Summer Internship Report

at

Piramal Swasthya Foundation

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A Report

By

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On

Reproductive, Maternal, Newborn, Child, Adolescent Health and Nutrition practices among recently delivered mothers of children aged 0-23 months in rural Bihar

Under guidance of

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I see this as a major turning point in my professional growth. I'm determined to make the most of the abilities and information I've acquired, and I'll keep trying to get better in order to meet my professional goals. I'm excited to work with each and every one of you in the future.

Sincerely,

Shivam Kumar Sharma

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ACRONYMS/ABBREVIATIONS

BPCR-birth preparedness and complication readiness.

ANC-antenatal care.

ASHA- Accredited Social Health activist.

MCP- Mother Child protection card

NFHS- National Family Health Survey

NHM- National Health Mission

MMR-maternal mortality rate

SBA-skilled birth attendant.

PNC-post natal care.

THR- Take Home Ration.

WASH- Water and sanitation hygiene.

OBSERVATIONAL LEARNINGS

ORGANIZATION PROFILE:

Piramal Foundation creates creative answers to problems that stand in the way of India's economic potential being fully realized. India has started the process of guaranteeing universal health coverage, and Piramal Swasthya is helping with that by using its experience and knowledge of creating ground-breaking solutions that have a big impact. The goal of Piramal Swasthya is to close the gaps in public healthcare by supporting and enhancing the Government of India's plan to achieve universal health coverage. One of the biggest non-profits in India's primary public healthcare sector, Piramal Swasthya focuses on non-communicable diseases, maternal health, and child and adolescent health.

With more than ten years of expertise, Piramal Swasthya has managed a number of healthcare innovations at scale that are meeting the primary healthcare requirements of the majority of India's underprivileged and marginalized communities. Through 35 creative public healthcare delivery schemes, Piramal Swasthya operates in 21 Indian states and has provided services to over 112 million beneficiaries to date. Over 2500 workers, including more than 250 physicians, are employed by Piramal Swasthya and collaborate with Seva Bhav.

The Group's key values—Knowledge, Action, Care, and Impact—direct the organization as it fulfills its social obligations.

INTERNSHIP JOURNEY

During my two-month internship I gained practical knowledge in data collection and research methodologies. This experience encompassed several key areas, each contributing to a comprehensive understanding of the field.

Data collection and questionnaire design: I was introduced to the practical aspects of data collection for research studies This included exposure to different types of questionnaires and learning how to conduct in-depth interviews. These skills are essential for gathering accurate and relevant data from study participants.

SAS Software: I learned the basics of SAS software, focusing on SAS syntax, recoding, and data analysis. This included practical exercises that helped me understand how to manipulate and analyze data using SAS, a critical tool for any data analyst.

Microsoft excel: My training in Microsoft Excel covered data management techniques, including the use of pivot tables, conditional formatting, VLOOKUP, HLOOKUP, and data validation. These skills are crucial for organizing and analyzing large datasets efficiently.

Epidemiology and Research Methodology: I gained knowledge in epidemiology and various research methodologies This required learning about a variety of study designs, such as case-control, cohort, and cross-sectional studies. I also learned about key epidemiological concepts like relative risk, incidence, and prevalence. Understanding these methodologies is fundamental for conducting robust and credible research.

Field visit: I participated in field visits that provided practical insights into conducting research studies in real-world settings. These visits included a trip to the sub-divisional hospital in Danapur, where I gained a brief yet informative understanding of hospital operations. Observing how a hospital functions helped contextualize the data collection process within healthcare