60 minutes unrelated to anesthesia
Total paralysis	Lactate > 5	
Coagulation disorders	Creatinine >3.5mg/dl	

***LOC: loss of consciousness.* PaO2: partial pressure arterial oxygen. *FiO2: fraction of inspired oxygen. *pH: potential of Hydrogen**

Since there are fewer MDs than near-miss incidents, this idea has garnered increased attention recently due to its potential as an additional maternal outcome metric to maternal mortality.

The following are some benefits of auditing near-miss incidents: [13]

1. Compared to assessing maternal deaths, more lessons can be learned from the greater number of near misses.

2. It is easier to draw lessons from near misses since they typically have the same pathophysiological mechanisms as maternal mortality.

3. It's crucial that patients and healthcare professionals can be interviewed separately about the treatment they get and the care they provide.

4. Variations in the causes of maternal mortality and morbidity may also highlight locations where a suitable intervention has saved lives.

Severe maternal outcome and Sustainable Development Goals[14,15]

By 2015, significant progress had been made globally in reducing lifetime risk for maternal and infant mortality and morbidity and increasing life expectancy.

.Partnership, prosperity, people, planet, and peace are the five categories into which the 17 Sustainable Development Goals (SDGs) are separated. Of the 17 objectives, only aim number three particularly addresses health issues, including those affecting mothers and newborns. The third Sustainable Development Goal is to "ensure healthy lives and promote well-being for all at all ages." The objective is to reduce the global MMR from the current rate of 210 per 100,000 live births to less than 70 per 100,000 live births by 2030, per a recent UNFPA report.[15]

The sequelae of severe maternal outcome

It is reasonable to assume that for every maternal death, a significant number of women will live but experience permanent disability. Chronic anemias, vaginal prolapse, urine incontinence, perineal rips, and fistulas are among the long-term negative consequences that women who experience near misses may experience. Among the disabilities associated with maternal morbidity, some of the women also experience depression.[7.]

Not only would the woman's family and children suffer if she does not survive these issues, but the community and society as a whole will also suffer. Long-term effects include increased mortality in her children, loss of supervision leading to a loss of education, and financial instability. [16,18]

Most teenage children become the only provider in an effort to close the financial gap, which leads to low school enrollment and high dropout rates.[16,17,18].

I did a literature search and found that

Nayana K C et al (2024)[17] conducted a cross sectional study in a tertiary care center and **collected** Patient demographics, most common causes and previous medical conditions.The important cause were hemorrhage and hypertension. Nearly two-thirds of near misses or 55.74%, are linked to hemorrhage and these complications lead to 38.46% of all maternal deaths. Near misses and maternal deaths were each most commonly due to hypertension: 37.9% and 30.7% of them, respectively. Risks for mothers were highest in the last part of pregnancy and after the baby was born (38.5%). Because of this, it's important to improve quality of care for new mothers during and after childbirth. The most common reason for maternal near-miss deaths was Hemorrhage (55.74%), with Hypertensive disorders in pregnancy close behind (37.93%). Of all MNMs, 54.02% had anemia as the main cause which contributed to other complications occurring.

Itishree Jeena et al (2024) [19] conducted a cross sectional study by looking at the health records of maternal near miss cases who were admitted for the obst & gynec department of a tertiary hospital, between May 2024 and October 2024. Age, parity, gestational age, risk factors for the mother or fetus, method of delivery and lifesaving interventions were examined for the patients. Total, 2784 pregnancies were admitted in the obstetric department for delivery, with 284 maternal near-miss cases and 48 deaths. Hypertension and PPH with severe anemia was the major cause of MNM. Women with multiparity, lack of awareness are at increased risk of near miss cases.

Ankitha C (2023)[20] conducted a observational study at the Obstetrics and Gynecology Department, Maulana Azad Medical College and the Lok Nayak Hospital in New Delhi. 7064 people were born in the study period. Near miss patients most frequently had hemorrhage or

hypertensive problems during pregnancy. All of the nearby miss cases demanded that patients remain in the HDU and ICU. Altogether, all near miss cases in the study needed six units of whole blood, 61 units of packed red blood cells, 62 units of platelets and 42 units of fresh frozen plasma. The percentage of deaths in our study that occurred in newborns and at birth was 38.8%.

Hana Nigu s sie Te sho meet . al(2022)[21] study was conducted between February and April 2020, 264 women participated in an unmatched case-control design at a facility. Data were gathered using pre-tested interviews and a review of medical records. Conclusions of the study- Older women, those who have not gone to school, had less antenatal care, a health problem during pregnancy, were admitted by an emergency team and had a C-section were more likely to suffer maternal near-miss. Advancing socio-demographic status, using ANC services, early management of medical conditions, a lower Cesarean rate and enhancing referral procedures are important to minimize the chance of a maternal near-miss.

Chandrakant Prasad, et . al(2022)[22] Conducted a study to discover the key reasons behind high rates of near-miss morbidity and mortality among mothers. From the WHO's list of MNM inclusion requirements, 100 pregnant women who met the criteria and all cases of maternal mortality during the study were included. In that year, there were 2085 deliveries, 1578 live babies and 507 were found stillborn; the standard age of close incidents was 26.304.70 years (41.98%) and the average maternal mortality rate was 25.89. WLTC-100. MNM included 81cases and maternal death totaled 19. Of those women admitted, 19% died, the maternal near-miss rate was 51.33 for every 1,000 births and the near-miss mortality ratio was 4.3 to 1. The MMR is 101.57/1,000 LB and the SMOR is 63.53/1,000 LB. Researchers found that most near-miss incidents were caused by haemorrhage and hypertension.

Sima maity,et.al(2022) [23]A study was performed at the Purba Medinipur district hospital in West Bengal found that 21% of women who had possibly life-threatening conduct conditions (PLTC) also had life-threatening conduct conditions (LTC), concluded the study. Hemorrhage and pregnancy-related hypertension/eclampsia were the chief causes of maternal death and near-misses (9.46/1000 LB and 8.3:1, respectively). The study recommends that health care programmers' increase their efforts to get women to attend a doctor as soon as they can.

Divya Mecheril Balachandran (2022)[9] Conducted a study Between May 2018 and April 2021 in Puducherry, India, 37 590 babies were born, of whom 1833 (4.9%) had conditions that could be fatal for the mother and 380 women experienced serious complications. Running the same data through each set of rules, they found that the incidence of maternal near miss could be as high as 15.6 per 1000 live births and as low as 7.6. Therefore, the criteria set by both the WHO and Global Network can help recognize maternal near miss in places with few resources.

Neha Agarwal et al (2021)[2]

A study was done between July 2015 and December 2016. They studied cases in ob-ward, labor room, HDU and ANC – OPD, finding that bleeds during pregnancy or childbirth were the commonest major threats encountered in both groups. They observed with multiple logistic regression that organ dysfunction predicted near miss and the need for mechanical ventilation and that coagulation dysfunction predicted maternal death. A mother in the near miss or death group was more likely to have a still-born child ($p < 0.001$).

Ragini Kulkarni et al (2021)[3] Conducted a systematic review among the 25 articles included in the review, nearly all were observational studies done at government health facilities. From 3.9 cases in 1,000 births to 379.5 cases in 1,000 births and 7.6 to 60.4 cases in 1,000 deliveries are what researchers found. All but one of the studies described show that Hypertensive disorders and anemia were often the primary causes of MNM in women. The use of MNM criteria was not consistent among Indian studies carried out over the last ten years. Standard criteria listed in the MNM-Review guidelines by the Government of India should guide upcoming studies in India for organizing data and estimates.

Sedigheh Abdollahpour et al (2019)[4]

Conducted a systematic review by searched in PubMed, Scopus and Web of Science electronic databases for English language articles published up to March 2019. In addition, they considered 49 articles for this study. The overall worldwide prevalence of MNM, was 18.67 and the confidence interval was 16.28 to 21.06 per thousand. To look at heterogeneity, the results were studied for each continent and each country. After performing meta-regression of MNM on MD, they achieved an adjusted R-squared of 78.88%. There were many cases of the

disease in the study participants. Selected countries should design regular programs to improve how facilities operate and to prevent MNM, focusing on women's health.

Bharathi P et al (2018)[24]Conducted A crosssectional study done in the Department of Obg and Gynec, VIMSAR, Burla from July 2017 through December 2017,all the records from adult patients evaluated.WHO criteria were used to categorize each case. Information about maternal near miss patients was collected from their case records. According to their research, out of all 1406 deliveries, they found 89 were near miss cases. The study included 1349 births and resulted in 8 maternal mortalities. The mortality rate for mothers was 593/ 100,000 live births. They found preeclampsia (40.4%), then by severe anaemia (29.2%) and finally by eclampsia (19.1%).

Princey Rajakumari Et al (2017)[25] Conducted a observational study and found that Hypertensive disorder occurs most often in near miss cases. Deaths from heart disease are more common than those from pregnancy problems. Both perinatal and neonatal mortality are found to be much greater in the near miss category than among the general public. Maternal near miss can signal issues with a mother's health. Improving maternal health care requires keeping watch for and investigating maternal near miss events. It will additionally give important details to policy makers, allowing them to work on the areas in need so mothers enjoy good health.

Bakshi RK et al (2015)[26] Conducted a Cross-sectional study for a period of 12 months regarding the WHO requirements for the 'near miss' category. The study included 937 pregnant women who used health services and of these, 61 had Severe Maternal Outcomes; 51 were

maternal ‘near-misses’ and 10 were maternal deaths. Among every 1000 live births, the Severe Maternal Outcome Ratio was 88.66. Five point one percent of mothers experienced a ‘near miss,’ and the MI was 16.39%. In India and other countries, assessing maternal health quality using the near miss approach developed by the WHO is considered effective.

Pragathi Chabbra et al (2014)[18]

According to a Review all by Pragathi C et al, the main issues causing both near miss and maternal mortality include hemorrhage, hypertensive disorders, sepsis and obstructed labor. By looking at near miss cases, we gain information about the three delays patients face so the appropriate decisions can be made. Some maternal near miss indicators are suggested to measure the level of care received. Near miss data will be useful for understanding and deciding if new approaches for better maternal health are appropriate.

Pande et al. conducted an examination of the effects of maternal death in rural Kenya between September 2011 and March 2012. It was discovered that when they were well, over three-quarters of the women who passed away had more family obligations. Following their passing, the immediate and extended relatives were largely responsible for these duties. Grandmothers had to look after the majority of the children.[16].

EPIDEMIOLOGY OF MATERNAL MORTALITY

Deaths brought on by pregnancy or childbirth problems are referred to as maternal mortality. According to UN inter-agency projections, the worldwide maternal mortality ratio (MMR) decreased by 34% between 2000 and 2020, from 339 deaths to 223 deaths per 100,000 live births.[27,28]

Maternal deaths are among the least likely to be reported and are primarily seen in isolated rural locations. According to UN estimates, India had over 24 million births in 2017 and about 35,000 maternal deaths during or soon after childbirth, resulting in an MMR of 145 per 100,000 live births. [28]

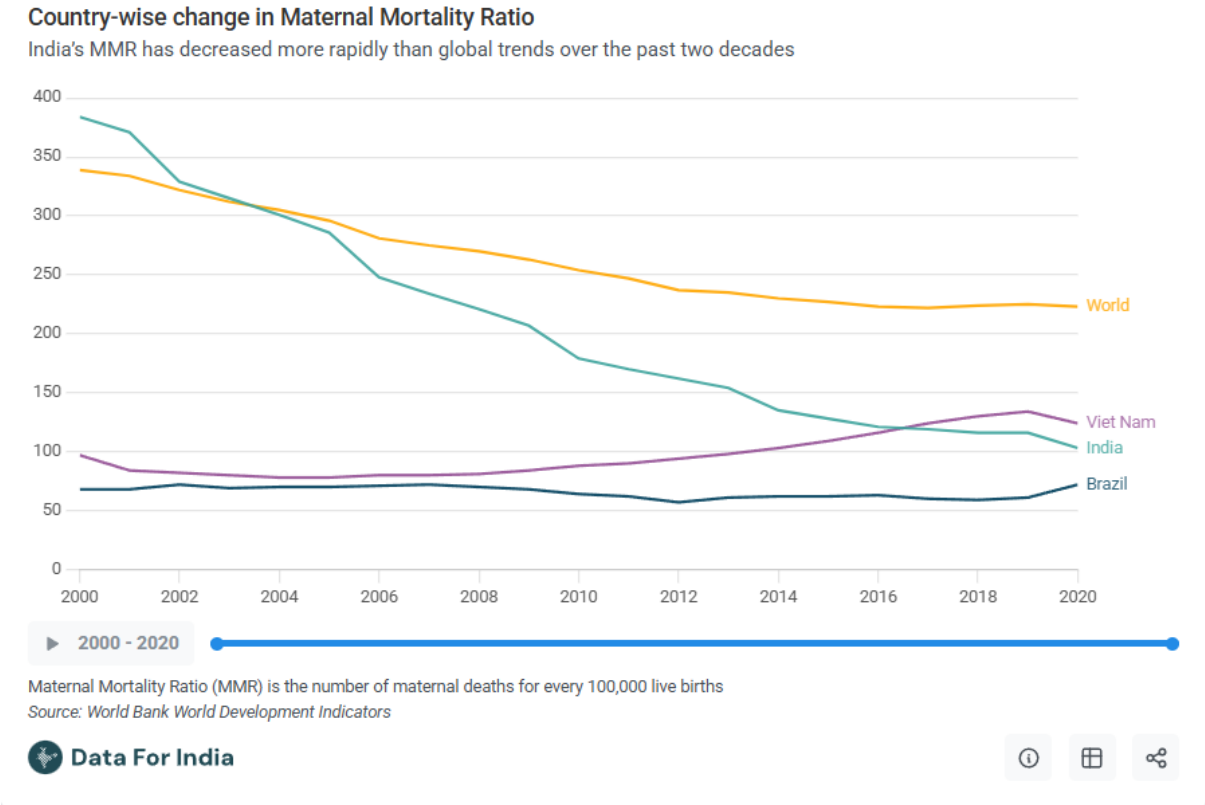
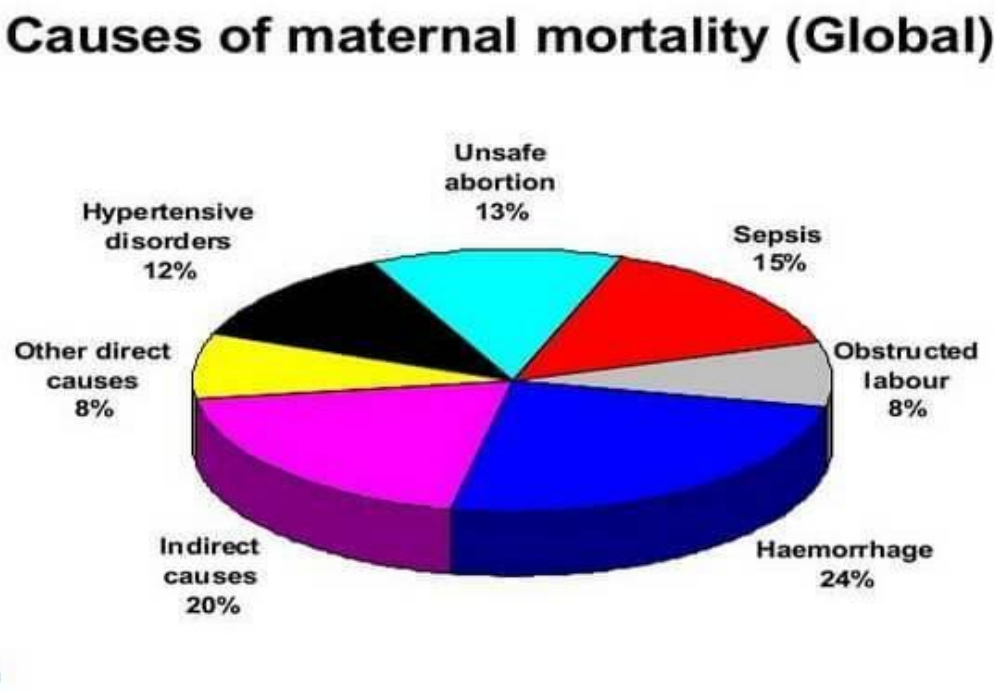


Figure 1: Country wise maternal mortality ratio

Causes for maternal mortality Globally



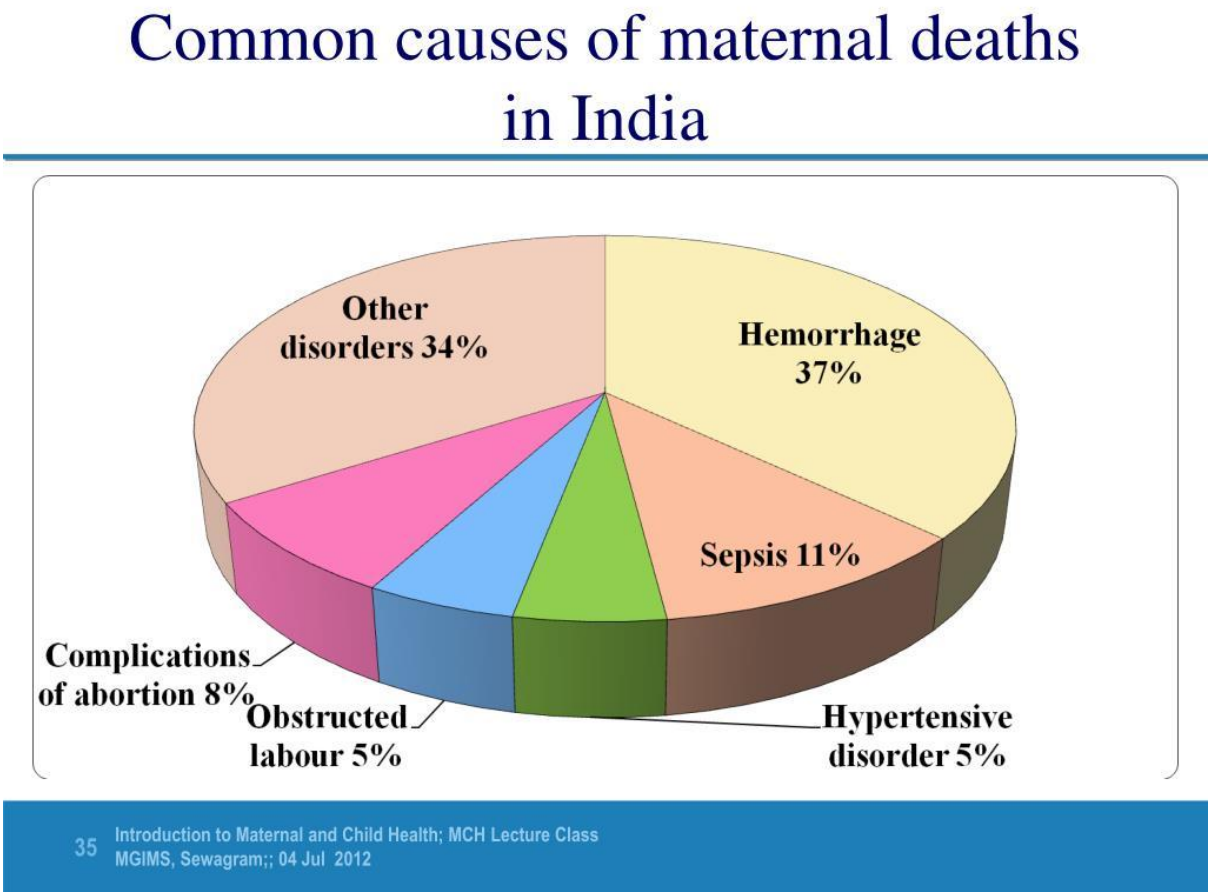
1.Direct causes [29]

Obstetric complications of pregnancy, delivery, and postpartum are examples of direct causes of maternal mortality. Hemorrhage-related mortality, caesarean section problems, etc. maternal deaths are caused by sepsis, hypertensive disorders of pregnancy, and hemorrhage.

2. Causes that are indirect

It covers deaths from pre-existing conditions or illnesses that arose during pregnancy

and were exacerbated by pregnancy's physiological consequences rather than directly related to obstetric reasons.



Factors determining Maternal near miss

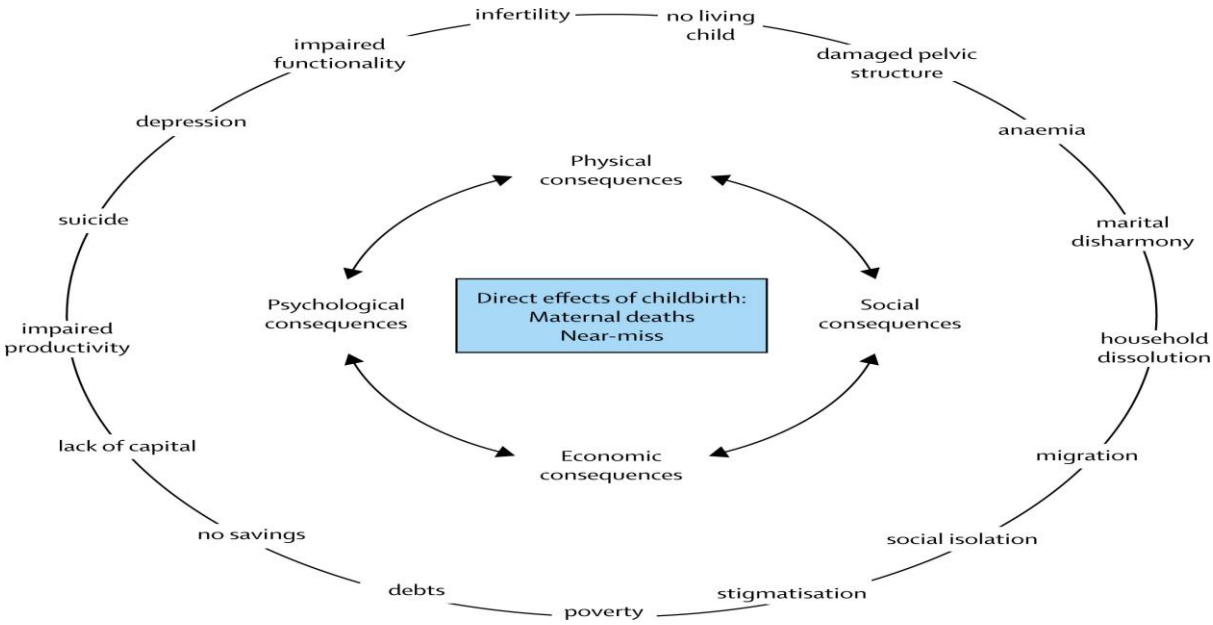


Figure 2: Factors determining maternal near miss (MNM)

1.The Obstetric Population

past medical history may be raise her risk of pregnancy difficulties above the typical level of expected risk during pregnancy, even before she becomes pregnant. Complications can occur for the woman throughout pregnancy, labor, or the postpartum phase. Classifying the obstetric population into low and high risk groups is crucial as a result.[9]. This classification aids in delivering targeted prenatal care, preventing unfavorable results.

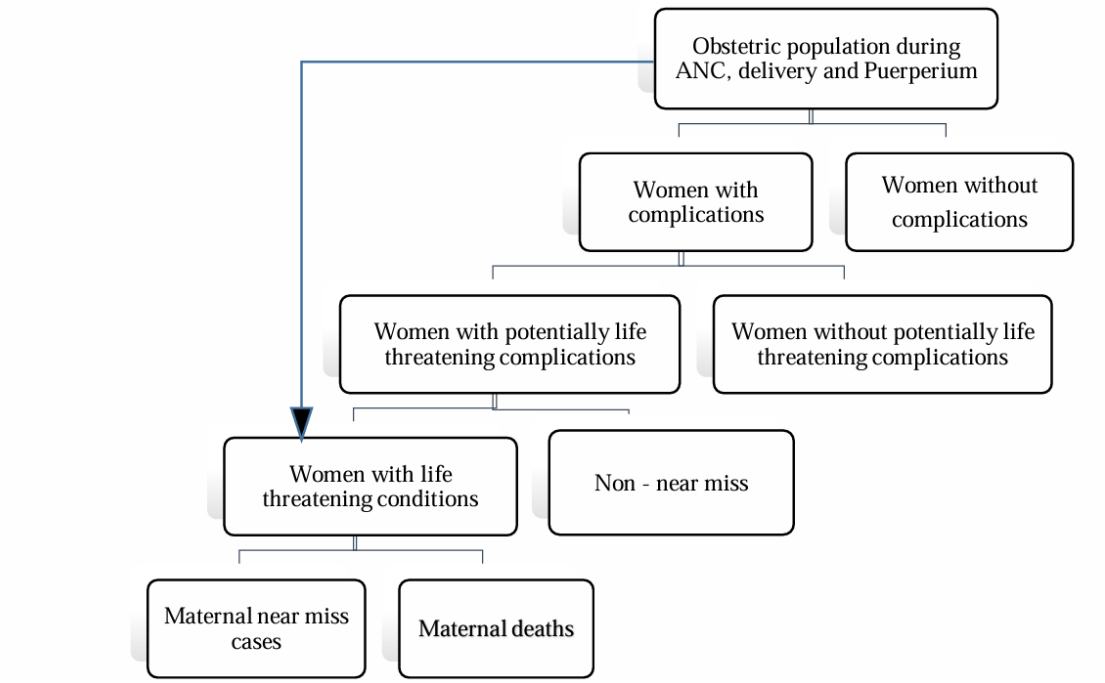


Figure 3: The obstetric population

2.The Role of Antenatal Care in preventing poor maternal outcomes

The care a woman receives during pregnancy is known as antenatal care (ANC). The main goal of ANC is to safeguard and advance the health of expectant mothers and their unborn children in order to produce a healthy mother and baby at the end of the pregnancy. The foundation of a healthy pregnancy, labor, and improved outcomes for both the mother and the fetus is antenatal care, or ANC. Offering options for the prevention, diagnosis, and treatment of illnesses that may put a woman at risk for potentially fatal problems during pregnancy and/or delivery is another goal of ANC.[30,31]

Over the past 20 years, India has implemented policies and initiatives encouraging

women to attend four or more antenatal care (ANC) visits and give birth in an institution[19].In India, however, only 59% of women between the ages of 15 and 49 received four or more ANC visits, and 61% of mothers received postnatal care (PNC) within two days of giving birth, indicating that access to healthcare during the reproductive era is not equally distributed. PNC attendance seems to have gotten less emphasis than ANC and delivery care, despite the fact that encouraging PNC, ANC, and institutional deliveries are all equally vital. While routine ANC checks can aid in the early identification of obstetric problems that could negatively impact the health of the baby[32]

According to a **Nihal research**, 32% of women in 2019–2021 had acceptable, high-quality prenatal care, a mere 9% increase over the 2015–16 period. Counseling and the distribution of Iron and Folic Acid (IFA) tablets were two major obstacles to receiving proper, high-quality prenatal care. The southern states were found to have the highest utilization rates of high-quality prenatal care. Women who had greater education and money were more likely to use quality ANC, and those who had health insurance and were exposed to the media were more likely to use it.[32]

3.Maternal age as a risk factor for poor maternal outcome[33,34]

One risk factor for adverse maternal outcomes is the mother's age. Parturition at extreme ages is strongly associated with adverse outcomes for both the mother and the newborn. For obstetricians and midwives worldwide, early childbirth—defined as giving birth before the age of—is a problem. Maternal issues associated with adolescent pregnancy include anemia, puerperal infections, eclampsia, and pre-eclampsia. The reason why teenage mums have more obstetric issues is still up for debate. Low socioeconomic status, single status, and low educational attainment are among the demographic factors that substantially contribute to these unfavorable outcomes. Because they often have pre-

existing medical conditions, pregnant women over 35 are more likely to have pregnancy complications.

4.Obstetric related risk factors

a. Grand-multiparity[35]

Grand-multiparity risk factors for obstetrics: Parity and SMO are known to be related; higher parity is associated with higher rates of morbidity and mortality. Developed countries have a lower MMR than poor socioeconomic countries because they have better access to ANC, contraception, and facilities that allow for safer deliveries. Other studies found that high pregnancy numbers and short interpregnancy intervals were associated with adverse outcomes, including anaemia, hypertension, malpresentation, and postpartum haemorrhage from uterine atony and rupture.

b. Mode of delivery - caesarean section[36]

The delivery method is a lower caesarean section. Maternal mortality and caesarean delivery have a complicated relationship. In the past, caesarian sections were performed to lower maternal and perinatal deaths; more recently, they have also been done to avoid maternal and perinatal morbidity. Women who have caesarean sections may die from eclampsia or other complications related to the procedure or the indication itself. Repeat caesarian procedures are associated with a higher risk of bleeding due to placenta praevia, morbidly adherent placenta, and adhesions. Hysterectomy rates are also higher among patients who are delivered via caesarian section.

c. Impact of co-existing medical conditions on maternal outcomes.[37]

It is especially important that women who have medical issues go for prenatal care.

Besides making it harder to become pregnant, most medical conditions tend to affect the mother's health during pregnancy and even after labor, but just a few are able to stop her from getting pregnant. Taking care of these women before their pregnancy is given top priority. Older mothers and those who have had more children are more often found to have diabetes and high blood pressure before they get pregnant

Research by Gabriella and colleagues revealed that the rates of both Diabetes mellitus and Gestational Diabetes mellitus were 1.3% and 5.4%, respectively, among the 57.3 million pregnant women in the cohort studied. Those with diabetes mellitus had triple the risk for in-hospital death or cardiac arrest, compared to women with no diabetes mellitus (in-hospital death: OR = 3.05; 95% CI = 2.45–3.79, cardiac arrest: OR = 3.21; 95% CI = 2.57–4.01). Women with GDM or DM during pregnancy were more likely than others to start labor earlier than usual. According to the study, 5.4% of pregnant women had GDM, while 1.3% had DM. Among those pregnant women with GDM and DM, there was a bigger risk of delivering their babies early rather than women free of GDM and DM.[38,39]

A study by **Nayana K C showed that** The main causes of maternal mortality and MNM were hemorrhage and high blood pressure. 38.46% of maternal fatalities and 55.74% of near-misses are caused by hemorrhage.54.02% anemia was the most frequent root cause of MNM that subsequently resulted in additional issues [17]

A study by **Habte A et al showed that** Heart disorders were the primary cause of mortality with respiratory-related conditions coming in second. The majority of the female patients with respiratory issues had both tuberculosis (TB) and HIV. Things that can be avoided to minimize severe maternal outcomes are examining preventable variables that may have led to the bad

outcome is crucial when examining women with SMO. Whether a woman will have access to the care she needs to preserve her life depends on these circumstances. These include issues pertaining to patients, healthcare professionals, and the healthcare system[40]

A PROSPECTIVE Study by **Neha Agarwal** showed that The most frequent potentially fatal consequence in the MNM and MD groups was obstetric hemorrhage. We found through logistic regression analysis that organ failure was the key factor linked to near misses and patients managing without breathing while on a ventilator. The independent prediction of maternal death is possible through coagulation abnormalities. The risk of stillbirth was much greater for women in the death or near-miss groups (p ¼ < 0.001). [42]

Despite not being statistically related, our results showed that second continuous near misses meaning death were nearly three times as likely to result in newborn death while in the NICU.

Reasons for preventing serious results in mothers that doctors can avoid

Careful examination of what might have caused the outcome is necessary when dealing with women with MNM. Whether a woman can receive the care for surviving depends on these kinds of situations. These problems involve challenges with health providers, the health system and patients.. In 19946, Thaddeus and Maine developed a guide that helps explain why women often put off seeing a doctor.

The founders split this model into the following categories:

1.Not seeing a doctor in time, either because people:

Not knowing enough or realizing when a problem needs attention often means people wait too

long to get appropriate care. Many communities still look to traditional healers because of their traditional beliefs.

2. proper health facilities

The link has been made between how far hospitals are from community health facilities, how accessible the modes of transport are and the condition of the roads.

3. Not getting the right help quickly at the place of referral

Many problems can arise for patients the moment they enter the hospital. Hospitals in most developing nations are crowded and staff short, making those left in the field uninspired by their demanding tasks. Lack of needed medicines and blood in emergencies is a further significant problem

Causes of maternal near miss

Direct causes

- Severe hemorrhage: Antepartum hemorrhage (e.g., placental abruption, placenta previa) and Postpartum hemorrhage (PPH)
- Hypertensive disorders: Severe preeclampsia and eclampsia
- Obstructed or prolonged labor: Uterine rupture
- Infections and sepsis: like Chorioamnionitis and Puerperal sepsis
- Other causes like Amniotic fluid embolism, Complications from unsafe abortion

2.Indirect causes

The following illnesses are made worse by pregnancy:

• Hematological disorders (such as severe anemia and thromboembolism)

• Asthma flare-ups and acute respiratory distress syndrome are examples of respiratory

illnesses.

• Heart conditions (peripartum cardiomyopathy, for example)

• Hormonal conditions (such as uncontrolled diabetes and thyroid crises)

• Viruses: HIV/AIDS, Malaria, tuberculosis virus

• Hepatic or renal impairment

• Neurological disorders, such as epilepsy and cerebrovascular accident

3. Factors Associated with the Health System

These elements hasten the emergence of problems and are brought on by

- ✓ lack of qualified personnel
- ✓ Socioeconomic barriers (such as the inability to receive timely care due to financial
- ✓ Inadequate medical facilities (including emergency obstetric care)
- ✓ Limited access to essential medications (such oxytocin and magnesium sulfate);
- ✓ delays or inadequate care:, geographic, or cultural limitations)
  delayed problem identification;
- ✓ delayed referral to more advanced therapy

According to a study by Fatima Aparecida et al. [42], hemorrhage was the leading cause of maternal near-misses and deaths at this facility, indicating that delays may occur in implementing proper obstetric treatment. Hypertension was the main reason of ICU admission and the main PLTC.

Table 2: Maternal near miss indicators [43]

Maternal near-miss (MNM) refers to a woman who nearly died but survived a complication that occurred during pregnancy, childbirth or within 42 days of termination of pregnancy.

Maternal death (MD) is the death of a woman while pregnant or within 42 days of termination of pregnancy or its management, but not from accidental or incidental causes.

Live birth (LB) refers to the birth of an offspring which breathes or shows evidence of life.

Severe maternal outcome refers to a life-threatening condition (i.e. organ dysfunction), including all maternal deaths and maternal near-miss cases.

Women with life-threatening conditions (WLTC) refers to all women who either qualified as maternal near-miss cases or those who died (i.e. women presenting a severe maternal outcome). It is the sum of maternal near-miss and maternal deaths (WLTC = MNM + MD).

Severe maternal outcome ratio (SMOR) refers to the number of women with life-threatening conditions (MNM + MD) per 1000 live births (LB). This indicator gives an estimate of the amount of care and resources that would be needed in an area or facility [SMOR = (MNM + MD)/LB].

MNM ratio (MNMR) refers to the number of maternal near-miss cases per 1000 live births (MNMR = MNM/LB). Similarly to the SMOR, this indicator gives an estimation of the amount of care and resources that would be needed in an area or facility.

Maternal near-miss mortality ratio (MNM : 1 MD) refers to the ratio between maternal near-miss cases and maternal deaths. Higher ratios indicate better care.

Mortality index refers to the number of maternal deaths divided by the number of women with life-threatening conditions expressed as a percentage [MI = MD/(MNM + MD)]. The higher the index the more women with life-threatening conditions die (low quality of care), whereas the lower the index the fewer women with life-threatening conditions die (better quality of care).

Perinatal outcome indicators (e.g. perinatal mortality, neonatal mortality or stillbirth rates) in the context of maternal near-miss could be useful to complement the quality-of-care evaluation.

Criteria for Maternal near miss [44]

- **For diagnosis of Near Miss, the patient should meet Minimum 3 criteria: one each from 1) clinical findings(either symptoms or signs), 2) investigations & 3) interventions done Or Any single criteria which signifies cardio respiratory collapse as indicated with heart (♥)symbol**

1.1 PREGNANCY SPECIFIC OBSTETRIC AND MEDICAL DISORDERS

Adverse Event	Disorders/Conditions or Complications	Clinical findings		Results of Investigations	Interventions
		Symptoms	Signs		
HAEMORRHAGE	• Abortion → Spontaneous / Termination of Pregnancy (Safe/Unsafe) • Ectopic Pregnancy • Gestational Trophoblastic Disease • Antepartum hemorrhage -Placenta previa -Placental abruption • Scar dehiscence • Rupture uterus • Surgical injury during labour, Caesarean Section/ Forceps or Vacuum delivery • Third Stage complications, e.g. Inversion of uterus, retained placenta, Cervical tear, others • Post partum haemorrhage -Atonic -Traumatic • Amniotic Fluid Embolism	Any Bleeding from or into the genital tract leading to • Air Hunger • Syncopal attacks	• Altered conscious state • Tachycardia >120/min Low volume pulse • Bradycardia <40/min • Tachypnea >40/min • Bradypnoea < 6 /min • Blood pressure - Systolic < 90 mmHg - Diastolic < 60 mmHg • Absent peripheral reflexes • Oliguria with output < 30ml/hour	• Acute fall Hb < 5 gm % or 30 % fall in haematocrit (fall in hemoglobin so as to affect oxygen saturation) • ♥ Fall in oxygen saturation below 90 % • ♥ $PaO_2 : FiO_2$<200 • ♥ $PaCO_2$>50mm Hg • ♥ Platelet < 20,000 (Acute Decline in platelet count more significant) • ♥ Clot observation time > 7 min. or any other test done which proves deranged coagulation profile • Serum creatinine >3.5mg/dL • ECG – Ischemic changes, ST inversion, elevation	• ♥ ICU admission requiring resuscitative (CAB) or cardio respiratory support • ♥ Blood & blood products transfusion (more than 90 ml/kg body weight/ >5 units of blood) • ♥ Use of cardiotonics/ vaso pressors (Mephentine/Dobutamine/ Dopamine etc) • ♥ Circulatory collapse requiring Emergency Surgery for controlling blood loss such as urgent Evacuation, Laparotomy with or without Hysterectomy, Internal Iliac Ligation or any Suturing of tears with a background of hemorrhage • Dialysis- peritoneal/ hemodialysis (renal replacement therapy)

PaO2 : Partial pressure of oxygen in the blood, FiO2 : Fraction of inspired oxygen, PaCO2 : Partial pressure of carbon dioxide in the blood.

SESIS	• Septic Abortions → Termination of pregnancy / Spontaneous • Prelabour rupture of membranes Term/Preterm • Puerperal sepsis • Post surgical procedures (E.g. Cesarean section, laparotomy, evacuation, manual removal of placenta , others)	• High grade fever • Abdominal pain • Distention of abdomen • Vaginal foul smelling discharge • Decreased urinary output • Altered consciousness • Difficulty in breathing	• Delirium/altered conscious state • Persistent rise in Temp >39.2ºC, not responding to routine treatment • Hypothermia temp < 37 º C • Pulse rate > 120/min • Thready, low volume pulse • Tachypnoea> 20/min • Rebound tenderness of abdomen, guarding, rigidity • Clinical evidence of septic focus in body, Pus discharge from wound, cervix or vagina	• Leucocytosis (>15,000/cu mm) • Microbial culture positive for organisms • Ultrasound shows intra uterine/ pelvic/ abdominal collection • Imaging modality showing bladder/bowel /uterine injuries e.g.. air under diaphragm	• ♥ ICU admission for resuscitative procedure like (CAB) or cardiorespiratory support • Shifting to intravenous fourth general Antibiotics like(Sulbactum+ Cefoperazone combinations, Imepenum etc) • ♥ Blood component transfusion (upto 90 ml /kg body weight/ >5 units of blood) • ♥ Use of cardiotonics/ vaso pressors (Mephentine/Dobutamine/ Dopamine etc) • ♥ Surgical procedure done (Evacuation, Laparotomy for Drainage of pus,Repair of Bladder, Bowel and /or Hysterectomy) • Dialysis – peritoneal /hemodialysis (renal replacement therapy)
HYPERTENSION	• Hypertensive disorders of pregnancy (Pregnancy induced hypertension, Preeclampsia, Eclampsia, HELLP Syndrome)	• Convulsions • Diminution/Blurring of vision • Severe epigastric pain • Severe headache non responsive to pain killers • Difficulty in breathing • Palpitations	• Altered conscious state • BP ≥160/110mm Hg • Deep Jaundice • Oliguria / anuria / haematuria • ♥ coma • Coagulation failure • ♥ Pulmonary edema • ♥ Evidence of circulatory collapse	• Proteinuria > 1 gm/dl • S. Creatinine >3.5 mg /dL • Elevated S Bilirubin (> 6 mg/dL) • ALT, AST(>100 IU/L) • Thrombocytopenia <20,000 • Haemolysis on peripheral smear • ♥ Clot observation time > 7 min. or any other test done which shows deranged coagulation profile • Hypertensive retinopathy > GRADE II • Abnormal ECG (ST inversion, elevation/ arrhythmias) • ♥ Cerebral hemorrhage on CT scan	• ♥ ICU admission for resuscitative procedure like (CAB) or cardiorespiratory support • ♥ Non responder to Magnesium sulphate • ♥ Mechanical Ventilation • ♥ Blood & blood products transfusion (more than 90 ml/kg body weight/ >5 units of blood) • ♥ Use of cardiotonics/ vaso pressors (Mephentine/Dobutamine/ Dopamine etc) • ♥ Status eclampticus

POSTPARTUM COLLAPSE	• Amniotic Fluid Embolism • Uterine Inversion	• Acute collapse of patient after delivery	• Pusle not recordable • BP not recordable • Cardiorespiratory arrest	• Acute fall Hb < 5 gm % (fall in hemoglobin so as to affect oxygen saturation) • ❤ Fall in oxygen saturation below 90 % • ❤ $PaO_2 : FiO_2$<200 • ❤ $PaCO_2$>50mm Hg • ❤ Platelet < 20,000 (Acute Decline in platelet count more significant) • ❤ Clot observation time > 7 min. or any other test done which proves deranged coagulation profile • ECG – Ischemic changes, ST inversion, • elevationw	• ❤ ICU admission requiring resuscitative (CAB) or cardio respiratory support • ❤ Blood & blood products transfusion (more than 90 ml/kg body weight/ >5 units of blood) • ❤ Use of cardiotonics/ vaso pressors (Mephentine/Dobutamine/ Dopamine etc) • ❤ Circulatory collapse requiring Emergency Surgery for controlling blood loss such as urgent Evacuation, Laparotomy with or without Hysterectomy , Internal Iliac Ligation or any Suturing of tears with a background of hemorrhage • Dialysis- peritonel/ hemodialysis
LIVER DYSFUNCTION / FAILURE	• Acute fatty liver of pregnancy • Acute Fulminant hepatic failure	• Convulsions • Altered behavior • Bleeding from various sites (nose, gums, IV access ports, varices)	• Unconsciousness • Deep jaundice • Hepatic flaps, tremors • Abnormal bleeding sites - haematuria, haemetemesis, haemoptesis, bleeding gums etc.	• Elevated Serum Bilirubin (> 6mg/dL) • Abnormal liver enzymes ALT,AST (> 100 IU/ L) • Abnormal ECG • Coagulation profile deranged • USG showing showing changes of Acute fatty liver ❤ Fibroscan showing changes of acute fatty liver	• ❤ ICU admission for resuscitation and cardiorespiratory support • ❤ Resuscitation • ❤ Mechanical ventilation • ❤ Blood and component transfusion (more than 90 ml/kg body weight/ >5 units of blood)
CARDIAC DYSFUNCTION / FAILURE	• Cardiomyopathy (antepartum, postpartum)	• Breathlessness specially at night • Palpitations • Chest pain • Orthopnoea	• Tachycardia pulse > 120 bpm • Dyspnoea • Organic Murmurs • Cardiomegaly • Signs of CCF/LVF	• Abnormal ECG • Abnormal echocardiography • X ray chest (with shielding of abdomen) showing Gross Cardiomegaly • ❤ Acid Base values PH <7.35 or >7.45 PCO_2 >50 or <30 mmHg PO_2 arterial < 80 mmHg	• ❤ ICU admission for resuscitative procedure like (CAB) or cardiorespiratory support • ❤ Ventilatory support • Digitalisation • Use of cardiotonics
1.2 PREEXISTING DISORDERS AGGRAVATED DURING PREGNANCY					
Anaemia	• Iron /Folic Acid Deficiency • Sickle cell Disease • Thallasemia • Aplastic Anaemia	• Dyspnea • Palpitations • Syncopal Attack • ❤ Altered conscious state • Features of Sickle cell crisis such as bone pains, joint pains, acute abdominal pain etc • Swelling over body	• Severe Pallor • Jaundice • Tachycardia- pulse rate >120/ min • Tachypnea>20/min • Tender, inflamed joints • Sternal tenderness • Spleenomegaly • Anasarca • Ascites • ❤ Signs of congestive cardiac failure • Bleeding Tendencies	• Hemoglobin below 5 gm/dl • Hemoglobin status not able to maintain O_2 saturation of 90% • Platelet < 20,000 • ❤ Clot observation time > 7 min. or any other test done which proves deranged coagulation profile • Elevated S Bilirubin (> 6 mg /dL)	• ❤ ICU admission for resuscitative procedure like (CAB) or cardiorespiratory support • ❤ Blood /component transfusion (Upto 90 ml /kg/ >5 units of blood) • ❤ Use of cardiotonics/ vaso pressors (Mephentine/Dobutamine/ Dopamine etc)
Respiratory Dysfunctions	• Asthma • Tuberculosis • Pneumonia	• Breathlessness /Air hunger • High/Low grade fever • Chronic weight loss	• Tachycardia- pulse rate >120/ min • Tachypnea - >20/min • Orthopnea • Abnormal Chest signs (Ronchi, Crepts, Absent breath sounds) • Signs of Cardiorespiratory failure • Cynosis, flaps	• Various lesions on chest X ray (with shielding of abdomen) specific to disease • ❤ Abnormal Acid Base values PH <7.35 or >7.45 PCO_2 >50 or <30 mmHg PO_2 arterial < 80 mmHg PO_2 venous <40 mmHg	• ❤ ICU admission for resuscitation and Cardiorespiratory Support, and or Endotracheal Intubation

Cardiac Dysfunctions	• Rheumatic Heart Disease • Congenital Heart Disease • Cardiomyopathies • Aortic Aneurysm • Collagen Disorders	• Breathlessness/Air hunger • Orthopnea • Palpitations • Paroxysmal nocturnal dyspnea • Chest pain	• Tachycardia - pulse rate >120/ min • Bradycardia > 40/min • Irregular pulse • Tachypnea > 40/min • Bradypnoea < 6/min • Organic murmurs • Cardiomegaly • Tender hepatomegaly • Signs of CCF/LVF Pitting edema, raised JVP, basal crepts etc.	• Abnormal ECG • Abnormal Echocardiography • ❤ Abnormal Acid Base values PH <7.35 or >7.45 mmHg PCO_2 >50 or <30 mmHg PO_2 arterial < 80 mmHg PO_2 venous <40 mmHg	• ❤ ICU admission for resuscitative procedure like (CAB) or cardiorespiratory support • ❤ Ventilatory support, • ❤ Digitalisation • ❤ Use of cardiotonics
Hepatic Dysfunction	• Cirrhosis of liver • Portal hypertension • Acute liver failure	• Yellowness of urine / eyes/other body parts • Convulsions • Altered behavior • Bleeding from various sites (nose,gums, IV access ports, varices)	• Deep Jaundice • ❤ Hepatic flaps/ tremors • Abnormal bleeding sites - haematuria, haematemesis, haemoptysis, bleeding gums etc. • Abnormal bleeding from nose, gums, I/V sites, varices • HepatomegalyAscites	• Elevated Serum Bilirubin (>6 mg /dL) • Abnormal liver enzymes ALT,AST (> 100 IU / L) • Abnormal ECG • ❤ Clot observation time > 7 min. or any other test done which proves deranged coagulation profile • Imaging modalities showing hepatomegaly ,splenomegaly and any other abnormalities	• ❤ ICU admission for resuscitative procedure like (CAB) or cardiorespiratory support • ❤ Mechanical Ventilation • ❤ Blood and component transfusion
ENDOCRINAL DISORDERS **Diabetic Ketoacidosis**	• Gestational diabetes mellitus • Diabetes mellitus	• Altered conscious state • Breathlessness / Air Hunger • Palpitations • Convulsions • Bladder/Bowel dysfunction	• ❤ Features of circulatory collapse • Neurological deficit like muscular weakness, paresis, plegia • ❤ Altered consciousness • ❤ Coma	• Ketoacidosis pH < 7.35 RBS > 200 g/dL • Abnormal ECG • Electrolyte imbalance (Sr Na < 129 K <3.2 - >5.5	• ❤ ICU admission for resuscitative procedure like (CAB) or cardiorespiratory support • ❤ Mechanical Ventilation • Resuscitative Procedures • Management of Ketocidosis (Insulin or glucagon)
Thyroid Crisis	• Thyrotoxicosis • Thyroid storm • Pheochromocytoma	• Palpitations • Convulsions • Bladder/Bowel dysfunction	• Altered consciousness • Coma • Tachycardia pulse > 120 bpm	• Sr T_3 elevated (>200 IU) • Low TSH (< 0.2 IU) • Ischaemic changes on ECG • Elevated Vinyl mandilic acid	• ❤ ICU admission for resuscitative procedure like (CAB) or cardiorespiratory support • ❤ Mechanical Ventilation • Resuscitative Procedures

Neurological Dysfunction	• Epilepsy • Cortical vein thrombosis	• Syncopal attacks • Convulsions • Unconscious state	• Altered conscious state and coma • Abnormal reflexes (hyper or absent) • Paresis/plegia • ❤ Cardiorespiratoy failure	• Abnormal EEG • Abnormal acid –base status • ❤ CT/MRI head showing abnormalities	• ❤ ICU admission for resuscitative procedure like (CAB) or cardiorespiratory support • Shifting to intravenous Antibiotics fourth generation • ❤ Mechanical ventilation • Heparanisation
Renal Dysfunction / Failure	• Medico renal disease e.g chronic/acute renal failure • Renal artery stenosis • Transplant complications • Collagen Disorders	• Reduced / absent urine • Edema all over body • Breathlessness (due to volume overload) • Unconscious state	• Oliguria - < 400 ml urine output in 24 hours not responding to fluid therapy and diuretics • Anuria • ❤ Coma	• USG showing renal abnormalities • Doppler USG showing stenotic renal artery • Deranged KFT	• ❤ ICU admission for resuscitative procedure like (CAB) or cardiorespiratory support • Need for dialysis peritonel/ hemodialysis

1.3 INCIDENTAL AND ACCIDENTAL CAUSES IN PREGNANCY

Accident/assault/ surgical problems	• Trip or fall • Vehicular accident • Violence • Blunt trauma abdomen • Assault • Burns • Poisoning • Cancers • Acute surgical condition • Suicide attempt • Snake bite • other	• History of trauma or accident, suicide attempt • Syncope • Pain (abdominal or pertaining to specific site) • Blurred vision • Bleeding • ❤ Convulsions • ❤ Altered behavior	• Altered conscious state • Tachycardia > 120/min, low volume pulse • Bradycardia <60/min • Tachypnea >20/min • Blood pressure Systolic < 90 mmHg Diastolic < 60 mmHg • Tenderness, rigidity and guarding of anterior abdominal wall with/ without distension • ❤ Cardiorespiratory failure • Evidence of trauma /burns	• Acute fall Hb < 5 gm (fall in hemoglobin so as to affect oxygen saturation) • Fall in oxygen saturation below 90 % • ❤ $PaO_2 : FiO_2$<200 • ❤ $PaCO_2$>50mm Hg • Platelet < 20,000 acute decline in platelet count more significant • ❤ Clot observation time > 7 min. or any other test done which proves deranged coagulation profile • USG showing trauma to vital organs • Imaging modality showing Injury to bladder, bowel, liver, spleen • CT/MRI showing injury	• ❤ ICU admission for resuscitative procedure like (CAB) or cardiorespiratory support • ❤ Blood &blood products transfusion (more 90 ml/kg body weight/ >5 units of blood) • ❤ Use of cardiotonics/ vaso pressors (Mephentine/Dobutamine/ Dopamine etc) • ❤ Surgical procedures done (laparotomy for intraperitoneal haemorrhage, repair of bladder, bowel, spleen, liver, kidney, burr hole for head injury)

Anaphylaxis	• Anaesthetic drugs • Antibiotics • Antimalarials • Iron preparations • Anticonvulsants • Blood transfusions • Other reactions	• History of taking the drug • Breathlessness • Air Hunger • Syncope • Not passing urine	• ❤ Altered conscious state • Tachycardia > 120/min thready, low volume pulse • Bradycardia <60/min • Tachypnea >20/min • Blood pressure - Systolic < 90 mmHg - Diastolic < 60 mmHg • Oliguria/Anuria	• Fall in oxygen saturation below 90 % on room air • ❤ PaO_2 : FiO2<200 ❤ $PaCO_2$ >50mm Hg • Proteinuria > 1 gm/dl • S. Creatinine >3.5 mg /dL • Elevated S Bilirubin (6 mg/dL) ALT, AST(>100 IU/L) • Thrombocytopenia <20,000 • Haemolysis on peripheral smear • Clot observation time > 7 min. or any other test done which proves deranged coagulation profile • ECG	• ❤ ICU admission for resuscitative procedure like (CAB) or cardiorespiratory support • ❤ Blood & blood products transfusion (more 90 ml/kg body weight/ >5 units of blood) • ❤ Use of cardiotonics/ vaso pressors (Mephentine/ Dobutamine/ Dopamine etc • ❤ Use of Adrenaline Renal dialysis- peritoneal/ hemodialysis (Renal Replacement Therapy)
Infections	• Malaria • Dengue • H1N1 viral Disease • Lower respiratory tract infections • ARDS • Meningitis • Enchephalitis • Infective hepatitis (A,B,C,E) • HIV/AIDS • Scrub typhus • Nephritis • Other	• High grade fever (with/ without chills and rigor) • Yellowness of urine • Altered behavior • Breathlessness • Abdominal pain • Abdominal Distension • Unconscious state • Convulsions	• Altered conscious state • Persistent rise in Temp >39.2 °C, not responding to routine treatment • Hypothermia temp , 37 °C • Pulse rate > 120/min • Tachypnea> 20/min • Chest signs (Crepts, crackles, ronchi, decreased or absent air entry) • Neck rigidity • Coma • Bleeding from various sites	• Leucocytosis (>15,000/cumm) • Toxic granules on peripheral smear • Low platelets(<50,000) • Microbial culture positive for organisms • Dengue , paracheck, malarial parasite positive on ELISA/ peripheral smear • H1N1 ELISA positive • Spinal fluid positive for infection • Elevated serum bilirubin (>6 mg) • Abnormal liver enzymes (> 100 IU) • Abnormal ECG • Abnormal EEG • Clot observation time > 7 min. or any other test done which proves deranged coagulation profile • Positive Hepatitis markers • HIV ELISA positive	• ICU admission for resuscitative procedure like (CAB) or cardiorespiratory support • Shifting to intravenous Antibiotics of fourth generation (Sulbactum+ Cefoperazone combinations, Imepenum) • ❤ Blood component transfusion (upto 90 ml / kg body weight/ >5 units of blood) • ❤ Use of cardiotonics/ vaso pressors (Mephentine/Dobutamine/ Dopamine etc) • Injectable antimalarials • Use of drugs to relieve cerebral odema (Mannitol) • Antiretroviral therapy
Embolism and Infarction	• Pulmonary embolism • Cerebral embolism (stroke) • Cardiac embolism (myocardial infarction)	• Breathlessness • Air hunger • Collapse • Acute chest pain • Syncope	• Tachypnea - >20/min • BP : 1) Systolics <90 mhg. 2) Disystolics <60 mhg. • Weak pulse • Abnormal chest signs (Ronchi, Crepts, effusion) • ❤ Cardiorespiratoy failure • Sweating, cold and clammy skin	• Various lesions on chest X ray pertaining to disease • Abnormal ECG • ❤ CT/MRI showing Lesion	• ❤ ICU admission for resuscitative procedure like (CAB) or cardiorespiratory support • ❤ Blood component transfusion (upto 90 ml /kg body weight/ >5 units of blood) • ❤ Use of cardiotonics / vaso pressors (Mephentine/Dobutamine/ Dopamine etc • Anticoagulant therapy • Drugs to reduce cerebral odema (Mannitol)

Monitoring and evaluation [45]

Although a biological issue is cited as the origin of MNM, the majority of MNM cases are actually the consequence of a series of events involving numerous social, cultural, and medical elements. In order to improve service delivery, remedial measures to close these gaps can be implemented. To implement maternal near-miss reviews, private sector providers could also find this helpful.

Program managers, medical superintendents, officers in charge, and district program managers who regularly provide maternal health interventions will find the guidelines

useful in carrying out this program. Every facility should guarantee that all pertinent data is available in hard copy and soft copy. It will be difficult to analyze the vast amount of data collected for surveillance, interventions, remedial measures, etc. The GOI will eventually construct centralized web software to input the data, perform analysis, and produce reports for action. Once this gateway is built, the data of particular facilities can be moved to it.

To stop such morbidities in the future, the Nodal officers will assess the crucial factors and pinpoint the gaps so that corrective action can be started. The number of women in a center who report having MNM or become MNM, the causes of MNM, referral locations and the quality of care provided, antenatal care and its quality, identified pregnancy complications, labor care and delivery complications, iatrogenic injuries, blood requirements and their availability, interventions required to save the women, good practices, and reasons for delays 1, 2, or 3 are the main outcomes that require attention.

Indicators for Monitoring

1. Total Number of MNM cases in the reporting month
2. MNM cases reviewed by CMHO
3. Out of total MNM cases indicate the number against following complication:
    a. PPH -Postpartum hemorrhage
    b. Eclampsia
    c. Anemia
    d. Septic Abortion
    e. others
4. Type of gaps identified after review
5. Status of corrective action taken for the gaps identified

Gaps in maternal near miss[46]

The health system's inadequacies can be found and filled by auditing maternal morbidity. In the past, maternal deaths were assessed as a means of preventing maternal deaths; however, this method did not yield comprehensive data. We now audit maternal near-misses in order to examine the entire picture of obstetrical treatment, its outcome, the mother's morbidity and mortality status, the resources available, the degree of delay, and—above all—the underlying reason of a maternal near-miss. When a near-miss case is not handled properly and promptly, it can be fatal. Consequently, it is crucial to determine the factors and conditions that led to it. Maternal near-miss analysis offers valuable information for improved preventive planning. Important information on the mother's experience can be obtained because she lives. Any information about the incident will be helpful in averting maternal death because a maternal near-miss is only one step away from maternal mortality.[47]. Maternal near misses can serve as controls if they are audited concurrently with maternal deaths. To encourage institutional delivery, the Janani Suraksha Yojana (JSY) program, which offers cash incentives, was started in India. Financial resources and medical staff should be expanded appropriately because the increasing strain on healthcare facilities may lower the quality of care. According to a study on the effects of the JSY plan, there has been no decrease in maternal mortality but an increase in institutional deliveries of maternal near misses.[46]

Materials and methods:

Study design: A Prospective observational study

Study Setting: All the patients attending the labor ward of the Department of Obstetrics and Gynecology, BLDE(DU) Shri. B.M.Patil Medical College, Hospital and Research Centre, Vijayapura will be included after obtaining informed written consent.

Study Population: All pregnant women and women 42 days following termination of pregnancy

Near Miss Criteria[48]

Severe maternal complications:

- Severe postpartum hemorrhage
- Severe preeclampsia
- Eclampsia
- Sepsis or Severe systemic infection
- Ruptured uterus
- Severe complications of abortion
- Ruptured ectopic pregnancy

2) Critical interventions:

- Admission to the Intensive Care Unit
- Interventional radiology
- Laparotomy (includes hysterectomy, exclude cesarean section)
- Use of blood products (transfusion of blood cells or red cells ≥5 units)

Organ dysfunction/failure

1) **Cardiovascular Dysfunction:**

- Use of continuous vasoactive drugs
- Severe hypoperfusion (lactate<5mmol or >45 mg/dl)
- Severe acidosis (pH<7.1)
- Acute cyanosis
- Gasping

2) Respiratory Dysfunction:

- Respiratory rate >40 or <6
- Intubation and ventilation (not related to anesthesia)
- Severe hypoxemia (O_2 saturation<90% for =60 minutes or PaO_2 / FiO_2 <2006y

3) Renal Dysfunction:

- Dialysis for acute renal failure
- Severe acute azotemia (Creatinine =3.5mg/dl)
- Oliguria non-responsive to fluids or diuretics

4) Coagulation/hematological Dysfunction:

- Severe acute thrombocytopenia (<50000 platelets/ml)
- PT or aPTT >1.5 times of normal

5) Hepatic Dysfunction:

- Jaundice in pregnancy
- Severe acute hyper bilirubinemia (bilirubin >6.0mg/dl)
- Prolonged unconsciousness (lasting=12 hours)

Exclusion criteria: Women with non obstetrical complications.

Methodology

All the patients who are admitted in the labor ward of dept. of OBG at BLDE (DU), SHRI B M PATIL MEDICAL COLLEGE AND RESEARCH CENTRE, who have had either normal delivery or caesarean section following which those who may need ICU management for any of the obstetric complications After obtaining written, informed consent, participants who meet the inclusion criteria will be included in the research. The detailed history; clinical examination; laboratory and imaging details and the management treatment details will be documented and assessed as per the WHO near miss criteria[49], Along with demographic information like age, parity, booking status, gestational age, maternal complication/need for intervention, and referral reasons are noted. The delay in treatment noted at the patient level, at referral level to the hospital from PHC/nursing home/private hospital will be noted. Detailed examinations like general physical examination , obstetrical examination, surgical procedures undergone, ICU care are noted, relevantinvestigation done, complication and co-morbidity as listed will be noted. The course of treatment and thematernal outcome will be documented.

OUTCOME:

- **PRIMARY OUTCOME:** To know the prevalence and predisposing factors of near miss cases in our institution
- **SECONDARY OUTCOME:** To know the adequacy and efficacy in handling SAMM cases

Sample Size- 100

Taking into account that the 95% confidence limit, 5% threshold of significance,

and 0.05 margin of error for these studies. The following formula is used to calculate the sample number.

Sample Size (n) = $(Z^2 \times p \times (1-p) / d^2$

Where, z is the z score = 1.96

d is the margin of error = 0.05

n is the population size

P is the population proportion = 0.07

The estimated sample size of the study is 100.[2]

Results:

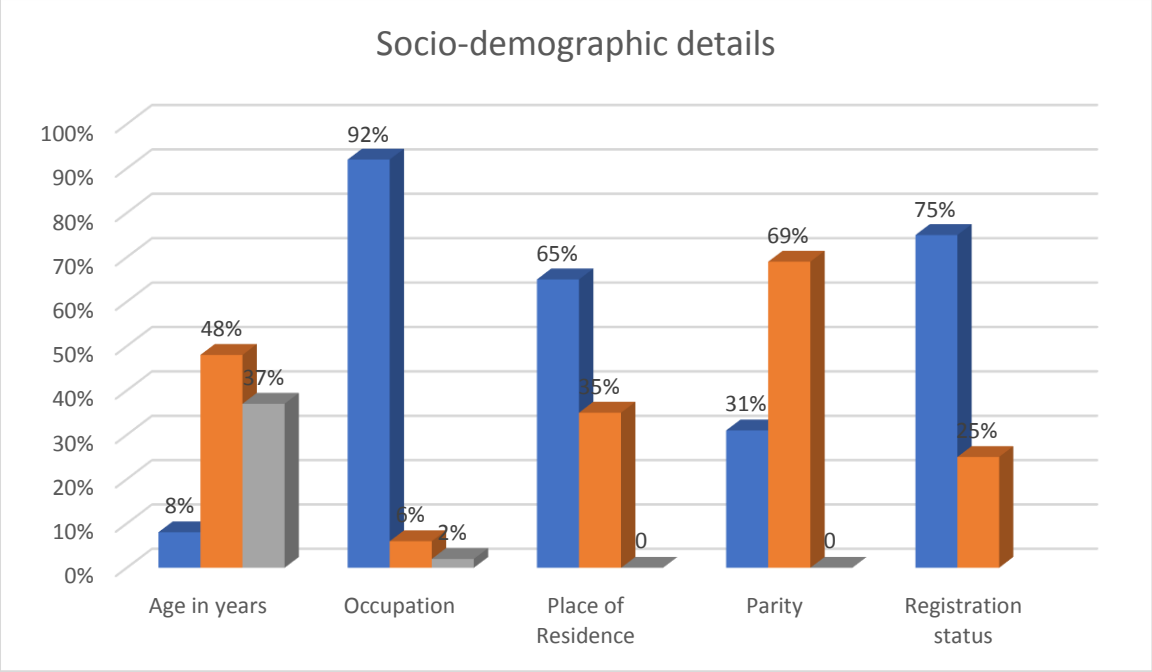
A study title "A Prospective Observational Study of Maternal Near-Miss (MNM) Cases at Shri. B.M.Patil Medical College, Hospital and Research Centre, Vijayapura a Tertiary Care Centre" with the objectives to analyze the clinical and sociodemographic aspects in severe acute maternal morbidity (SAMM) cases at a tertiary care hospital.

All the patients attending the labour ward of the Department of Obstetrics and Gynecology, for a period of 1 year. Those who met the inclusion criteria was considered for the study and we found 100 SAMM cases. Out of this 25% were delivered in labour room via vaginal delivery and 73% had elective LSCS,2% had abortion. 71% got delivered in BLDE, 63.6% got reffered from the district hospital

Table 2: Sociodemographic details among the study participants

Sl no	Socio demographic details	Frequency	Percentages
Age in years	<20 years	8	8.0 %
	21-25 years	48	48.0%
	25-30 years	37	37.0 %
	>31 years	7	7.0 %
Occupation	Housewife	92	92.0 %
	Labor	6	6.0 %
	Tailor	2	2.0 %
Place of Residence	Rural	65	65.0 %
	Urban	35	35.0 %
Parity	Primi gravida	31	31 %
	Multigravida	69	69 %
Registration status	BOOKED	75	75.0%
	UNBOOKED	25	25.0 %

This table represents the Sociodemographic distribution among the study subjects and found that 48%(n-48) were in the age group of 21-25 years followed by 25-30 years having 37%.The mean and SD of age is 25.2 years and 3.71 years , majority were housewife with 92% highest were residing in rural with 65% and with urban 35%,31% (n-31) were primigravida and 69% were multigravida with varying gravida and parity status.75% with booked cases and it is shown in bar diagram

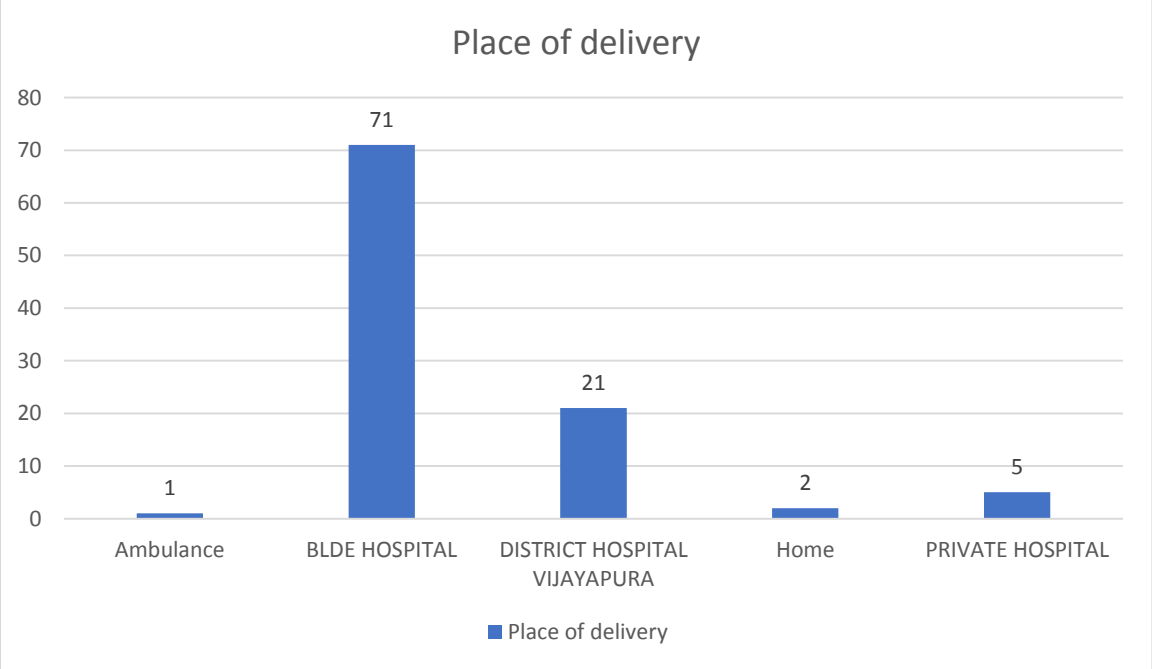


Graph 1: Sociodemographic details among the study participants

Table 3: Place of Delivery wise distribution of study participants

Sl no	Place of delivery	Frequency	Percentages
1	Ambulance	1	1.0 %
2	BLDE HOSPITAL	71	71.0 %
3	DISTRICT HOSPITAL VIJAYAPURA	21	21.0 %
4	Home	2	2.0 %
5	PRIVATE HOSPITAL	5	5.0 %
6	Total	100	100.0

This table presents the Place of Delivery and found that highest delivery happened in BLDE hospital with 71% followed by district hospital 21% least in home and ambulance with 2% and 1% and it is shown in bar diagram

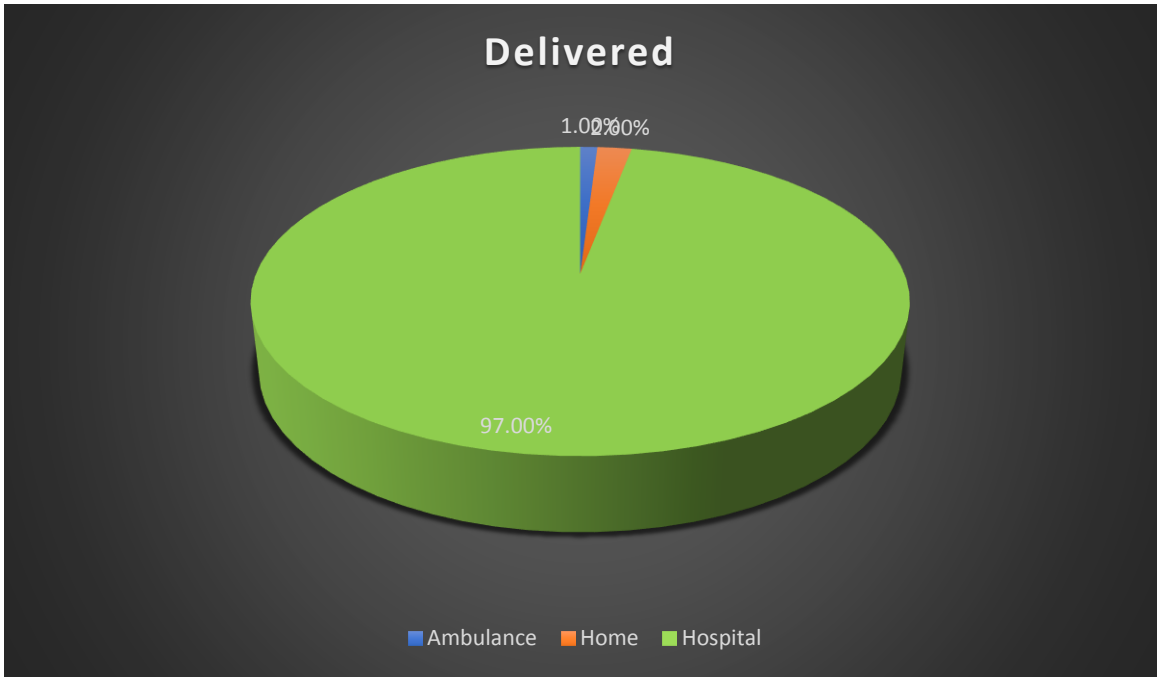


Graph 2: Place of Delivery wise distribution of study participants

Table 4: Delivered wise distribution among study participants

Sl no	Delivery at	Frequency	Percentages
1	Ambulance	1	1.0 %
2	Home	2	2.0 %
3	Hospital	97	97.0 %
4	Total	100	100.0

This table presents the delivered wise distribution and found that 97% had hospital delivery and with 2% in home delivery and it is shown in pie diagram

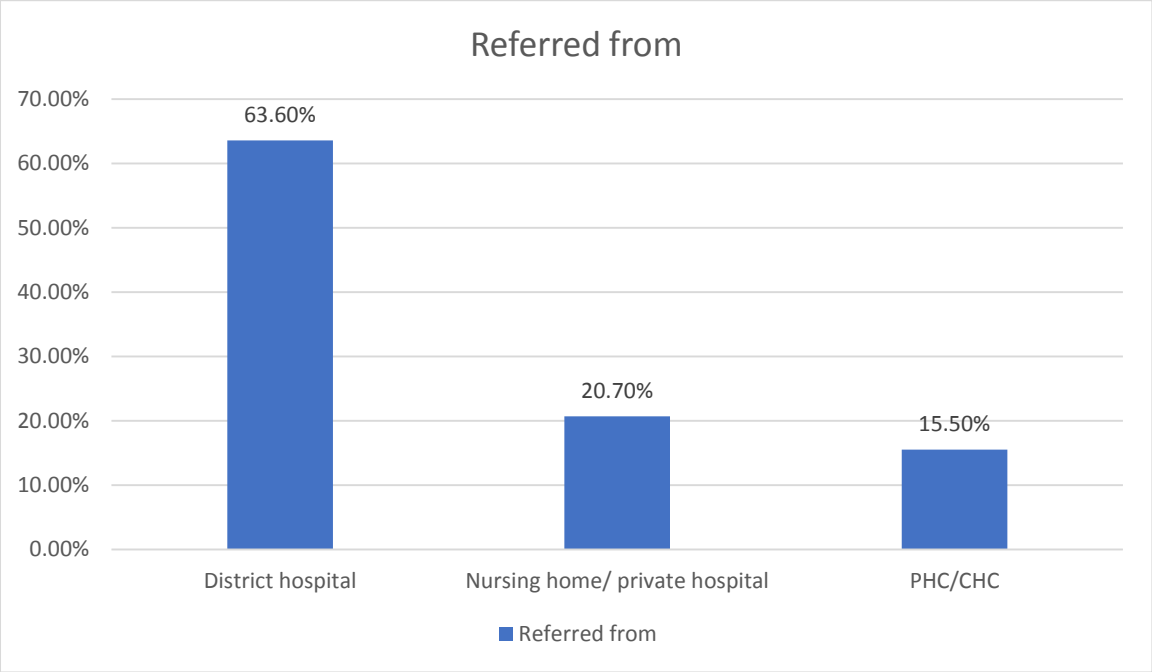


Graph 3: Delivered wise distribution among study participants

Table 5: Referral wise distribution among study participants

Sl no	Referred from	Frequency	Percentages
1	District hospital	49	63.6 %
2	Nursing home/ private hospital	16	20.7 %
3	PHC/CHC	12	15.5 %
4	Total	77	100

This table presents the Referral wise distribution among study participants and found that 63.6% were referred from district hospital followed by 20.7%(n-16) from Nursing home/ private hospital and 15.5%(n-12) from the PHC/CHC

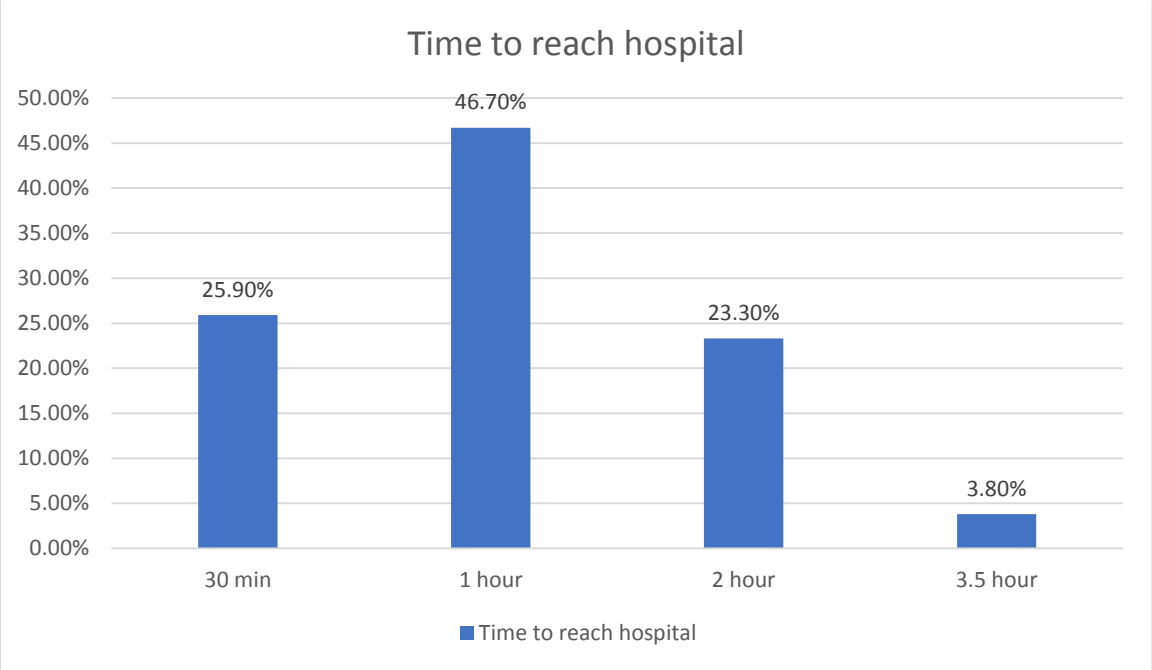


Graph 4: Referral wise distribution among study participants

Table 6: Time to reach hospital wise distribution among Maternal near miss cases

Sl no	Time to reach hospital	Frequency	Percentages
1	30 min	20	25.9 %
2	1 hour	36	46.7 %
3	2 hour	18	23.3 %
4	3.5 hour	3	3.8 %
5	Total	77	100

This table presents the time to reach hospital and found that majority 46.7%(n-36) reached the hospital within 1 hr followed by 25.9% (n-20) reached within 30 min and only 3.8% (n-3) took 3.5 hrs to reach the hospital and it is shown in bar diagram



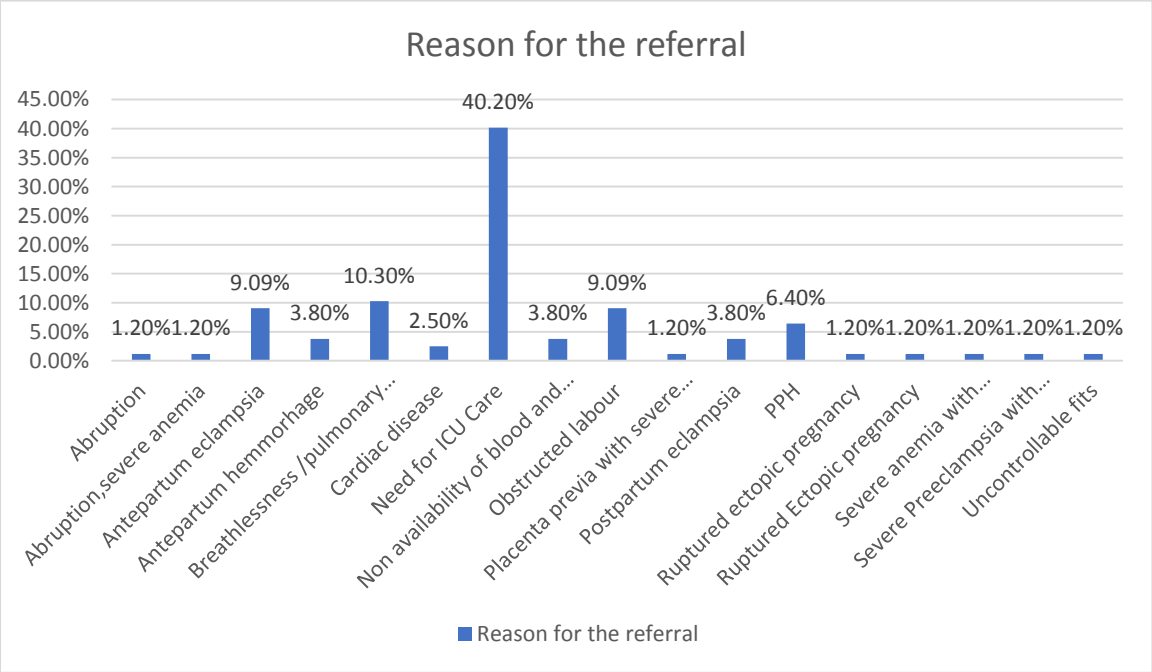
Graph 5: Time to reach hospital wise distribution among Maternal near miss cases

Table 7: Distribution of Reason for referral among Study participants

Sl no	Reason for the referral	Frequency	Percentages
1	Abruption	1	1.2 %
2	Abruption,severe anemia	1	1.2 %
3	Antepartum eclampsia	7	9.09 %
4	Antepartum hemmorhage	3	3.8 %
5	Breathlessness /pulmonary edema	8	10.3 %
6	Cardiac disease	2	2.5 %
7	Need for ICU Care	31	40.2 %
8	Non availability of blood and blood products	3	3.8 %
9	Obstructed labor	7	9.09 %
10	Placenta previa with severe anemia	1	1.2 %
11	Postpartum eclampsia	3	3.8 %
12	PPH	5	6.4 %
13	Ruptured ectopic pregnancy	1	1.2 %
14	Ruptured Ectopic pregnancy	1	1.2 %
15	Severe anemia with thrombocytopenia, breathlessness	1	1.2 %
16	Severe Preeclampsia with breathlessness	1	1.2 %

17	Uncontrollable fits	1	1.2 %
18	Total	77	100

This table represents the Distribution of Reason for referral among Study participants and found that highest with 10.3% (n-8) with breathlessness and least with 1.2% with many factors and it is shown in bar diagram

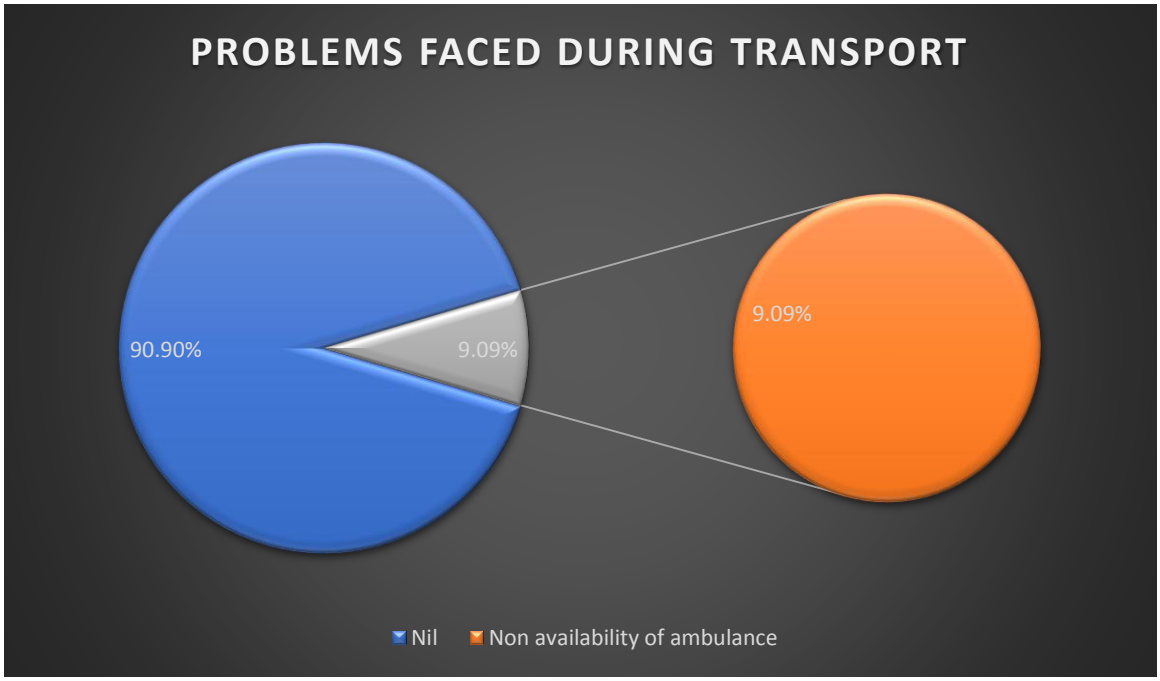


Graph 6: Distribution of Reason for referral among Study participants

Table 8: Problems Faced During Transport among study participants

Sl no	PROBLEMS FACED DURING TRANSPORT	Frequency	Percentages
1	Nil	70	90.9 %
2	Non availability of ambulance	7	9.09 %
3	Total	77	100

This table presents the PROBLEMS FACED DURING TRANSPORT among the study participants and found that 90.9% Had no problem but 9.09% had problem like non availability of ambulance and it is shown in pie diagram

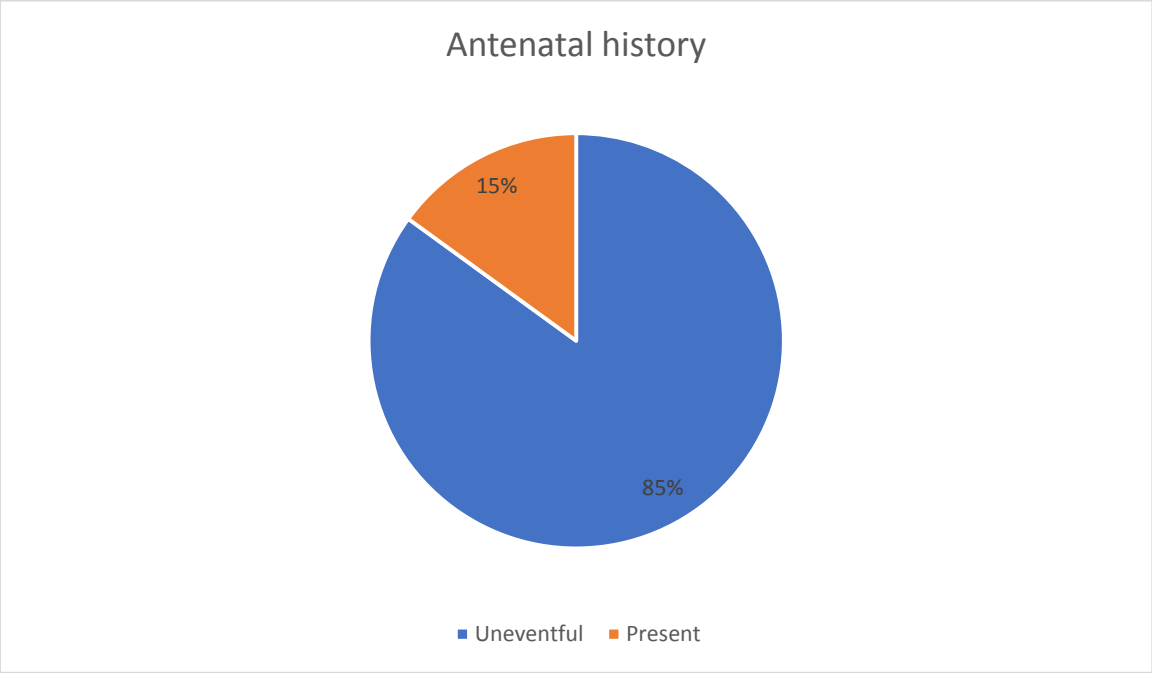


Graph 7: Problems Faced During Transport among study participants

Table 9: Antenatal history wise distribution among study participants

Sl no	Antenatal history	Frequency	Percentages
1	Uneventful	85	85 %
2	Present	15	15 %
3	Total	100	100

This table represents the Antenatal history wise distribution among study participants and found that 85% had uneventful history and 15% had some complications like Gestational DM , Anomaly scan shows intracardiac echoic foci within left ventricle ,High BP, Fever, epilepsy and it is shown in pie diagram

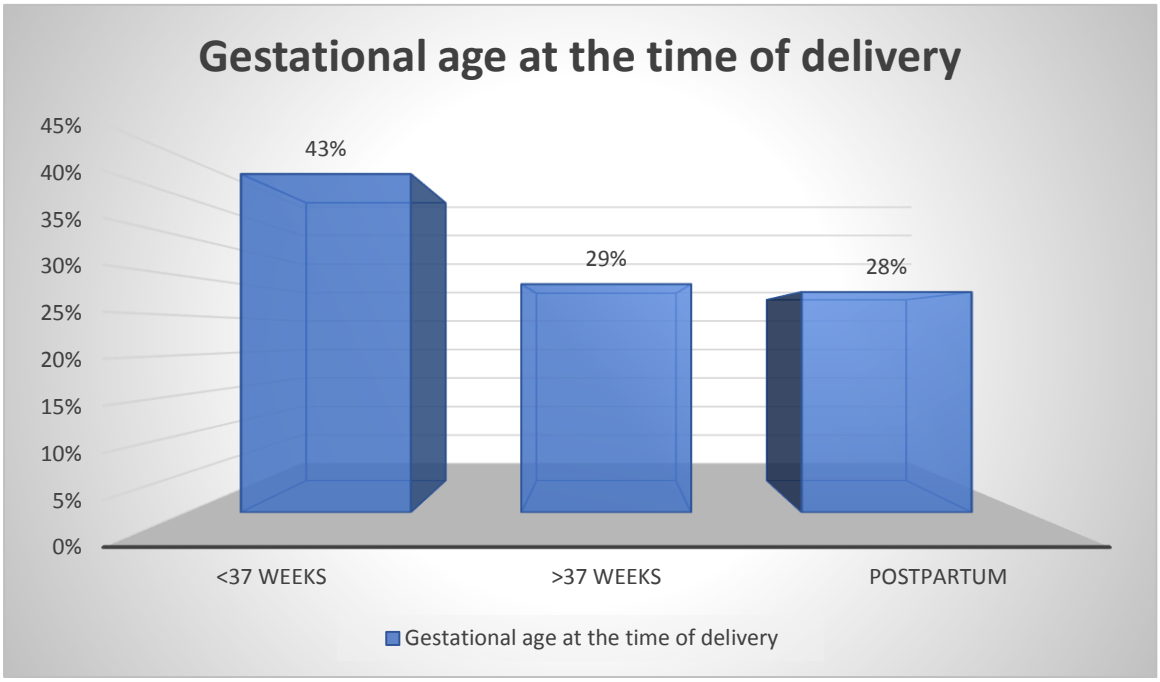


Graph 8: Antenatal history wise distribution among study participants

Table10; Gestational age the time of delivery among the study participants

Sl no	Term	Frequency	Percentages
1	<37 weeks	43	43 %
2	>37 weeks	29	29 %
3	Postpartum	28	28 %
4	Total	100	100

This table represents the gestational age at the time of delivery among study participants and found that 43% (n-43) Delivered <37 weeks and 55% (n-55) delivered term babies and among them 29% (n-29) had delivery 37 weeks and 28% had postpartum delivery

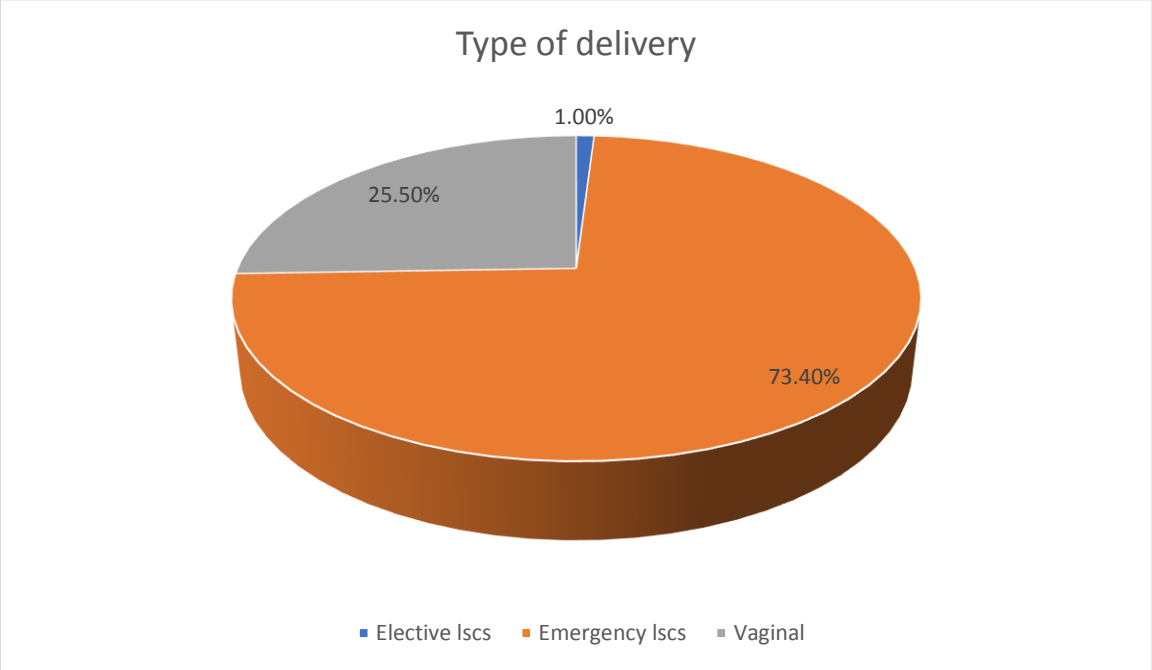


Graph 9: Gestational age the time of delivery among the study participants

Table 11: Type of delivery done among study participants

Sl no	Type of delivery	Frequency	Percentages
1	Elective lscs	1	1.0 %
2	Emergency lscs	72	73.4 %
3	Vaginal	25	25.5 %
4	Total	98	100

This table presents the type of delivery for the study subjects and found that 73.4% (n-72) had emergency LSCS followed by 25.5%(n-25) had Vaginal delivery and least with elective LSCS with 1% and it is shown in pie diagram

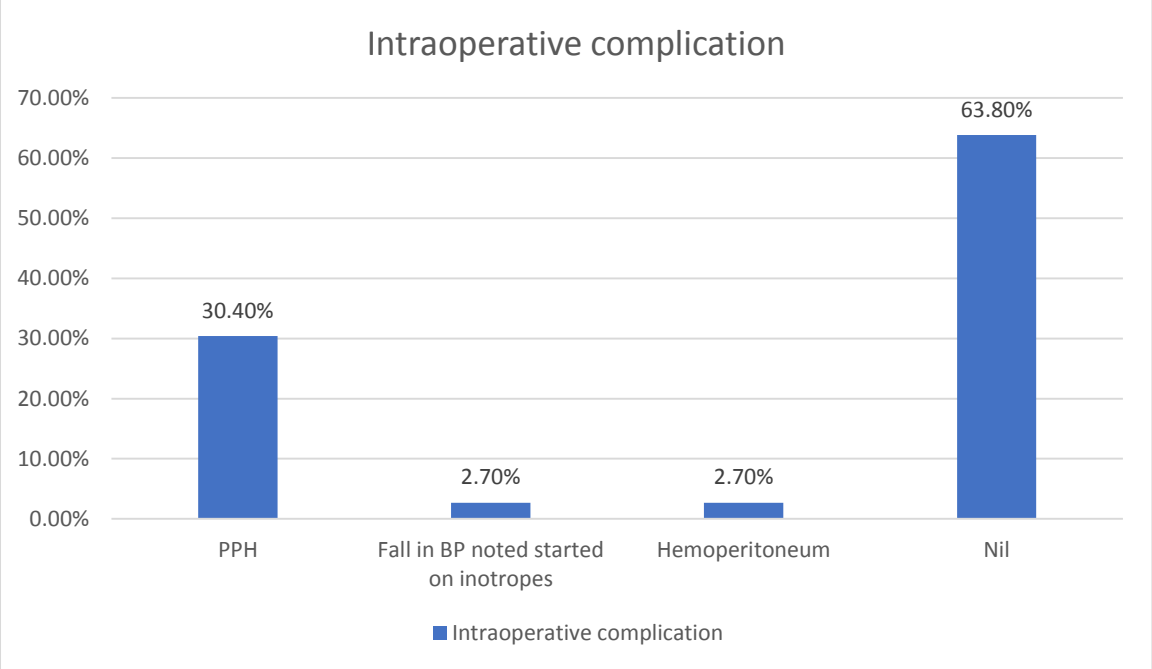


Graph 10: Type of delivery done among study participants

Table 12: Intraoperative complication among the study participants

Sl no	Intraoperative complication	Frequency	Percentages
1	PPH	22	30.4 %
2	Fall in BP noted started on inotropes	2	2.7 %
3	Hemoperitoneum	2	2.7 %
4	Nil	46	63.8 %
5	Total	72	100 %

This table presents the Intraoperative complication among the study participants and found that among the emergency LSCS cases 63.8%(n-46) had no complication but 30.4% (n-22) had PPH , followed by fall in BP among 2.6%(n-2) and hemoperitoneum in 2.7%(n-2) and it is shown in bar diagram



Graph 11: Intraoperative complication among the study participants

Table 13: Fetal details among study participates

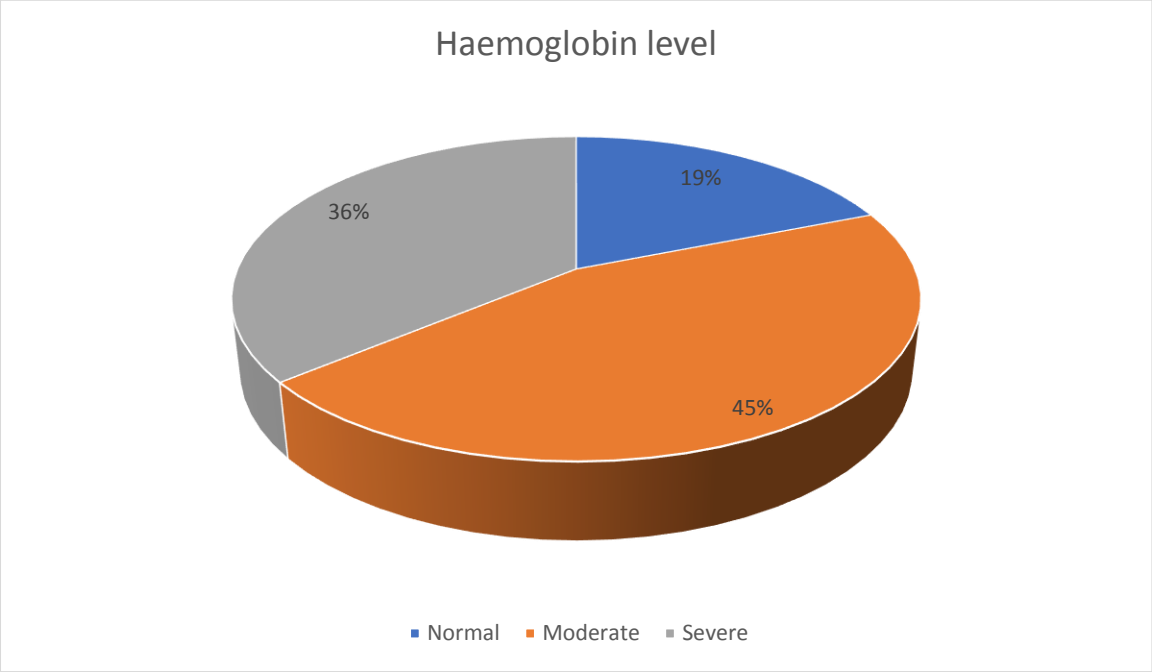
Sl no	Baby condition	Frequency	Percentages
Sex of the baby	Female	46	46.9 %
	Male	52	53.06 %
Outcome of the baby	IUD	21	21.4 %
	LIVE	77	78.5 %
Weight of the baby	<2.5kgs	40	40.8%
	>2.5 kgs	58	59.1%
NICU admission	No	54	62 %
	Yes	33	37.9 %
Indication of NICU stay	RDS	28	28 %
	Preterm /LBW	21	21 %
	Asphyxia	1	1 %

This table represents the baby born to the maternal near miss cases and fetal condition after delivery

Table 14: Distribution of HB level among the study participants

Sl no	Hemoglobin level	Frequency	Percentages
1	Normal	19	19 %
2	Moderate	45	45 %
3	Severe	36	36 %
4	Total	100	100 %

This table represents the Hb level among the study partcipnats and found that 19% had normal Hb level, followed by 45% with moderate Hb level and 36% had severe Hb level and it is depicted in pie diagram.

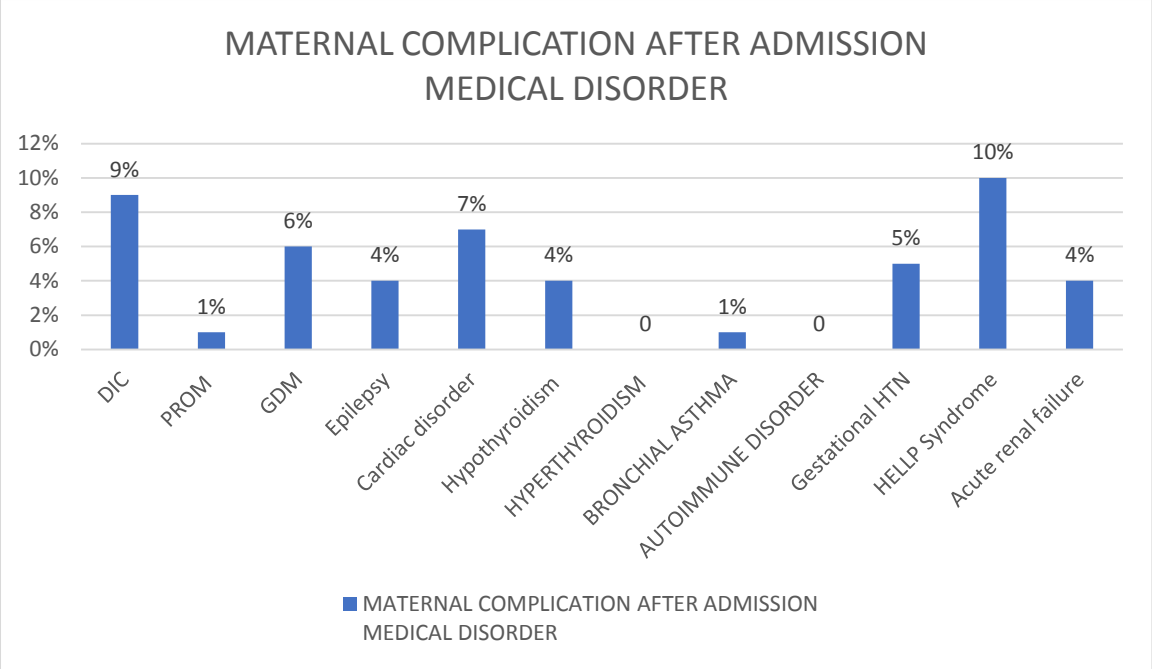


Graph 12: Distribution of HB level among the study participants

Table 15: Maternal complication among study participates

Sl no		Frequency	Percentages
MATERNAL COMPLICATION AFTER ADMISSION MEDICAL DISORDER	DIC	9	9 %
	PROM	1	1 %
	GDM	6	6 %
	Epilepsy	4	4 %
	Cardiac disorder	7	7 %
	Hypothyroidism	4	4 %
	HYPERTHYROIDISM	0	0
	BRONCHIAL ASTHMA	1	1 %
	AUTOIMMUNE DISORDER	0	0
	Gestational HTN	5	5 %
	HELLP Syndrome	10	10 %
	Acute renal failure	4	4 %

This table represents the maternal complication after admission Medical disorder and found Majority had HELLP syndrome with 10% followed by DIC with 9% and it is shown in bar diagram



Graph 12: Maternal complication among study participates

Table 16: Placental complication among the study participants

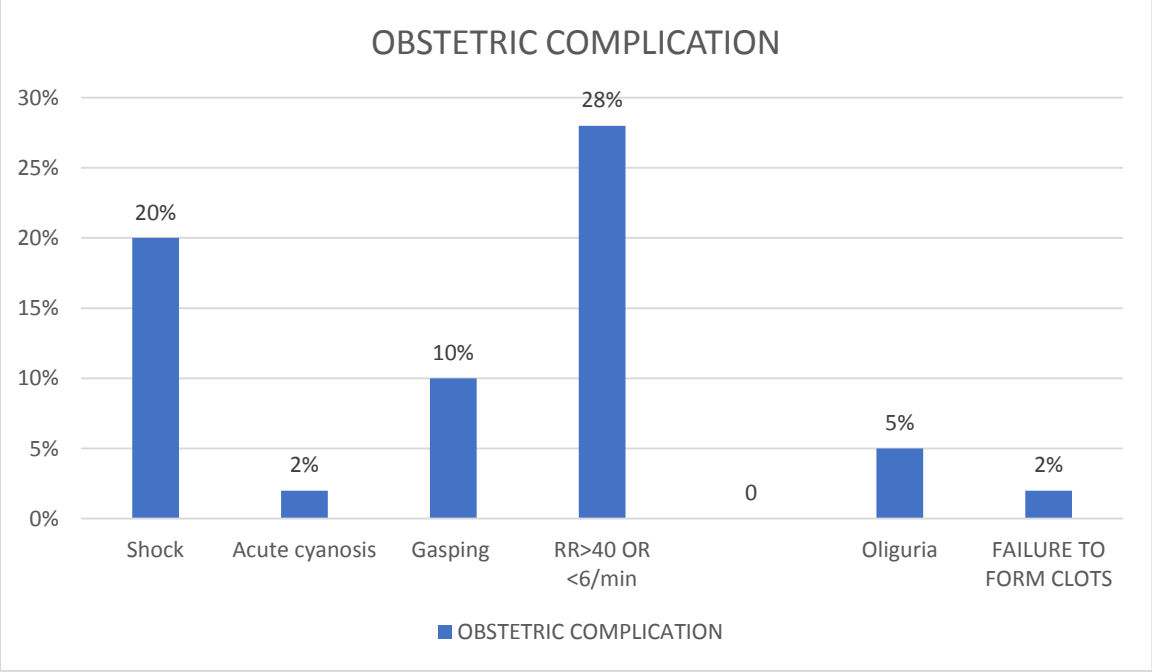
Sl no		Frequency	Percentages
PLACENTAL ABNORMALITIES	ABRUPTIO PLACENTA	13	13 %
	PLACENTA PREVIA	2	2 %

This table presents the placental abnormality among the study participants and found that 13% had ABRUPTIO PLACENTA and 2% had PLACENTA PREVIA and it is shown in pie diagram

Table 17: Obstetric complication among the study participants

Sl no		Frequency	Percentages
OBSTETRIC COMPLICATION	Shock	20	20 %
	Acute cyanosis	2	2 %
	Gasping	10	10 %
	RR>40 OR <6/min	28	28 %
	Oliguria	5	5%
	FAILURE TO FORM CLOTS	2	2 %

This table presents the Obstetric complication among the study participants and found that 28% had RR>40 followed by shoch with 20 % and least with acute cyanosis with 2% and it is shown in bar diagram

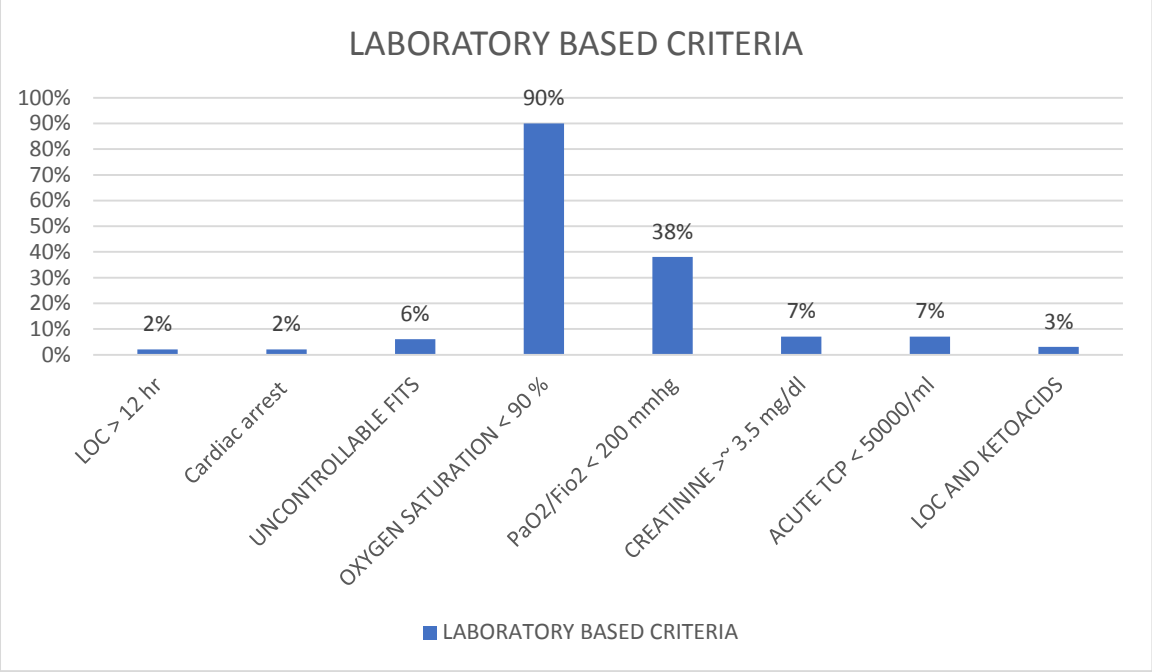


Graph 13: Obstetric complication among the study participants

Table 18: Laboratory Based Criteria among the study participants

Sl no		Frequency	Percentages
LABORATORY BASED CRITERIA	LOC > 12 hr	2	2 %
	Cardiac arrest	2	2 %
	UNCONTROLLABLE FITS	6	6 %
	OXYGEN SATURATION < 90 %	90	90 %
	PaO2/Fio2 < 200 mmhg	38	38 %
	CREATININE >~ 3.5 mg/dl	7	7 %
	ACUTE TCP < 50000/ml	7	7 %
	LOC AND KETOACIDS	3	3 %

This table represents the LABORATORY BASED CRITERIA among the study participants and found that 90% had OXYGEN SATURATION < 90 % and least with 2% with cardiac arrest and LOC >12 hrs

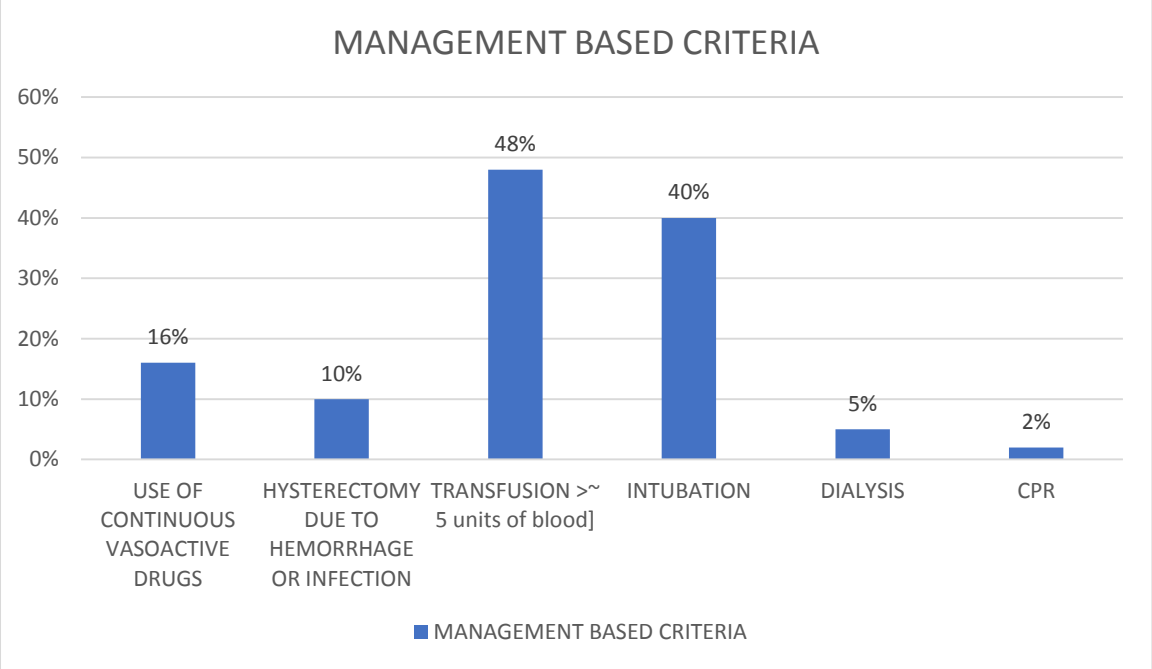


Graph 14: Laboratory Based Criteria among the study participants

Table 19: Management based criteria among the study participants

Sl no		Frequency	Percentages
MANAGEMENT BASED CRITERIA	USE OF CONTINUOUS VASOACTIVE DRUGS	16	16 %
	HYSTERECTOMY DUE TO HEMORRHAGE OR INFECTION	10	10 %
	TRANSFUSION >~ 5 units of blood]	48	48 %
	INTUBATION	40	40 %
	DIALYSIS	5	5 %
	CPR	2	2 %

This table represents the management based criteria for the study participants and found that 48% had TRANSFUSION >~ 5 units of blood, followed by 16% had used VASOACTIVE DRUGS and least with CPR of 2% and it is shown in bar diagram

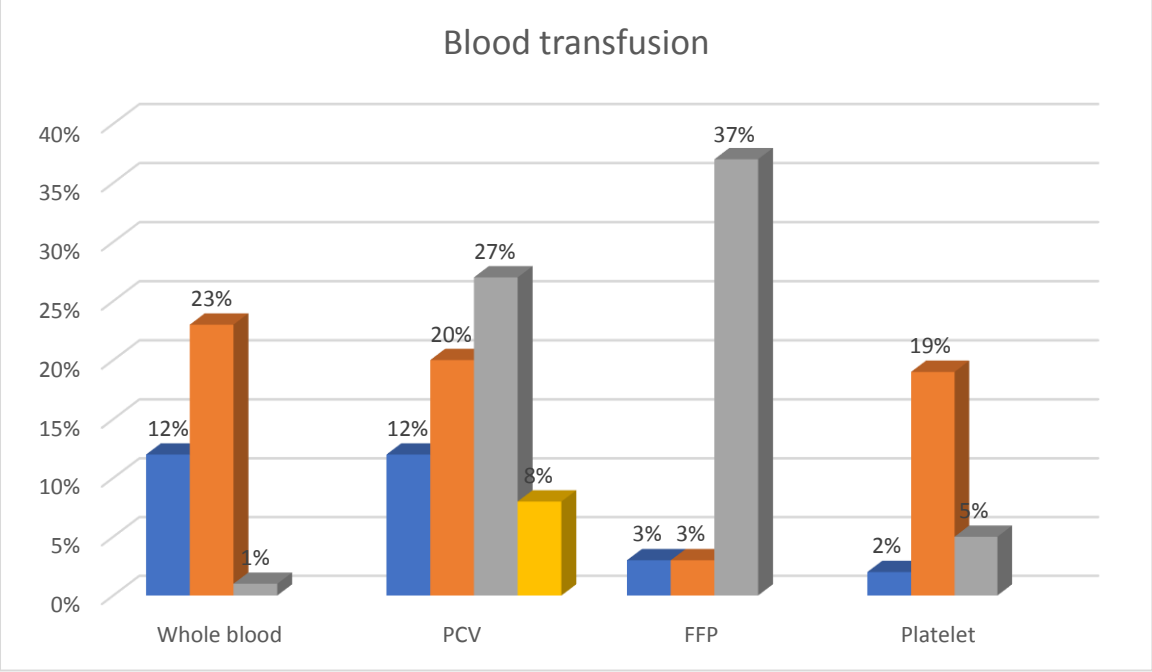


Graph 15: Management based criteria among the study participants

Table 20: Distribution of blood transfusion for the study participants

Sl no	Intervention	Frequency	Percentages
TRANSFUSIONS-Whole blood	1 2 3	12 23 1	12 % 23 % 1 %
TRANSFUSIONS PCV	1 2 3 4	12 20 27 8	12 % 20 % 27 % 8 %
TRANSFUSIONS-FFP	2 3 4 and more	3 3 37	3 % 3 % 37 %
TRANSFUSIONS-platelet	1 2 3 4and more	2 19 5 3	2 % 19 % 5 % 3 %

This table presents the blood transfusion done for the study participants and found that Whole blood transfusions were given in 12, 23, and 1 cases for 1, 2, and 3 units respectively. PCV transfusions were more frequent, with 27% patients receiving 3 units, followed by 20% receiving 2 units. Additional interventions included FFP (37 patients had 4 or more units), platelet transfusions, 5 cases of dialysis, and 2 ICD insertions and it shown in bar diagram

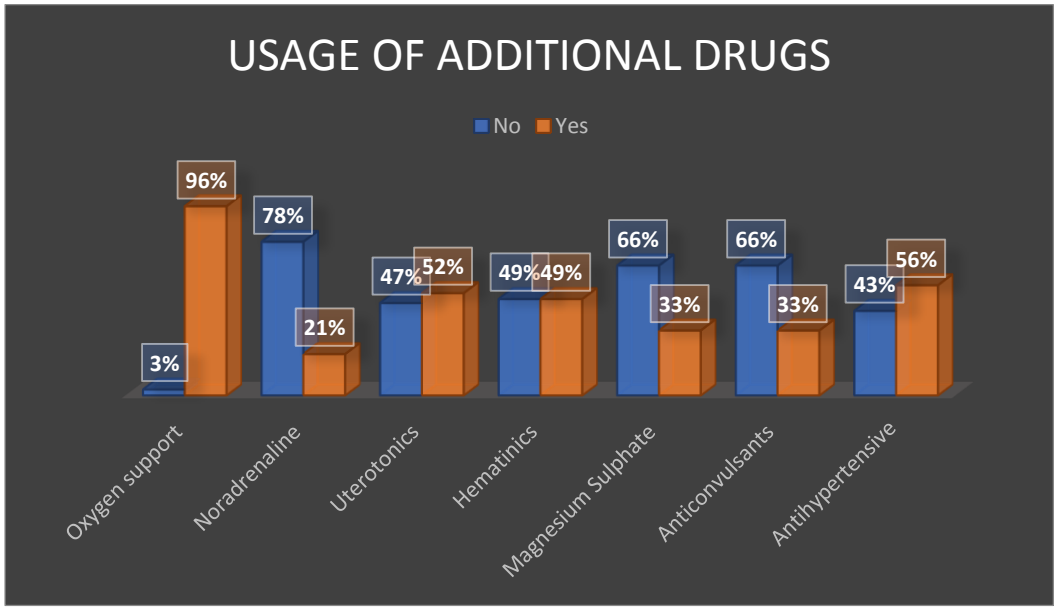


Graph 16: Distribution of blood transfusion for the study participants

Table 21; Distribution of usage of additional drugs given for the study participants

Sl no	Variables	Frequency	Percentages
Oxygen support	No Yes	3 96	3 % 96 %
Noradrenaline	No Yes	78 21	78 % 21 %
Uterotonics	No Yes	47 52	47 % 52 %
Hematinic	No Yes	49 49	49 % 49 %
Magnesium Sulphate	No Yes	66 33	66 % 33 %
Anticonvulsants	No Yes	66 33	66 % 33 %
Antihypertensive	No Yes	43 56	43 % 56 %

This table represents the Distribution of usage of additional drugs given for the study participants and found that Among the patients, 96% required oxygen support, while only 3% did not. Noradrenaline was used in 21% of cases, with the majority (78%) not needing it. About half of the patients received uterotonics (52%) and hematinic (49%). Magnesium sulphate and anticonvulsants were both administered to 33% of the patients. Antihypertensive drugs were given to 56%, showing that over half had elevated blood pressure requiring treatment.

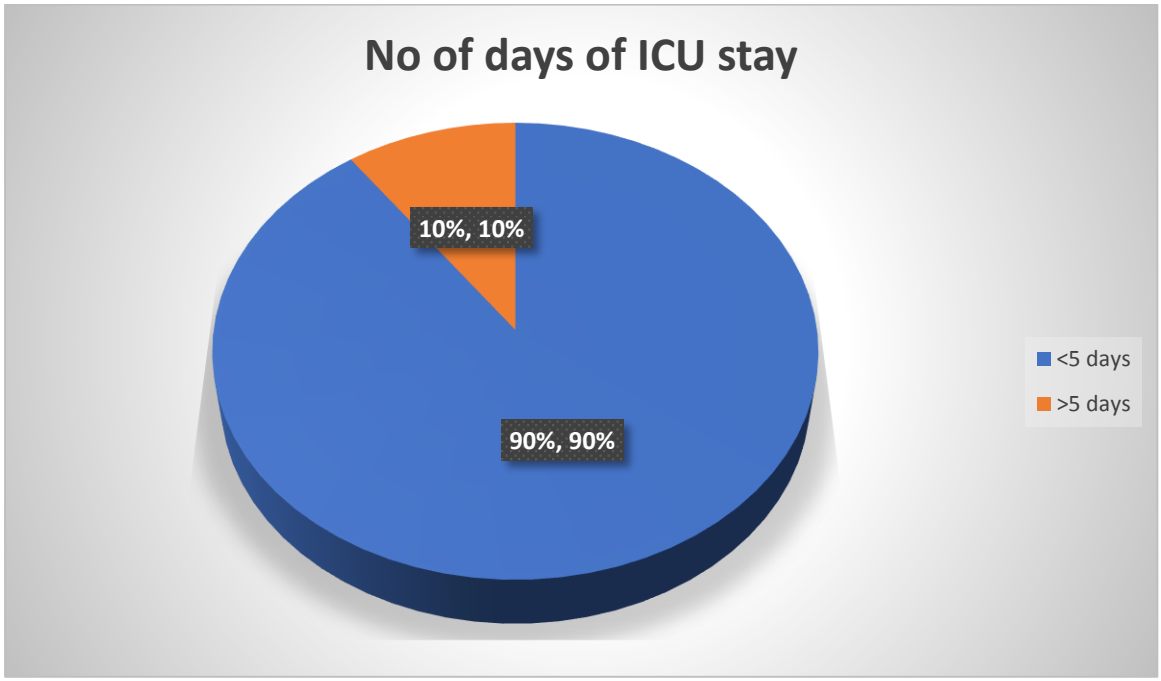


Graph17 : Distribution of usage of additional drugs given for the study participants

Table22: ICU stay among the study participants

Sl no	No of days of ICU stay	Frequency	Percentages
1	<5 days	90	90 %
2	>5 days	10	10%

This table presents the duration of ICU stay and found that 90 % stayed <5 days and only 10 % Stayed >5 days for multiorgan involvement and it is shown in pie diagram

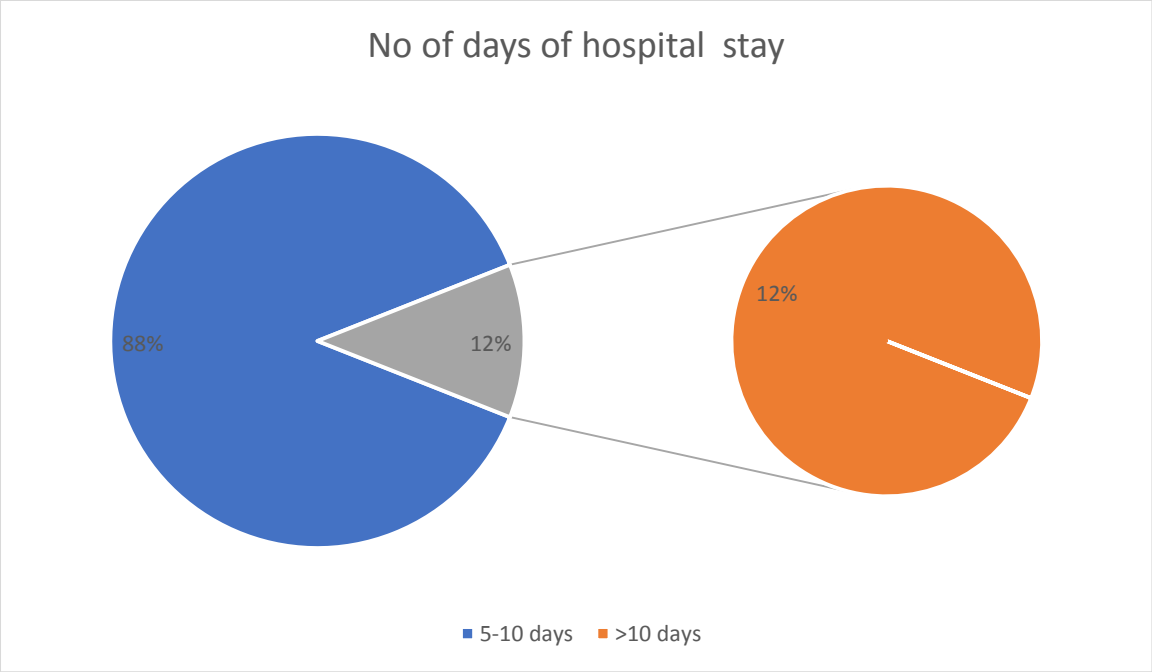


Graph 18: Duration of ICU stay among study participants.

Table 23: Duration of Hospital stay among study participants

Sl no	No of days of hospital stay	Frequency	Percentages
1	5-10 days	88	88%
2	>10 days	12	12%

This table represents the duration of hospital stay among the study participants and found that 88% stayed for 5-10 days and 12% Stayed in hospital for >10 days and it is shown in pie diagram

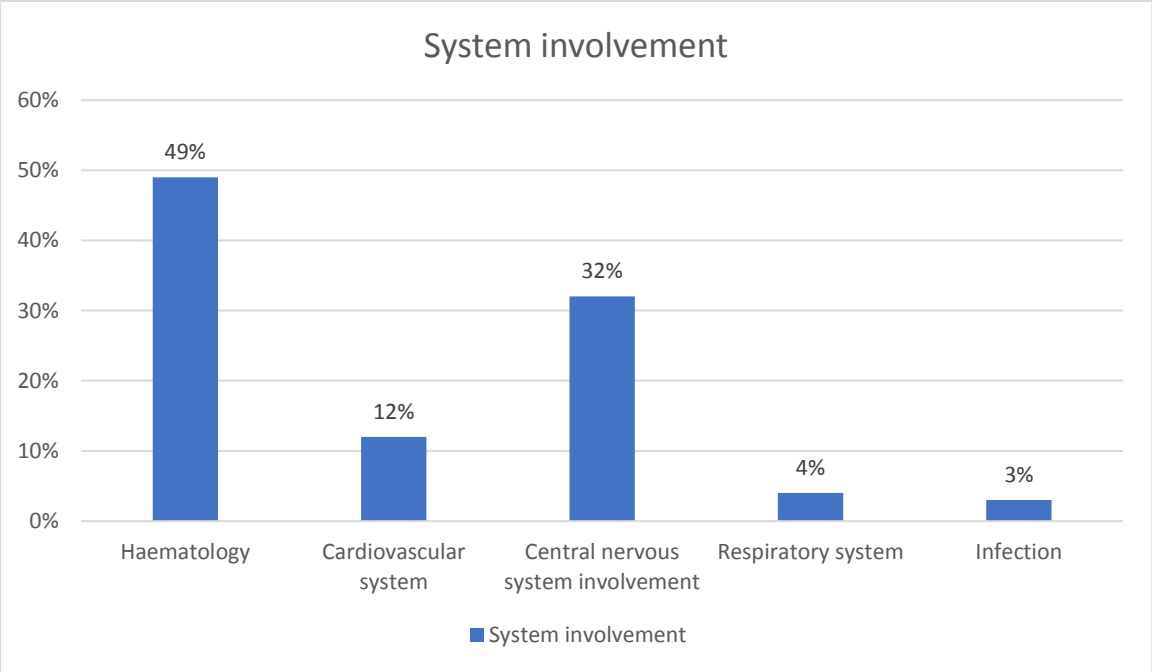


Graph 19 : Duration of Hospital stay among study participants

Table 24: Diagnosis for hospital stay among the maternal near miss cases

Sl no		Frequency	Percentages
1	Hematology	49	49 %
2	Cardiovascular system	12	12 %
3	Central nervous system involvement	32	32 %
4	Respiratory system	4	4 %
5	Infection	3	3 %

This table presents the Diagnosis for hospital stay and found that 49% had Hematology involvement like anemia ,pph , Abruption followed by CNS with 32% and CVS with 12% and it is shown in bar diagram



Graph 20: Diagnosis for hospital stay among the maternal near miss cases

Table 25: System wise distribution of diagnosis among the study participants

Sl no	System involvement	Frequency	Percentages
1	Hematological system		
	1. Anemia	18	18 %
	2. DIC	2	2 %
	3. PPH	22	22 %
2	Cardiovascular system		
	1. Breathlessness	9	9 %
3	Central nervous system		
	1. Pre-Ecampsia,eclampsia	33	33 %
	2. Epilepsy	2	2 %
4	Endocrine system		
	1. Gestational Diabetes	5	5 %
5	Respiratory system		
	1. Pulmonary edema	4	4 %
6	Renal system		
	Renal failure	2	2 %
7	Others		
	Sepsis	3	3 %

This table represents the system involvement in the maternal near miss cases and found that highest involvement with the Hematological system including anemia , DIC,PPH and followed by central nervous system involvement with highest participants had pre-eclampsia and eclampsia and least system is renal with renal failure.

Discussion

A study title "A Prospective Observational Study of Maternal Near-Miss (MNM) Cases at a Tertiary Care Centre" with the objectives to analyze the clinical and sociodemographic aspects in severe acute maternal morbidity (SAMM) cases at a tertiary care hospital. We found that out of 100 sample size, 25% were delivered in labor room through vaginal delivery and 73% had elective LSCS, 2% had abortion.98% had SAMM and o % mortality rate

Sociodemographic Characteristics

In our study more than half of the MNM cases were of women aged 21-25 years (48%) and 25-30 years (37%). The mean and SD of age is 25.2 years and 3.71 years A notable majority of the women in our study were housewives, 65% of the MNM cases were from the rural areas. 69% of the women were multigravida

Similar study conducted by **Sayyed et al** showed that the maximum number of patients (50.59%) fell under the age group of 20-25 years followed by the number (28.24%) of patients under the age group of 26-30 years. Many of the women had failed to be un booked. Most of the cases that were studied belonged to the referred category and came from rural areas. Most of the subjects were educated up to Primary level.[11]

Another Similar study was done by **Patankar et al** and it was showed that the mean ± standard deviation of age in the present study was 27.84 ± 3.43 years. Most of the cases were nullipara,

i.e., 33.68%. The major cases were those from rural area 63.26%, who were only having primary education at 62.25%, those of lower socio- economic status at 66.33%, the unbooked patients at 80.62% and 69 cases were referred from periphery.[50]

Place of Delivery

97% of maternal near-miss (MNM) cases in our analysis delivered in hospitals as compared to 2% at home and 1% en-route in ambulances. Such a high institutional deliveries is consistent with the national trend where institutional deliveries rose from 18% in 2005 to 52% in 2016 because of such schemes as Janani Suraksha Yojana (JSY) . However, the cases of MNM among the hospital deliveries indicate that even though access has improved, the quality of care and timely handling of complication areas that require addressing.[51]

Time to Reach Hospital

Prompt access to health facilities is important in dealing with obstetric emergencies. In our study, 25.9% of the 77 cases of available data reached the hospital within thirty minutes of collapse, 46.7% within sixty minutes, 23.3 % within two hours and 3.8% took between three and a half hours. A study in North-East India by **Visi V et al** indicated that most cases of MNM encountered delay in seeking care which was attributed to the misjudgment of the severity of their conditions related to pregnancy . Additionally, the use of public transport and the non-immediate availability of ambulances were identified as some elements that contributed to delays in reaching healthcare facilities .[52]

Referral

In our study we found that, based on examination of 77 maternal referrals, the most frequent referral reason was the ICU care need (40.2%), followed by breathlessness or pulmonary

edema (10.3%), antepartum eclampsia (9.09%), and obstructed labour (9.09%). Some other significant causes were Postpartum hemorrhage (6.4%), cardiac disease, antepartum hemorrhage, and absence of blood products. These results signify a degree of medical, obstetric, and systemic reasons requiring a greater degree of care.

As compared with other region's studies, there are similarities and differences. A study in Eastern Nepal by **Sitaula S et al** showed that with many similarities of healthcare with different parts of India observed obstetric hemorrhage as the major cause of maternal deaths, hypertensive disorders and severe anemia at the second and third in the list respectively. It was highlighted in this research that almost 75% of maternal death was avoidable and were commonly caused by delay in seeking or obtaining proper treatment, such as delay in referral. This demonstrates systemic problems that were similar to those mentioned in our study, such as nonavailability of blood products or ICU care.[53]

On the contrary, Ghana reported cases of hypertensive disorders of pregnancy as the main indication for obstetric ICU, responsible for 70.4% of cases followed by hemorrhage (14.4%) and sepsis (9.3%). In that study, the ICU Mortality rate was 26% which means how critical those referrals are. Relative to our findings, the Ghana study demonstrates a relatively greater rate of hypertensive complications necessitating ICU admission while our study stands out to emphasize on ICU need in an overall sense, inclusive of such conditions as pulmonary edema and severe anemia.[54]

Transport

In our maternal transport challenges study, it was revealed that 90.9% of the 77 reported cases didn't face problems during transportation while 9.09% of them were affected by the unavailability of ambulances. This is an indication that most of the patients reported smooth transfer but a significant proportion had barriers that could likely postpone critical care.

A similar study in Unnao district by **Raj et al** [55]in Uttar Pradesh throws light on similar problems facing the country of India. It was seen through this study that 16% of maternal deaths were related to the difficulty to organize transportation in order to get to any health care facility. Additionally, 30% of the deaths were along the route to a health facility, emphasizing the important role delay in transportation plays in maternal outcomes. The research also revealed that there were only 10 ambulances available for use in 15 facilities meaning that they were insufficient by the number that was required according to Indian Public Health Standards i.e. 19ambulances. This shortage combined with long delays resulted in substantial delays, with the mean times of arranging transport from home to the first facility were 3.1 hours.

These results parallel with our research findings pointing at the fact that even a small amount of transport problems can have dramatic consequences for maternal health. Both studies emphasize the need for efficient and flexible emergency transport systems to guarantee timely arrivals to obstetric care hence limiting preventable maternal deaths.[55]

Maternal Complication leading to maternal near Miss

a. **Delivery complication**

In our study, emergency LSCS's were responsible for 73.4% of the 98 deliveries, elective LSCS for 1.0% and vaginal deliveries for 25.5%. The intraoperative complications were

detected in 36.2% of all cases of cesarean delivery, the most frequent of them was postpartum hemorrhage (PPH) – 30.4%, then the hypotension requiring inotropic support and hemoperitoneum – each 2.7%.

Another similar prospective observational study done in two tertiary hospitals in Maharashtra, India by **Samant PY et al** showed that beginning from July 2018 to November 2020, reported an incidence of maternal near-miss (MNM) of 11 in 1000 live births. Hemorrhage and hypertensive disorders of pregnancy were the leading cause of MNM at 36.4% and 30.3% respectively. Remarkably, 80.2% of the women were anemic whereby 32.4% had severe anemia. Also, 86% of the MNM events were recorded at admission and 81% of the women had been referred by lesser healthcare facilities. The delays in both seeking and reaching care were reported by 52.6% and 32.5% of the women, respectively.[56]

Another study conducted in South Africa on bleeding during and after cesarean sections (BDACS) and 93 cases of near miss were identified whereby atonic uterus (43%) and surgical trauma (29%) were the main causes.[57]

Maternal complication after admission

a. **Medical Disorder**

In our study, we found out diverse maternal complications that occurred post admission for 98 deliveries. 9% had disseminated intravascular coagulation (DIC); 6% had gestational diabetes mellitus (GDM); 4% epilepsy; 5% had gestational hypertension; 10% HELLP Syndrome. A similarfindings by **Tavera G et al** [58]showed that prevalence of gestational diabetes is 5.4% and Gestational hypertension is 10% according **to Drechsel KC** et al.[59]

Another Similar **Dhaded et al** [60]study carried out at a tertiary care centre found that hypertensive disorders were the leading medical co morbidity in maternal near miss cases;

forming 60.1% of the cases. In our study we found that acute renal failure prevalence is 4% which is lesser than a study by **Thakur G et al** that looked into events of maternal near miss found that acute kidney injury (AKI) was present in 18% of cases. Among these, approximately 45% required dialysis.

c. **Obstetric complication**

In our study, the prevalence of the important obstetric complications among Maternal near-miss (MNM) cases was as such: acute cyanosis (2%), shock (20%), gasping (10%), RR >40or <6/min(28%), oliguria (5%) and failure to form clots (2%). These complications are important markers for critical MMM and conform to the criteria of the World Health Organization for defining MNM events.

A comparison presents that a study carried out in a tertiary care hospital in North India by **Shrestha J et** al had reported that 42.5% hematological dysfunction, 27.5% neurological dysfunction, 17.5% respiratory dysfunction, 5% cardiovascular dysfunction, and 12.5% coagulation disorders were present Such findings emphasize the extensive replications of the types of organ system dysfunctions noted in MNM cases between different regions.[61]

d. Additional drugs given

From our study, we noted the following management-level interventions of the maternal near-miss (MNM) cases we found that Oxygen support was given to 96% of patients received oxygen therapy,78% had Noradrenaline administration,21% required vasoactive support,52%

were administered uterotonic agents,49% received hematinic supplementation,33% were treated with magnesium sulfate,33% received anticonvulsant therapy,56% were managed with antihypertensive medications.

These interventions depict the critical care measures that are required to deal with severe obstetric complication and coincide with the World Health Organization's criteria used to identify the cases of MNM.

Comparison, a study in the Jawaharlal Institute of Postgraduate Medical Education & Research (JIPMER) in Puducherry analyzed 37,590 live births and identified 380 severe maternal outcomes amongst women. The study gave particular relevance to the usage of indicators of WHO severity, such as the usage of vasoactive drugs, intubation, and blood products' transfusion as critical management-based criteria determining the cases of MNM. Although the percentages for each intervention were not specified, the current study reported the value of these crucial care procedures' in the management of complex maternal complications. [9]

Another study conducted at Dehradun, Uttarakhand by **Bakshi RK et al** assessed healthcare facility readiness/performance in maternal mortality prevention. It was discovered that all women giving birth at the tertiary healthcare center received oxytocin to avoid postpartum hemorrhage and 94.73 % of the eclampsia women received magnesium sulfate as a primary treatment. These findings emphasize the role of early use of uterotonics and magnesium sulfate in the treatment of severe obstetric complications. [62]

e. Placental abnormality

In our study we found that 13% had ABRUPTIO PLACENTA and 2% had PLACENTA PREVIA Among the hypertensive disorders severe pre-eclampsia comprised 23.5%,eclampsia14.9% ,HELLP syndrome 7.1%. With in the spectrum of hemorrhage post-partum hemorrhage formed maximum (13.1%) cases of near misses [63]

System wise distribution of diagnosis on the study participants

In our research, we found different system involvements in the cases of Maternal near-miss (MNM);

Hematological system

In our study maternal near-miss (MNM), we found that there were various organ systems that were affected, demonstrating the multisystem effect of severe maternal morbidity. Hematological system was also affected in a large number of cases; 18% anemia, 22% postpartum hemorrhage (PPH) and 2% disseminated intravascular coagulation (DIC) was noted among the women. A similar study by **Ankitha C et al** [64]Haemorrhage (52.2%) and hypertensive disorders of pregnancy (30.4%) were the major primary obstetric complications responsible for near miss cases. Similar statistics were seen in the study by **Rakesh HJ** et al[65] where haemorrhage was also the commonest cause of near miss followed by hypertensive disorders of pregnancy. [65]Anaemia was the most common underlying disorder in the near miss cases in our study. Similarly, anaemia was the major contributory factor of severe morbidity in 75% of the near miss cases in the study conducted by **Gupta et al.[66]**

Hypertensive disorder

In our study we found that 56% had hypertensive disorder and on antihypertensive treatment . A similar study by **Priyanka Patel et al** [67]found that Hypertensive disorder of pregnancy 44.4% were most common cause of MNM, a similar observation was made in other studies, Taly et al [62]which is 25%. Another study by **Sunanda N, et al** Hypertension and its complication (33%) which is lower than our study.[68]

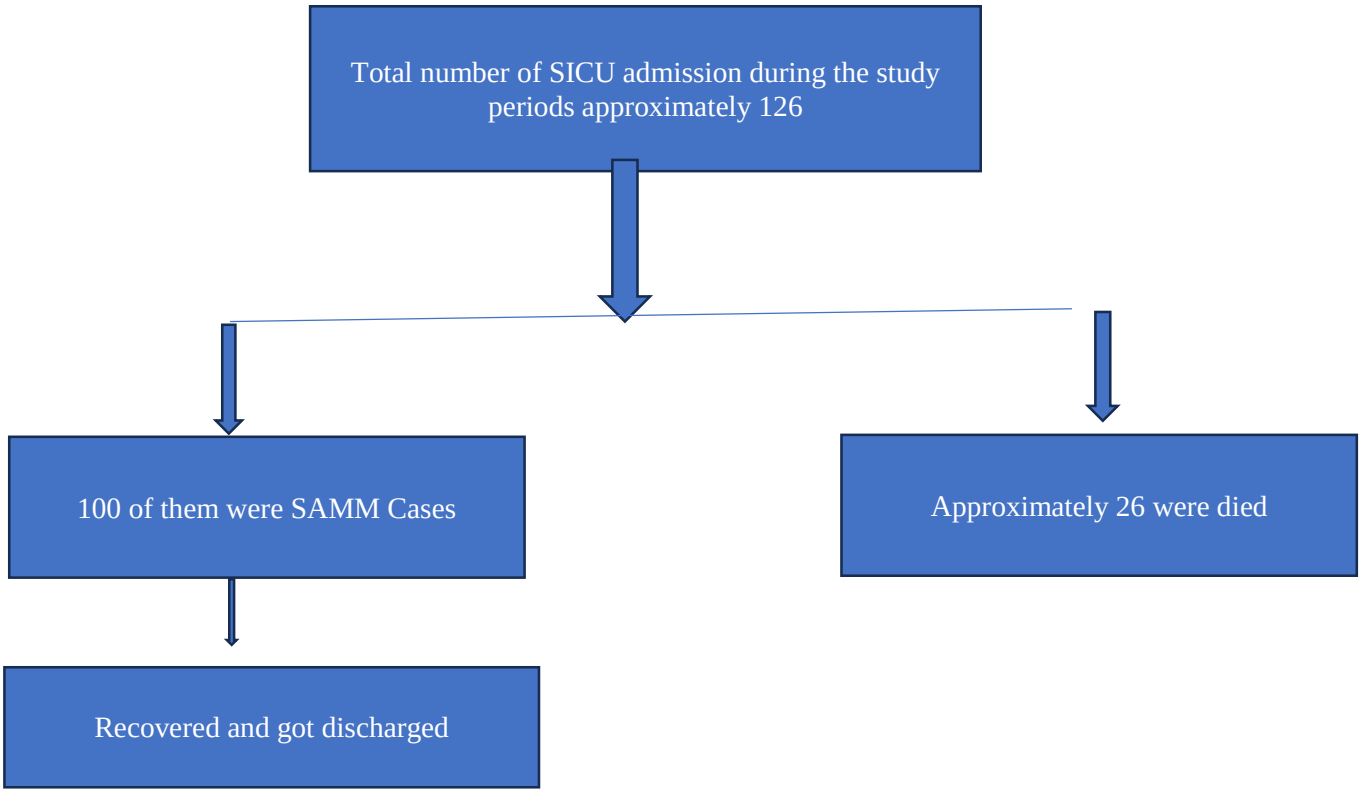
Breathlessness – indication of the cardiovascular system involvement, present in 9% of the cases. As central nervous system was often involved, 33% of the cases were due to pre-eclampsia and eclampsia and 2% due to epilepsy. A similar study by **Katja et al** showed that 46 (10%) had gestational hypertension, 338 (76%) had preeclampsia, and 63 (14%) had eclampsia.[69] Another study by E Abalos found that Incidences of pre-eclampsia, eclampsia and chronic hypertension were 2.16%, 0.28% and 0.29%, respectively ,the prevalence is lower than our study

In the endocrine system, in 5%, gestational diabetes mellitus was revealed in the study population. The cardiac disease in our study is 2.5% and the respiratory system was found to be affected in 4% of the women as pulmonary edema, and the renal system was found to get compromised as acute renal failure in 2% of the cases. Other systemic complications noted include sepsis (3.0%). In a similar study conducted by **Sunanda N, et al** cardiac diseases (7.3%) and sepsis (6.09%) were the commonest cause for maternal near miss. [68]Another study by **Jyoti et al** also cited the heart disease is 8% each which is more compare to our study .[70]

Fetal outcome

In this maternal near-miss cases study conducted, male infants constituted 53.06% of births while female infants became 46.9%. Of the 98 deliveries, live births accounted for 77, (78.5%) while the intrauterine deaths (IUDs) contributed to 21 (21.4%). As follows from the results, 40.8% of neonates had a weight at birth below 2.5 kg, and the number of neonates with a weight above 2.5 kg was 59.1%. A considerable number of neonates (37.9%) needed hospitalisation to NICU. Respiratory distress syndrome (RDS) was the leading cause, followed by the premature birth or low birth weight, and a birth asphyxia was respectively 28%, 21%, and 1% of NICU admissions. Such findings bring out the critical neonatal consequences of severe maternal morbidity. Similar study by **Jyothi et al** found that in majority of cases that were near miss in hows there were caesarean and delivery (53.1%) and they had babies weighing between 1.5-2.5kg (40.4%) and the live birth rates were 67.4% and 77.5%.[70]

These results are in line with other Indian studies where the effects of neonatal outcome were studied, and maternal near-miss events were taken into account. For example, in a study that was carried out in India, it was found out that out of 84 live births from MNM cases, 26 of them (31%) received NICU admission. The most common indications for admission to the NICU were prematurity and low birth weight, respiratory distress, and combinations there of. Notably, 62% of these neonates were delivered through CS (Cesarean section) mainly because of maternal indications in the form of eclampsia and pre-eclampsia. The study emphasized that there was a direct contribution of maternal morbidity towards perinatal morbidity and mortality with 5 neonatal deaths due to premature birth coupled with extremes of low birth weight. [71]


Total number of SICU admission during the study periods approximately 126
100 of them were SAMM Cases
Approximately 26 were died
Recovered and got discharged

Strength

1. Prospective Study Design:

This study was conducted prospectively whereby it was possible to collect data in real time and minimize the likelihood of recall bias. Prospective design also ascertains superior accuracy in documenting the clinical signs, treatment given, as well as maternal outcomes.

2. Application of Standard WHO Criteria:

The use of the WHO near-miss approach was a standardized and globally accepted tool of identifying maternal near-miss cases. This enhances the comparability of the study with the national and international data.

3. Comprehensive Data Collection:

Information about the specifics were gathered on socio-demographic characteristics, clinical presentations, system involvement, interventions, maternal and neonatal outcomes, and intraoperative complications. This assisted in having a multidimensional consideration of each case.

4. Inclusion of Wide Case Spectrum:

The study was composed of women throughout the whole perinatal state beginning from pregnancy and up to 42 days postpartum so that both the antepartum as well as the postpartum near miss cases could be recorded.

5. Critical Evaluation of Management Practices:

Besides evaluating the clinical profiles, the study evaluated the types of interventions offered (e.g., ICU admission, oxygen therapy, antihypertensives, blood products, etc.) which reflects preparedness of facilities and their response in maternal emergencies.

6. Focus on Fetal Outcomes:

With the inclusion of data related to parameters in the fetus such as admissions in NICU, birth weights, and neonatal complications, the study gives a better overall picture of the effects of MNM on both the mother and the child.

7. Identification of System Gaps:

Important gaps in the healthcare system were identified in the study based on delays in referral, unavailability of ambulance, and a need for ICU care – information that is paramount in healthcare planning and policy formulation.

8. Tertiary Care Setting:

The use of a tertiary referral center in this study, shows that the findings represent the management of the most severe cases, thus giving insight on critical care capacity, referral patterns and emergency obstetric care.

9. Baseline for Future Interventions:

The data is useful in establishing baseline to develop maternal health intervention as well as audit practices, and train healthcare personnel at all levels of care.

10. Contribution to Regional Data:

Very few MNM studies are found from North Karnataka. This study addresses an important gap in the literature, particularly for Vijayapura region and provides important data available for state and national level maternal health surveillance.

Limitations:

1. Single-center study: Reduces generalizability of results to other regions of varying healthcare access and facilities which is limited to single geographical area
2. Limited sample size: May not manage to reflect the whole range of rare yet crucial MNM conditions.
3. Short follow-up duration: Only during 42 days postpartum; long-term disease burden of mothers or newborns was not evaluated.
4. Lack of qualitative data: Patient experiences and systemic barriers to care were not greatly examined.

Recommendations:

1. Strengthen referral systems: Enhance early identification and referral of high-risk cases to tertiary care centers.
2. Enhance training: Periodic obstetric emergencies drills and review on management of MNM for peripheral healthcare providers.
3. Improve access to critical care: Install availability of ICU, blood products, and surgical backup round the clock in district-level setup.
4. Promote community awareness: Spreading awareness among women and families on danger signs in pregnancy to facilitate early care-seeking behavior and importance of taking routine antenatal checkup especially when they are categorized as high-risk pregnancy.
5. Multicentric studies: Stimulate parallel endeavors in different areas to realize understanding of state-level and national trends.

Conclusion:

This Study underlines that the cases of maternal near-miss represent a major public health issue and are usually associated with the preventable reasons like hemorrhage, hypertensive disorders, and lapses of time for adequate treatment. Many cases of MNM needed intensive interventions like shedding of blood, ICU support and emergency surgical procedures. Early recognition and interdisciplinary approach and timely referral would be important to avoid maternal Morbidity and mortality . Improving referral chain, improving the critical care facilities and training of health professionals continuously are imperative for better maternal outcomes in resource-limited settings.

Summary:

This prospective observational study was carried out in Department of Obstetrics and Gynecology at BLDE(DU) Shri B.M. Patil Medical College, Hospital and Research Centre, Vijayapura. The study was to assess the Clinical and Socio – Demographic profile of women with Severe Acute Maternal Morbidity (SAMM) (also referred to as maternal near-miss (MNM)) from all pregnant women and women up to 42 days post-termination of pregnancy admitted in the labor ward.

The information gathered included demographic features, clinical conditions, involvement of the organ systems, interventions given, fetal results, and intraoperative/postpartum complications. For the study, the WHO near-miss criteria were used for the purpose of detecting the MNMs. The results have implications to the level of quality of maternal health and reveal preventable factors that cause severe maternal complications.

References

References

1 Teshome HN, Ayele ET, Hailemeskel S, Yimer O, Mulu GB, Tadese M. Determinants of maternal near-miss among women admitted to public hospitals in North Shewa Zone, Ethiopia: A case-control study. Frontiers in Public Health. 2022 Aug 25;10:996885.

2. Agrawal S, Singh A, Biswas R, Singh A. Retrospective review of maternal deaths and maternal near misses due to major obstetric haemorrhage at a tertiary care centre in India. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2019 Aug 1;8(8):3431-5.

3. Kulkarni R, Kshirsagar H, Begum S, Patil A, Chauhan S. Maternal near miss events in India. Indian Journal of Medical Research. 2021 Oct 1;154(4):573-82.

4. Abdollahpour S, Miri HH, Khadivzadeh T. The global prevalence of maternal near miss: a systematic review and meta-analysis. Health promotion perspectives. 2019;9(4):255.

5. Tiwari P, Seetha PM, Nirmala C.A review of severe acute maternal morbidity (SAMM) through “Three Delays Model” India. JMSCR 2017 March;03 ;(5) 19196-19202.

6. Thaddeus S, Maine D. Too far to walk: maternal mortality in context. Social science & medicine. 1994 Apr 1;38(8):1091-110.

7. Thorat MA. Best practice and research clinical obstetrics and gynaecology. Preface. Best Pract Re Clin Obstet Gynaecol. 2020;65:18e31.

8. Stein, CM & Muir J. The causes of delayed diagnosis of cancer of the cervix in Zimbabwe. Central african journal of medicine. 1986 Feb 1;32(2):29-31.

9. Balachandran DM, Karuppusamy D, Maurya DK, Kar SS, Keepanasseril A. Indicators for maternal near miss: an observational study, India. Bulletin of the World Health Organization. 2022 Jul 7;100(7):436.

10. MATERNAL NEAR MISS REVIEW December 2014 Operational Guidelines

11. Sayyed et al. A Descriptive Study of Maternal Near Miss Mortality in the Department of Obstetrics and Gynaecology at SMS Medical College. International Journal of Pharmaceutical and Clinical Research. 2023; 15(5); 275-281

12. Souza JP, Cecatti JG, Haddad SM, Parpinelli MA, Costa ML, Katz L, Say L. The WHO maternal near-miss approach and the maternal severity index model (MSI): tools for assessing the management of severe maternal morbidity.

13. Say L, Souza JP, Pattinson RC. Maternal near miss–towards a standard tool for monitoring quality of maternal health care. Best practice & research Clinical obstetrics & gynaecology. 2009 Jun 1;23(3):287-96.

14.World Health Organization. Trends in maternal mortality: 1990 to 2013: estimates by WHO, UNICEF, UNFPA, The World Bank and the United Nations Population Division: executive summary. World Health Organization; 2014.

15. United Nations Department of Economic and Social Affairs. The sustainable development goals report 2016. UN; 2016.

16. Pande RP, Ogwang S, Karuga R, Rajan R, Kes A, Odhiambo FO, Laserson K, Schaffer K. Continuing with "… a heavy heart"-consequences of maternal death in rural Kenya. Reproductive health. 2015 Dec;12:1-2.

17. Nayana, Narayani . MATERNAL NEAR MISS: A RETROSPECTIVE STUDY IN TERTIARY CARE HOSPITAL: International Journal of Medicine and Public Health.2024 SEPT ;14(3):398-402.

18. Chhabra P. Maternal near miss: an indicator for maternal health and maternal care. Indian Journal of Community Medicine. 2014 Jul 1;39(3):132-7.

19. Jeena et al. Maternal Near Miss: An Analysis of Severe Maternal Morbidity and Its Determinants in a Tertiary Care Hospital. International Journal of Pharmaceutical and

Clinical Research. 2024; 16(11); 1500-1505

20. Chonla A, Gupta S. Maternal near miss in a tertiary care hospital: A retrospective and prospective observational study. Indian Journal of Obstetrics and Gynecology Research. 2023;10(3):289-93.

21. Teshome HN, Ayele ET, Hailemeskel S, Yimer O, Mulu GB, Tadese M. Determinants of maternal near-miss among women admitted to public hospitals in North Shewa Zone, Ethiopia: A case-control study. Frontiers in Public Health. 2022 Aug 25;10:996885.

22. Prasad C, Gupta B, Singh A. Study of maternal near miss in tertiary care center: prospective observational study in Lady Hardinge Medical College, Delhi, India. Int J Innov Res Med Sci. 2022;7(07):374-81.

23.Maity S, Chaudhuri S. An observational study on maternal mortality and maternal near miss in a selected facility of West Bengal. Indian Journal of Public Health. 2022 Jul 1;66(3):371-4.

24. Panda B, Panda SK, Satapathy DM, Mishra RP. Maternal near miss-an indicator of maternal health in a tertiary care hospital of odisha. Infection. 2018;2:2-.

25. Rajkumari P . Maternal near Miss: An Indicator of Maternal Health. IOSR Journal of Dental and Medical Sciences (IOSR-JDMS) 2017;16(3):9-15.

26. Bakshi RK, Aggarwal P, Roy D, Nautiyal R, Kakkar R. Indicators of maternal near miss morbidity at different levels of health care in North India: A pilot study. Bangladesh Journal of Medical Science. 2015 Jun 20;14(3):254-7.

27. https://data.unicef.org/topic/maternal-health/maternal-mortality/ unicef

28. https://www.who.int/news-room/fact-sheets/detail/maternal-mortality#:~:text=Every%20day%20in%202020%2C%20almost%20800%20women%20died,death%20occurred%20almost%20ewho

29. Meh C, Sharma A, Ram U, Fadel S, Correa N, Snelgrove JW, Shah P, Begum R, Shah M,

Hana T, Fu SH. Trends in maternal mortality in India over two decades in nationally representative surveys. BJOG: An International Journal of Obstetrics & Gynaecology. 2022 Mar;129(4):550-61.

30. Pell C, Menaca A, Were F, Afrah NA, Chatio S, Manda-Taylor L, Hamel MJ, Hodgson A, Tagbor H, Kalilani L, Ouma P. Factors affecting antenatal care attendance: results from qualitative studies in Ghana, Kenya and Malawi. PloS one. 2013 Jan 15;8(1):e53747.

31. Meitei WB, Singh A. The nexus between maternal antenatal care attendance, newborn postnatal care and neonatal mortality in India: a matched case-control study. BMC Pregnancy and Childbirth. 2024 Oct 22;24(1):691.

32.Nihal S, Shekhar C. An assessment of adequate quality antenatal care and its determinants in India. BMC Pregnancy and Childbirth. 2024 Oct 24;24(1):698.

33. Hamal M, Dieleman M, De Brouwere V, de Cock Buning T. Social determinants of maternal health: a scoping review of factors influencing maternal mortality and maternal health service use in India. Public Health Reviews. 2020 Dec;41:1-24.

34.Kuppusamy P, Prusty RK, Kale DP. High-risk pregnancy in India: Prevalence and contributing risk factors–a national survey-based analysis. Journal of Global Health. 2023;13.

35. Mgaya AH, Massawe SN, Kidanto HL, Mgaya HN. Grand multiparity: is it still a risk in pregnancy?. BMC pregnancy and childbirth. 2013 Dec;13:1-8.

36. Esteves-Pereira AP, Deneux-Tharaux C, Nakamura-Pereira M, Saucedo M, Bouvier-Colle MH, Leal MD. Caesarean delivery and postpartum maternal mortality: a population-based case control study in Brazil. PloS one. 2016 Apr 13;11(4):e0153396.

37. Nair M, Kurinczuk JJ, Brocklehurst P, Sellers S, Lewis G, Knight M. Factors associated with maternal death from direct pregnancy complications: a UK national case–control study. BJOG: An International Journal of Obstetrics & Gynaecology. 2015 Apr;122(5):653-62.

38. **Tavera G, Dongarwar D, Salemi JL, Akindela O, Osazuwa I, Akpan EB, Okolie U, Johnson M, Spooner KK, Akpan UI, Yusuf KK. Diabetes in pregnancy and risk of near-miss, maternal mortality and foetal outcomes in the USA: a retrospective cross-sectional analysis. Journal of Public Health. 2022 Sep;44(3):549-57.**

39. Ingole SJ, Chaudhary SN. Maternal Near Miss Events in Tertiary Care Hospital: A Retrospective Observational Study. Journal of Clinical & Diagnostic Research. 2021 Apr 1;15(4).

40. Habte A, Bizuayehu HM, Lemma L, Sisay Y. Road to maternal death: the pooled estimate of maternal near-miss, its primary causes and determinants in Africa: a systematic review and meta-analysis. BMC Pregnancy and Childbirth. 2024 Feb 17;24(1):144.

41. Agarwal N, Jain V, Bagga R, Sikka P, Chopra S, Jain K. Near miss: determinants of maternal near miss and perinatal outcomes: a prospective case control study from a tertiary care center of India. The Journal of Maternal-Fetal & Neonatal Medicine. 2022 Dec 12;35(25):5909-16.

42. Lotufo FA, Parpinelli MA, Haddad SM, Surita FG, Cecatti JG. Applying the new concept of maternal near-miss in an intensive care unit. Clinics. 2012 Mar 1;67(3):225-30.

43. World Health Organization. Evaluating the quality of care for severe pregnancy complications: the WHO near-miss approach for maternal health.

44. MATERNAL NEAR MISS REVIEW December 2014 Operational Guidelines

45. Samant PY, Dhanawat J. Maternal near miss: an Indian tertiary care centre audit. Int J Reprod Contracept Obstet Gynecol. 2019;8(5):1874-9.

46. Naderi T, Foroodnia S, Omidi S, Samadani F, Nakhaee N. Incidence and correlates of maternal near miss in Southeast Iran. International journal of reproductive medicine. 2015;2015(1):914713.

47. Gupta SK, Pal DK, Tiwari R, Garg R, Shrivastava AK, Sarawagi R, Patil R, Agarwal L, Gupta P, Lahariya C. Impact of Janani Suraksha Yojana on institutional delivery rate and maternal morbidity and mortality: an observational study in India. Journal of health, population, and nutrition. 2012 Dec;30(4):464.

48. Soma-Pillay P, Pattinson RC, Langa-Mlambo L, Nkosi BS, MacDonald AP. Maternal near miss and maternal death in the Pretoria Academic Complex, South Africa: A population-based study. South African Medical Journal. 2015 Nov 9;105(7):578-83.

49. Singh V, Barik A. Maternal Near-Miss as a Surrogate indicator of the quality of obstetric care: a study in a tertiary care hospital in Eastern India. CureusJ. 2021 Jan;13(1).

50. Patankar A, Uikey P, Rawlani N. Severe acute maternal morbidity (near miss) in a tertiary care center in Maharashtra: A prospective study. International Journal of Scientific Study. 2016 Apr 1;4(1):134-40.

51. National health mission

52. Visi V, Akoijam BS. A review of maternal near miss cases in selected hospitals in North-East India. Indian Journal of Community Medicine. 2021 Jul 1;46(3):421-4.

53. Sitaula S, Basnet T, Agrawal A, Manandhar T, Das D, Shrestha P. Prevalence and risk factors for maternal mortality at a tertiary care centre in Eastern Nepal-retrospective cross sectional study. BMC Pregnancy and Childbirth. 2021 Dec;21:1-8.

54. Anane-Fenin B, Agbeno EK, Osarfo J, Opoku Anning DA, Boateng AS, Ken-Amoah S, Amanfo AO, Derkyi-Kwarteng L, Mouhajer M, Amoo SA, Ashong J. A ten-year review of indications and outcomes of obstetric admissions to an intensive care unit in a low-resource country. Plos one. 2021 Dec 31;16(12):e0261974.

55. Raj SS, Manthri S, Sahoo PK. Emergency referral transport for maternal complication: lessons from the community based maternal death audits in Unnao district, Uttar Pradesh, India. International journal of health policy and management. 2015 Jan 14;4(2):99.

56. Samant PY, Dhanawat J. Maternal near miss: an Indian tertiary care centre audit. Int J Reprod Contracept Obstet Gynecol. 2019 May;8(5):1874-9.

57. Yunus S, Kauser S, Ali S. Three ‘delays’ as a framework for critical analysis of maternal near miss and maternal mortality. J South Asian Feder Obst Gynae. 2013 May;5:57-9.

58. Tavera G, Dongarwar D, Salemi JL, Akindela O, Osazuwa I, Akpan EB, Okolie U, Johnson M, Spooner KK, Akpan UI, Yusuf KK. Diabetes in pregnancy and risk of near-miss, maternal mortality and foetal outcomes in the USA: a retrospective cross-sectional analysis. Journal of Public Health. 2022 Sep;44(3):549-57.

59.Drechsel KC, Adu-Bonsaffoh K, Loohuis KM, Srofenyoh EK, Boateng D, Browne JL. Maternal near-miss and mortality associated with hypertensive disorders of pregnancy remote from term: a multicenter observational study in Ghana. AJOG Global Reports. 2022 May 1;2(2):100045.

60. E. T, Dhaded S, Anjum M, Humera A. Study of maternal near miss cases at a tertiary centre. Int J Reprod Contracept Obstet Gynecol. 2025 Feb. 26;14(3):837-42.

61. Shrestha J, Shrestha R, Tuladhar R, Gurung S, Shrestha A. Maternal near miss in a tertiary care teaching hospital. American Journal of Public Health Research. 2015;3(5A):17-22.

62. Bakshi RK, Roy D, Aggarwal P, Nautiyal R, Chaturvedi J, Kakkar R. Application of WHO ‘Near-Miss’ Tool Indicates Good Quality of Maternal Care in Rural Healthcare Setting in Uttarakhand, Northern India. Journal of Clinical and Diagnostic Research: JCDR. 2016 Jan 1;10(1):LC10.

63. Sunanda N, Sudha R, Impana M. Analysis of maternal near miss cases in a tertiary care hospital. Int J Reprod Contracept Obstet Gynecol 2023;12:1248-52.

64.Chonla A, Gupta S. Maternal near miss in a tertiary care hospital: A retrospective and prospective observational study. Indian Journal of Obstetrics and Gynecology Research.

2023;10(3):289-93.

65. Rakesh HJ, Diana. Study of prevalence and factors associated with Maternal Near Miss (MNM) cases and maternal death at Rajiv Gandhi Government Women and Children Hospital, Pondicherry, India. Int J Reprod Contracept Obstet Gynecol. 2018;7(3):1048–53.

66.Sangeeta G, Leena W, Taru G, Sushma K, Nupur G, Amrita P. Evaluation of severe maternal outcomes to assess quality of maternal health care at a tertiary center. J Obstet Gynaecol India. 2015;65(1):23–7.

67. Patel P, Nagar JK, Patel RK, Kaur S. Study of maternal near miss as an indicator of quality of obstetrics care in tertiary care centre: a prospective study. International Journal of Reproduction, Contraception, Obstetrics and Gynecology.;12(7):2140.

68. Sunanda N, Sudha R, Impana M. Analysis of maternal near miss cases in a tertiary care hospital. Int J Reprod Contracept Obstet Gynecol 2023;12:1248-52.

69. Bakshi RK, Roy D, Aggarwal P, Nautiyal R, Chaturvedi J, Kakkar R. Application of WHO 'Near-Miss' Tool Indicates Good Quality of Maternal Care in Rural Healthcare Setting in Uttarakhand, Northern India. Journal of Clinical and Diagnostic Research: JCDR. 2016 Jan 1;10(1):LC10.

70. Chandran JR, Raj SV, Devi SD, Ramachandran A.Maternal near miss review from a tertiary care center in South India.Int J Reprod Contracept Obstet Gynecol2016;5:2657-60.

71. Lewis PF, Gundaiah B, Bavdekar NB. Fetal outcome in maternal near miss, retro-prospective study at tertiary centre. Int J Reprod Contracept Obstet Gynecol 2022;11:1426-31.

ANNEXURE-VII

BLDE(DEEMED TO BE UNIVERSITY) SHRI B.M.PATIL MEDICAL COLLEGE HOSPITAL AND RESEARCH CENTRE VIJAYAPURA -586103

INFORMED CONSENT FOR PARTICIPATION IN DISSERTATION/RESEARCH

I, the undersigned,_____D/OW/O_____,_____years, ordinarily resident_____do hereby state/declare that Dr Aparna S Patil of Shri.B.M.Patil Medical College Hospital and Research Centre have examined me thoroughly_____(place), and it hasbeen explained to me in my own language about the study.

Further, **Dr APARNA S PATIL** informed me that he/she is conducting a dissertation/research titled **"A PROSPECTIVE OBSERVATIONAL STUDY OF MATERNAL NEAR-MISS(MNM) CASES AT TERTIARY CARE CENTRE "** under the guidance of **Dr ARUNA M BIRADAR** requesting my participation in the study. The doctor has informed me that my participation in thisstudy helped in the evaluation of the results of the study, which is a useful reference for the treatment of other similar cases in the near future.

The Doctor has also informed me that information given by me, observations made/ photographs/videographs taken upon me by the investigator will be kept secret and not assessed by a person other than my legal heir except for academic purposes or me.

The Doctor did inform me that though my participation is purely voluntary, based on the information given by me, I can ask for any clarification during treatment/study

related to diagnosis,the procedure of treatment,result of treatment or prognosis.At the same time,I have been informed that I can withdraw from my participation in this study at any time I want or theinvestigator can terminate me from the course at any time but not the procedure of treatment andfollow up unless I request to be discharged. After understanding the nature of the dissertation or research,diagnosis made,and mode of treatment.I am giving consent for the investigations required and also for the follow up.

I the undersigned Shri/Smt_____, under my fully conscious state of mind agree to participate in the said research/dissertation.

Signature of the patient: Date :

Signature of Doctor Place:

ಸಮ್ಮತಿ ನಮೂನೆ

ಬಿ ಎಲ್ ಡಿ ಇ ಮೆಡಿಕಲ್ ಕಾಲೇಜ ಮತ್ತು ಆಸ್ಪತ್ರೆ, ಪ್ರಸೂತಿ ಮತ್ತು ಸ್ತ್ರೀರೋಗ ಇಲಾಖೆ ,ವಿಜಯಪುರ.

ನಾನು ...., ಕೆಳಗೆ ಸಹಿ ಮಾಡಿರುವವರು ಈ ಮೂಲಕ ನನಗೆ ಸಮ್ಮತಿಯನ್ನು ನೀಡಿರುತ್ತಾರೆ " ಏ ಪ್ರೊಸ್ಪೆಕ್ಟಿವ್ ಆಬ್ಸರ್ವೆಶನಲ್ ಸ್ಟಡಿ ಆಫ್ ಮೆರ್ಟನಲ್ ನಿಯರ್ ಮಿಸ್ ಕೆಸಸ್ ಎಟ್ ರ್ಟೆಶರಿ ಕೆರ್ ಸೆಂಟರ್ " ಎಂಬ ವಿಷಯದ ಅಧ್ಯಯನ ಕುರಿತು, ಡಾ.ಅರ್ಪಣಾ ಎಸ್ ಪಾಟೀಲ್ ಆದ ನಾನು ಡಾ. ಅರುಣಾ ಎಂ ಬಿರಾದಾರ್ ಅವರ ರ್ಮಾಗರ್ದಶನದಲ್ಲಿ ನನಗೆ ಈ ರ್ಕಾಯವಿಧಾನದ ಬಗ್ಗೆ ತಿಳಿಸಲಾಗಿರುತ್ತದೆ ಮತ್ತು ಸಂಶೋಧನೆಗಳನ್ನು ಗೌಪ್ಯವಾಗಿ ಇರಿಸಲಾಗುತ್ತದೆ ಹಾಗೂ ವರದಿ ಮಾಡಲಾಗುತ್ತದೆ. ಅಧ್ಯಯನದಲ್ಲಿ ನಾನು ಯಾವುದೇ ಒತ್ತಡವಿಲ್ಲದೆ ಸ್ವಯಂಪ್ರೇರಿತ ಒಪ್ಪಿಗೆ ನೀಡಿರುತ್ತೇನೆ. ಈ ನಿಟ್ಟಿನಲ್ಲಿ ಯಾವುದೇ ಹಣಕಾಸಿನ ನೆರವು ಇರುವುದಿಲ್ಲ. ---------- (ಸಹಿ /ಎಡ ಹೆಬ್ಬೆರಳಿನ ಗುರುತು)

ರಕ್ಷಕನ ಹೆಸರು :------- ----------

ದಿನಾಂಕ:

ವಿಳಾಸ: ---------- ---------- ಸ್ಥಳ:

ಸಾಕ್ಷಿ-ಹೆಸರು : --- ----------

ದಿನಾಂಕ:

ಸಹಿ : ---------- ----------

ಸ್ಥಳ:

BLDE

(DEEMED TO BE UNIVERSITY)

Declared as Deemed to be University u/s 3 of UGC Act, 1956

Accredited with 'A' Grade by NAAC (Cycle-2)

The Constituent College

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

BLDE (DU)/IEC/ 875/2022-23 10/4/2023

INSTITUTIONAL ETHICAL CLEARANCE CERTIFICATE

The Ethical Committee of this University met on **Saturday, 18th March, 2023 at 11.30 a.m. in the CAL Laboratory, Dept. of Pharmacology,** scrutinizes the Synopsis/ Research Projects of Post Graduate Student / Under Graduate Student /Faculty members of this University /Ph.D. Student College from ethical clearance point of view. After scrutiny, the following original/ corrected and revised version synopsis of the thesis/ research projects has been accorded ethical clearance.

TITLE: "A PROSPECTIVE OBSERVATIONAL STUDY OF MATERNAL NEAR-MISS (MNM)CASES AT TERTIARY CARE CENTER".

NAME OF THE STUDENT/PRINCIPAL INVESTIGATOR: DR.APARNA S. PATIL

NAME OF THE GUIDE: DR.ARUNA M.BIRADAR, PROFESSOR, DEPT. OF OBSTETRICS AND GYNAECOLOGY

Dr. Santoshkumar Jeevangi
Chairperson
IEC, BLDE (DU),
VIJAYAPURA

Chairman,
Institutional Ethical Committee,
BLDE (Deemed to be University)
Vijayapura

Dr. Akram A. Naikwadi
Member Secretary
IEC, BLDE (DU),
VIJAYAPURA

MEMBER SECRETARY
Institutional Ethics Committee
BLDE (Deemed to be University)
Vijayapura-586103. Karnataka

Following documents were placed before Ethical Committee for Scrutinization:

- Copy of Synopsis/Research Projects
- Copy of inform consent form
- Any other relevant document

Smt. Bangaramma Sajjan Campus, B. M. Patil Road (Sholapur Road), Vijayapura - 586103, Karnataka, India.
BLDE (DU): Phone: +918352-262770, Fax: +918352-263303, Website: www.bldedu.ac.in, E-mail:office@bldedu.ac.in
College: Phone: +918352-262770, Fax: +918352-263019, E-mail: bmpmc.principal@bldedu.ac.in

DrillBit

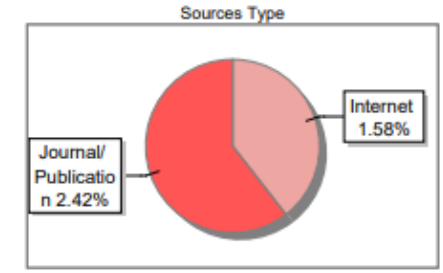
The Report is Generated by DrillBit Plagiarism Detection Software

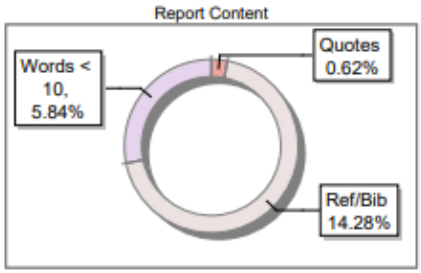
Submission Information

Author Name	APARNA. S. PATIL
Title	A PROSPECTIVE OBSERVATIONAL STUDY OF MATERNAL NEAR-MISS (MNM) CASES AT TERTIARY CARE CENTRE
Paper/Submission ID	3661241
Submitted by	somulalasangi@gmail.com
Submission Date	2025-05-24 15:55:54
Total Pages, Total Words	90, 14906
Document type	Thesis

Result Information

Similarity **4 %**

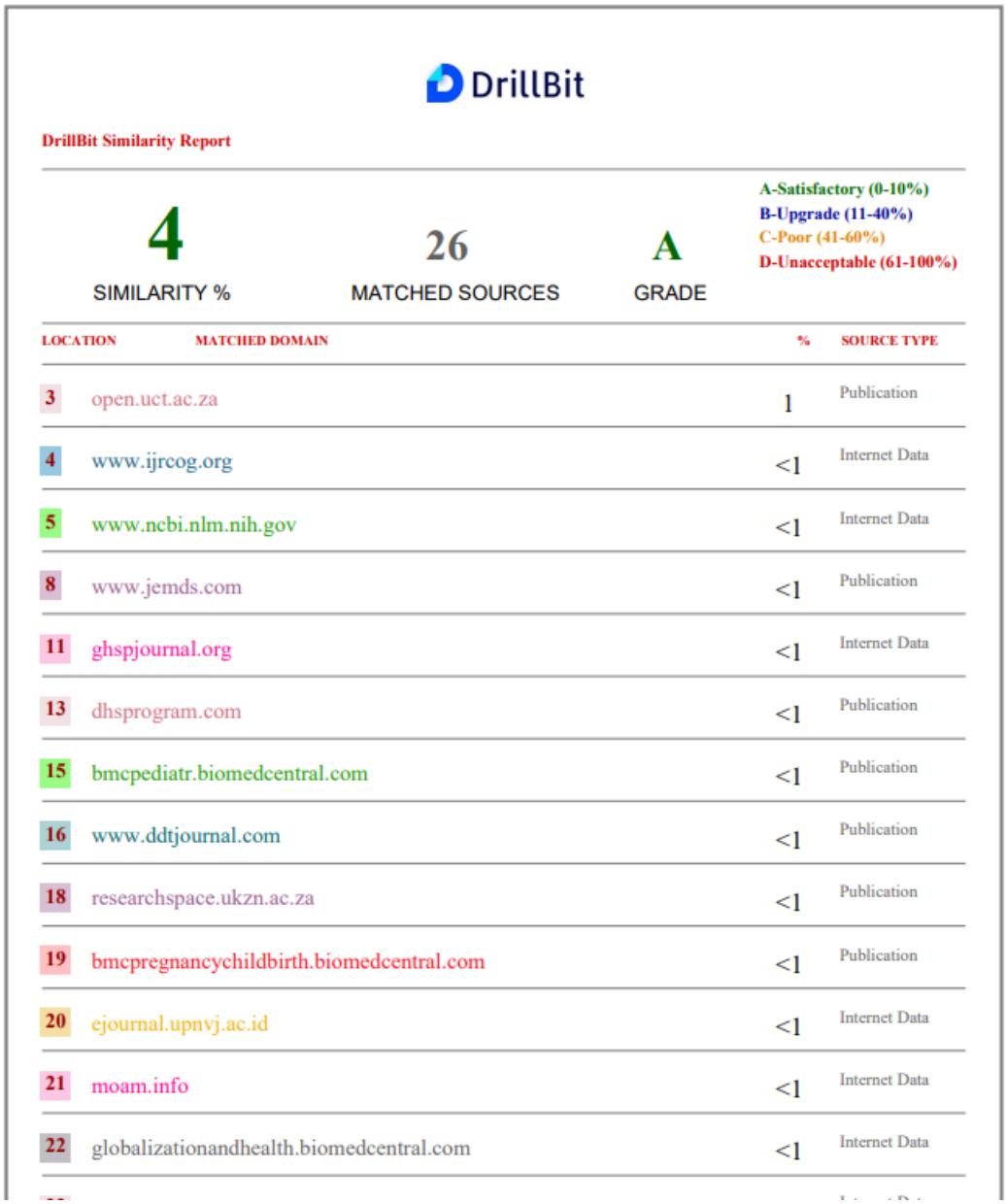




Exclude Information

Quotes	Excluded	Language	English
References/Bibliography	Excluded	Student Papers	Yes
Source: Excluded < 10 Words	Excluded	Journals & publishers	Yes
Excluded Source	**0 %**	Internet or Web	Yes
Excluded Phrases	Not Excluded	Institution Repository	Yes

A Unique QR Code use to View/Download/Share Pdf File



DrillBit

DrillBit Similarity Report

4	26	A
SIMILARITY %	MATCHED SOURCES	GRADE

A-Satisfactory (0-10%)
B-Upgrade (11-40%)
C-Poor (41-60%)
D-Unacceptable (61-100%)

LOCATION	MATCHED DOMAIN	%	SOURCE TYPE
3	open.uct.ac.za	1	Publication
4	www.ijrcog.org	<1	Internet Data
5	www.ncbi.nlm.nih.gov	<1	Internet Data
8	www.jemds.com	<1	Publication
11	ghspjournal.org	<1	Internet Data
13	dhsprogram.com	<1	Publication
15	bmcpediatr.biomedcentral.com	<1	Publication
16	www.ddtjournal.com	<1	Publication
18	researchspace.ukzn.ac.za	<1	Publication
19	bmcpregnancychildbirth.biomedcentral.com	<1	Publication
20	ejournal.upnvj.ac.id	<1	Internet Data
21	moam.info	<1	Internet Data
22	globalizationandhealth.biomedcentral.com	<1	Internet Data

SHRI B. M . PATIL MEDICAL COLLEGE, HOSPITAL AND RESEARCH CENTRE, VIJAYAPURA - 586103

Proforma

Case. no:

IP No:

Name:

Age:

Sex:

Address:

Occupation:

Contact no:

Resident of: Husband Name:

DOA: Phone no:

DO Study:

Place of Delivery:

Time of Delivery:

Time taken for Delivery(Onset of Labour to Delivery) : Home/Hospital Delivery/Ambulance Delivery :Referred from: PHC/CHC District Hospital Nursing Home/Private Hospital Time duration from referral to arrival:

Reasons for referral :

Problems Faced During Transport :

1) ANTENATAL H/O:

2) OBSTETRIC HISTORY :

1. Obstetric score:

2. Gestational age:

3. Booked/Unbooked

4. Total number of ultrasounds prior to admission:

5. Problems faced during Delivery:

A) Cesarean Section-Intra Operative

B) Vaginal Delivery-Intra partum/Postpartum-

3) MODE OFDELIVERY:

•Vaginal delivery:

• Instrumental delivery: A)Forceps - B)Vacuum -

• LSCS: A)Emergency-

B)Elective Indication:

Intra-op Complications:

4) FOETAL DETAILS:

- Sex of the baby

- Weight

- Live / IUD/ FSB/ Neonatal Death

- NICU Admission YES / NO

If Yes – Indicatio n : NICU Stay Duration

- At Discharge : Improved

Death - Cause:DAMA - Cause:

5) MATERNAL COMPLICATION AFTER ADMISSION

MEDICAL DISORDER	
DIC	
PROM	
GDM	
Epilepsy	
Cardiac Diseases	
Hypothyroidism	
Hyperthyroidism	
Bronchial Asthma	
Autoimmune disorder	
Gestational Hypertension	
HELLP Syndrome	
Acute Renal Failure	
Jaundice in pregnancy	

PLACENTAL ABNORMALITIES	
PLACENTA PREVIA	

ABRUPTIO PLACENTA	

OBSTETRIC COMPLICATION	
IUD	
PROM	
Multiple pregnancy	
Autoimmune disorder	
Polydromnios	
Preterm labor	
PIH	
Severe PE	
Rupture Uterus	
Eclampsia	

POSTPARTUM COMPLICATION	
PPH	
PRESS	
Sepsis	

Cebtral Venous Thrombosis	

Clinical Based Criteria	
Shock	
Acute Cyanosis	
Gasping	
RR>40 OR <6/min	
Oliguria	
Failure to form clots	
LOC >12hr	
Cardiac arrest	
Stroke	
Uncontrollable fits	
Preeclampsia with Jaundice	

Laboratory Based Criteria	
Oxygen Saturation<90%	
PaO2 /Fio2<200mmhg	
Creatinine≥3.5mg/dl	
Bilirubin 6mg/dl	

pH<7.1	
Lactate>5mmol/l	
Acute TCP<50,000/ml	
LOC and Ketoacids	

Management Based Criteria	
Use of continuous Vasoactive Drugs	
Hysterectomy due to haemorrhage or infection	
Transfusion≥5 units of blood	
Intubation	
Dialysis	
CPR	

CBC	
HB	
PCV	
MCV	
MCH	
MCHC	

ESR	
RDW	
RBC	
TC	
NEUTROPHILS	
LYMPHOCYTES	
EOSINOPHILS	
MONOCYTES	

BASOPHILS	
PLATELET	
URINE ROUTINE	
COLOUR APPEARANCE	
ALBUMIN	
SUGAR	
RBCS	
PUS CELLS	
EPI CELLS	
CASTS	

CRYSTALS	
COAGULATION **PROFILE**	
APTT	
PT TEST PT CONTROL	
INR	

LFT	
TSB	
CONJ	
UNCONJ	
SGPT	
SGOT	
SERUM PROTEIN	
ALBUMIN	
GLOBULIN	
AG RATIO	
ALP	

RFT	
UREA	
CREATININE	
URIC ACID	
S. Ca	
S. P	
S. Na	
S. K	
S. Cl	
ABG	

PH	
PCO2	
PO2	
HCO3	
SBC	
BEb	
BEecf	
TCO2	
A-ADO2	
SO2C	

FIO2	
LACTATE	
INFLAMMATORY MARKERS	
CRP	
D-DIMER	
IL-6	
FERRITIN	
LDH	
CARDIAC MARKES	
TROP I	
TROP T	

CPK-MB	
PRO-BNP	

6) <u>Interventions:</u>

A) ICU admission - YES / NO

B) Ventilator support - YES / NO . If YES, Duration-

C) Inotropic support - YES / NO . If YES, Drugs used and Duration-

D) Surgical intervention - 1)Peripartum hysterectomy

2) laparotomy

E) Transfusion- 1)Whole Blood -

2) PCV -

3) FFP -

4) Platelet-

F) Dialysis - YES / NO If YES, Frequency/ Cycles -

G) ICD insertion - YES / NO

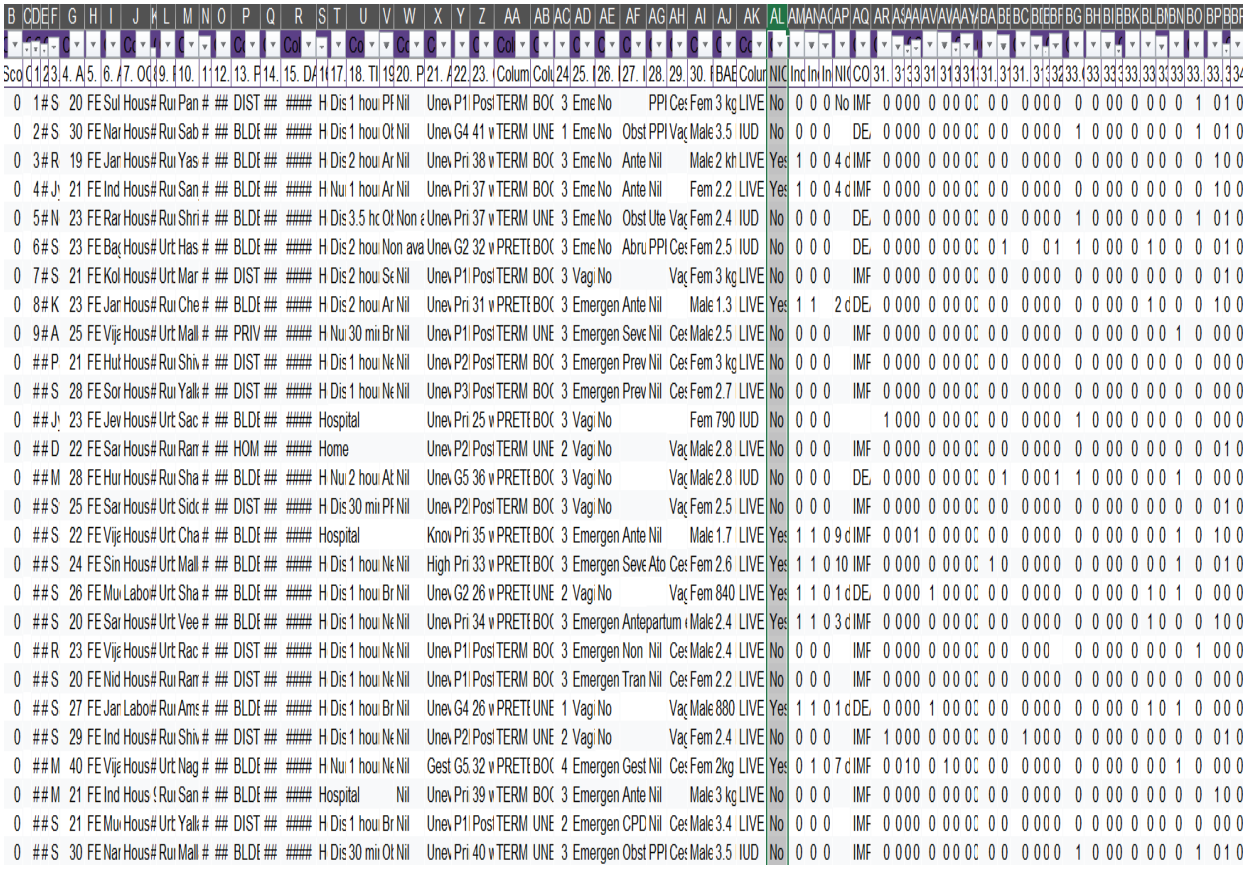
7)DRUGS (Additional):

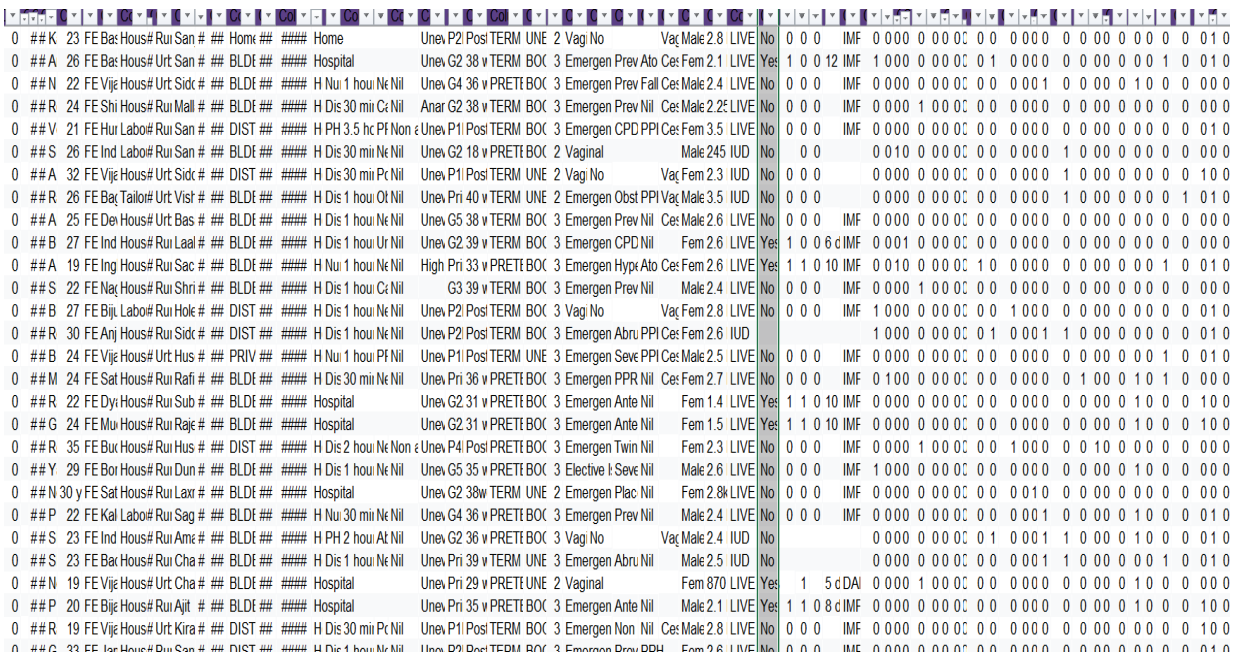
8)DURATION OF HOSPITAL STAY

9. PATIENT RECOVERY STATUS:

6) 10. SUMMARY:

Master chart





0	## R	25	FE	Ind	Hous#	Rur	Dev	#	##	BLDE	##	####	H Dis	30 min	Ar	Nil	Unev	Pri	32 v	PRETE	BOO	3	Emergen	Antepartum (			Fem	1.4	LIVE	Yes	1 1 0 3 d	DAI	0 000 0 00 0 0 0 0 000 0 0 00 0 1 0 0 0 1 0
0	## A	27	FE	Ind	Hous#	Rur	Lals	#	##	BLDE	##	####	H PH	2 hou	Ne	Nil	Know	G2	39 v	TERM	BOO	3	Emergen	Pers	Nil		Fem	2.6	LIVE	Yes	1 0 0 6 d	IMF	0 001 0 00 0 0 0 0 000 0 0 00 0 0 0 0 0 0 0
0	## S	23	FE	Sor	Hous#	Rur	Ram	#	##	BLDE	##	####	H PH	2 hou	Ot	Non a	Unev	Pri	39 v	TERM	BOO	3	Emergen	Obst	PPI	Vag	Male	3.5	IUD				0 000 0 00 0 0 0 0 000 1 0 00 0 0 0 0 1 0 1
0	## R	24	FE	Dav	Hous#	Rur	Sure	#	##	BLDE	##	####	H PH	2 hou	Ar	Non a	Unev	Pri	32 v	PRETE	BOO	3	Emergen	Ante	Nil		Male	2 kg	LIVE	Yes	1 1 0 7 d	IMF	0 000 0 00 0 0 0 0 000 0 0 00 0 1 0 0 0 1 0
0	## S	30	FE	Ma	Hous#	Rur	Vad	#	##	BLDE	##	####	H Dis	1 hou	Nc	Nil	Unev	G2	32 v	PRETE	BOO	4	Emergen	Prev	PPI	Ces	Male	2.5	IUD				0 000 0 00 0 0 1 0 001 1 0 00 0 1 0 0 0 0 1
0	## M	26	FE	Vija	Hous#	Rur	Hira	#	##	BLDE	##	####	H PH	2 hou	Ne	Non a	Unev	G5	32 v	PRETE	BOO	4	Emergen	Seve	Nil	Ces	Fem	2 kg	LIVE	Yes	0 1 0 7 d	IMF	0 010 0 10 0 0 0 0 000 0 0 00 0 0 1 0 0 0
0	## R	27	FE	Bag	Hous#	Urt	Kall	#	##	DIST	##	####	H Dis	1 hou	Ne	Nil	Unev	P2	Post	TERM	BOO	3	Vaginal			Vag	Fem	2.4	LIVE	No	0 0 0	IMF	1 000 0 00 0 0 0 1 000 0 0 00 0 0 0 0 0 1
0	## C	27	FE	Uka	Hous#	Rur	Sidr	#	##	BLDE	##	####	Hospital				Unev	G2	36 v	PRETE	BOO	4	Emergen	Ante	Nil		Fem	3 kg	LIVE	Yes	1 0 0 4 d	IMF	0 000 0 00 0 0 0 0 000 0 0 00 0 1 0 0 0 1 0
0	## N	23	FE	Bag	Hous#	Rur	Ana	#	##	BLDE	##	####	H PH	2 hou	Ne	Nil	Unev	Pri	39 v	TERM	UNE	3	Emergen	Shor	Ato	Ces	Fem	2.5	LIVE	No	0 0 0	IMF	0 000 0 00 0 0 0 0 000 0 0 00 0 0 1 0 0 1
0	## A	28	FE	Bas	Tailor#	Urt	Nus	#	##	BLDE	##	####	Hospital				Unev	G3	39 v	TERM	UNE	3	Vagi	Vaccum		Vag	Male	3.2	LIVE	Yes	1 0 1 5 d	IMF	0 000 0 10 0 0 0 0 000 0 0 00 1 0 0 0 0 1
0	## B	28	FE	Vija	Hous#	Urt	Gur	#	##	BLDE	##	####	H Dis	30 min	Br	Nil	Unev	G3	35 v	PRETE	UNE	3	Emergen	Bree	Nil	Ces	Fem	2.2	LIVE	No	0 0 0	IMF	0 000 0 00 0 0 0 0 000 0 0 00 0 1 0 0 0 0
0	## P	24	FE	Sug	Hous#	Rur	San	#	##	BLDE	##	####	H Nu	1 hou	Ne	Nil	Unev	G4	35 v	PRETE	BOO	3	Emergen	Prev	Intr	Ces	Male	2.4	LIVE	No	0 0 0	IMF	0 000 0 00 0 0 0 0 001 0 0 00 0 1 0 0 0 0
0	## S	26	FE	Ker	Hous#	Rur	Shiv	#	##	BLDE	##	####	Hospital				Gest	G3	29 v	PRETE	BOO	2	Emergen	Ante	Nil	Ces	Fem	700	LIVE	Yes	0 1 0 3 d	IMF	0 000 0 00 0 0 1 0 000 0 0 00 0 0 0 0 0 1 0
0	## B	22	FE	Tac	Hous#	Rur	Ram	#	##	BLDE	##	####	Hospital				Unev	Pri	34 v	PRETE	BOO	4	Vaginal				Male	1.6	IUD				1 000 0 00 0 0 0 0 000 1 0 00 0 0 1 0 0 0 0
0	## S	29	FE	Vija	Hous#	Urt	Cha	#	##	PRIV	##	####	H Nu	3.5 hc	Br	Nil	Unev	P2	Post	TERM	BOO	3	Vagi	No		Vag	Male	2.8	LIVE	No	0 0 0	IMF	0 000 0 00 0 0 0 0 000 0 0 00 0 0 1 0 0 0
0	## A	22	FE	Kur	Hous#	Rur	Pras	#	##	BLDE	##	####	H Nu	1 hou	Ne	Nil	High	Pri	33 v	PRETE	BOO	3	Emergen	Hype	Nil		Fem	2.6	LIVE	Yes	1 0 0 5 d	IMF	0 010 0 00 0 1 0 0 000 0 0 00 0 0 1 0 0 0
0	## S	26	FE	Hur	Hous#	Rur	Sure	#	##	DIST	##	####	H Dis	1 hou	Ne	Nil	Unev	P2	Post	TERM	BOO	3	Vaginal			Vag	Male	3.2	LIVE	No	0 0 0	IMF	0 000 0 00 1 0 0 0 000 0 0 00 0 0 0 0 0 0
0	## S	27	FE	Sat	Hous#	Rur	Som	#	##	BLDE	##	####	H Nu	2 hou	Ar	Nil	Unev	Pri	31 v	PRETE	BOO	3	Emergen	Ante	Nil		Male	1.3	LIVE	Yes	0 1 0 12	IMF	0 000 0 00 0 0 0 0 000 0 0 00 0 1 0 0 0 1 0
0	## S	23	FE	Ind	Hous#	Rur	Ram	#	##	BLDE	##	####	Hospital				High	Pri	38 v	TERM	BOO	3	Emergen	Ante	Nil		Male	2.1	LIVE	Yes	1 1 0 6 d	IMF	0 001 0 00 0 0 0 0 000 0 0 00 0 0 0 0 0 1 0
0	## R	30	FE	Kol	Hous#	Rur	Ravi	#	##	DIST	##	####	H Dis	1 hou	Ne	Nil	Unev	P1	Post	TERM	BOO	3	Emergen	CPD	Nil	Ces	Male	2.4	LIVE	No	0 0 0	IMF	0 000 0 00 0 0 0 0 000 0 0 00 0 0 0 0 1 0 0
0	## R	23	FE	Yal	Hous#	Rur	Bas	#	##	BLDE	##	####	H Dis	30 min	Se	Nil	Unev	G3	26 v	PRETE	UNE	2	Vaginal				Male	700	LIVE	Yes	1 1 0 1 d	DE	0 000 1 00 0 0 0 0 000 0 0 00 0 1 0 1 0 0 0
0	## A	29	FE	Vija	Hous#	Urt	Md a	#	##	BLDE	##	####	H PH	30 min	Pl	Nil	Unev	G3	38 v	TERM	BOO	3	Emergen	Plac	PPI	Ces	Male	2.9	LIVE	No	0 0 0	IMF	0 000 0 00 0 0 0 0 010 0 0 00 0 0 0 0 0 1
0	## P	23	FE	Vija	Hous#	Urt	Ana	#	##	BLDE	##	####	H Nu	30 min	Ru	Nil	Unev	G2	10 weeks		BOO	1			Hemoperitoneum								0 000 0 00 0 0 0 0 000 0 0 00 0 0 0 0 0 0
0	## S	26	FE	Alm	Hous#	Urt	Raja	#	##	BLDE	##	####	H PH	2 hou	Ar	Non a	Unev	G2	39 v	TERM	BOO	3	Emergen	Abru	Nil		Male	2.5	IUD				1 000 0 00 0 0 0 0 001 1 0 00 0 0 1 0 0 0
0	## Jy	23	FE	Bas	Hous#	Rur	Sha	#	##	BLDE	##	####	H PH	30 min	Ar	Nil	Unev	G4	36 v	PRETE	BOO	3	Emergen	Ante	Nil		Fem	3 kg	LIVE	Yes	1 0 0 4 d	IMF	0 000 0 00 0 0 0 0 000 0 0 00 0 1 0 0 0 1 0
0	## M	27	FE	Vija	Hous#	Urt	Rac	#	##	PRIV	##	####	H Nu	30 min	PF	Nil	Unev	P2	Post	TERM	UNE	3	Vagi	No		Vag	Fem	3.2	LIVE	No	0 0 0	IMF	0 000 0 00 0 0 0 0 000 0 0 00 0 0 0 0 0 1
0	## S	25	FE	Ma	Hous#	Rur	San	#	##	BLDE	##	####	H Dis	30 min	Ot	Nil	Unev	Pri	40 v	TERM	BOO	3	Emergen	Obst	PPI	Vag	Male	3.2	IUD				0 000 0 00 0 0 0 0 000 1 0 00 0 0 0 0 0 1
0	## S	26	FE	Dav	Hous#	Rur	Mall	#	##	BLDE	##	####	H Dis	2 hou	Nc	Nil	Unev	G2	32 v	PRETE	BOO	3	Emergen	Abru	PPI	Ces	Fem	2.5	IUD				0 000 0 00 0 0 1 0 001 1 0 00 0 1 0 0 0 0 1

0	## S	26	FE	Da	Hous#	Rur	Mall	#	##	BLDE	##	####	H Dis	2 hou	Nc	Nil	Unev	G2	32 v	PRETE	BOO	3	Emergen	Abru	PPI	Ces	Fem	2.5	IUD				0 000 0 00 0 0 1 0 001 1 0 00 0 1 0 0 0 0 1 0
0	## V	24	FE	Ara	Hous#	Rur	Nan	#	##	DIST	##	####	H Dis	30 min	Br	Nil	Unev	P2	Post	TERM	UNE	2	Emergen	Prev	Nil	Ces	Fem	3.2	LIVE	No	0 0 0	IMF	0 000 0 00 0 0 0 0 000 0 0 00 0 0 0 0 0 0 0 0
0	## S	32	FE	Bal	Hous#	Rur	Shri	#	##	BLDE	##	####	Hospital				GDM	G2	36 v	PRETE	BOO	4	Emergen	Seve	Nil		Fem	3.4	LIVE	No	0 0 0	IMF	0 010 0 00 0 0 0 0 000 0 0 00 0 0 0 0 0 0 0 0
0	## S	26	FE	Sha	Hous#	Urt	Yog	#	##	BLDE	##	####	Hospital				Unev	G4	35 v	PRETE	BOO	4	Emergen	Ante	Nil		Fem	3 kg	LIVE	Yes	1 0 0 4 d	IMF	0 000 0 00 0 0 0 0 000 0 0 00 0 1 0 0 0 1 0 1
0	## J	27	FE	Du	Hous#	Rur	Mal	#	##	PRIV	##	####	H Nu	30 min	Pc	Nil	Unev	P2	Post	TERM	BOO	3	Vaginal			Vag	Fem	2.8	LIVE		0 0 0	IMF	0 000 0 00 0 0 0 0 000 0 0 00 0 0 1 0 0 0 0
0	## J	29	FE	Chi	Hous#	Urt	Kris	#	##	BLDE	##	####	Hospital				Hypc	Pri	39 v	TERM	UNE	3	Emergen	CPD	PPI	Ces	Male	3.04	LIVE	No	0 0 0	IMF	0 000 0 10 0 0 0 0 000 0 1 00 0 0 0 0 0 1 0
0	## S	24	FE	Na	Hous#	Rur	Bas	#	##	BLDE	##	####	H Dis	2 hou	Ar	Nil	Unev	G3	36 v	PRETE	BOO	3	Vaginal			Vag	Male	2.8	IUD				0 000 0 00 0 0 1 0 001 1 0 00 0 1 0 0 0 0 1 0
0	## S	27	FE	Ko	Hous#	Rur	Amc	#	##	BLDE	##	####	Hospital				Unev	Pri	35 v	PRETE	BOO	3	Emergen	Antepartum (			Male	2.1	LIVE	Yes	1 1 0 8 d	IMF	0 000 0 00 0 0 0 0 000 0 0 00 0 1 0 0 0 1 0 0
0	## S	25	FE	Jav	Hous#	Rur	Iran	#	##	BLDE	##	####	H PH	1 hou	Ne	Nil	High	Pri	33 v	PRETE	BOO	3	Emergen	Hype	Atonic I		Fem	3.4	LIVE	Yes	1 0 0 3 d	IMF	0 000 0 00 0 1 0 0 000 0 0 00 0 0 1 0 0 0 0
0	## S	23	FE	Gu	Hous#	Rur	Mall	#	##	Ambu	##	####	Ambulance				Unev	G2	39 v	TERM	UNE	2	Vagi	No		Vag	Male	3.2	LIVE	No		IMF	0 000 0 00 0 0 0 0 000 0 0 00 0 0 0 0 0 1 0
0	## S	30	FE	Vija	Hous#	Urt	San	#	##	BLDE	##	####	H Dis	1 hou	Ne	Nil	Unev	Pri	38 v	TERM	UNE	3	Emergen	Ante	Nil		Male	3 kg	LIVE	No	0 0 0	IMF	0 000 0 00 0 0 0 0 000 0 0 00 0 0 0 0 1 0 0
0	## S	23	FE	Vija	Hous#	Urt	San	#	##	BLDE	##	####	H Dis	1 hou	Ot	Nil	Unev	Pri	39 v	TERM	BOO	4	Emergen	Obst	PPI	Vag	Male	3.2	IUD				0 000 0 00 0 0 0 0 000 1 0 00 0 0 0 0 1 0 1 0
0	## R	27	FE	Afz	Hous#	Urt	Ami	#	##	DIST	##	####	H Dis	30 min	Br	Nil	Unev	P3	Post	TERM	BOO	4	Emergen	Prev	Nil	Ces	Male	3 kg	LIVE	No	0 0 0	IMF	0 000 0 00 0 0 0 0 000 0 0 00 0 0 0 0 0 0 0 0
0	## A	31	FE	Ch	Hous#	Rur	Gan	#	##	BLDE	##	####	H Dis	1 hou	Ar	Nil	Unev	G3	39 v	TERM	BOO	4	Emergen	Feta	Nil		Male	3.7	LIVE	Yes	1 0 0 6 d	IMF	0 000 0 00 0 0 0 0 001 0 0 00 0 0 0 0 0 0 0 0
0	## L	23	FE	Tali	Hous#	Urt	Ran	#	##	BLDE HOSPITAL			Nu	2 hou	Ru	Nil	Unev	G2	9 weeks 1 day			1			Hemoperitoneum								0 000 0 00 0 0 0 0 000 0 0 00 0 0 0 0 0 0 0 0
0	## J	24	FE	Bal	Hous#	Rur	Ran	#	##	BLDE	##	####	Hospital				Unev	G2	40 v	TERM	BOO	4	Emergen	Prev	Nil		Male	2.8	LIVE	No		IMF	0 000 0 00 0 0 1 0 000 0 0 00 0 0 1 0 0 0 0
0	## J	25	FE	Sa	Hous#	Urt	Amt	#	##	BLDE	##	####	Hospital				Hype	G3	28 v	PRETE	BOO	2	Emergen	Ante	Nil		Fem	780	LIVE	Yes	1 1 0 1 d	DE	0 000 0 00 0 1 0 0 000 0 0 00 0 0 0 0 0 1 0 1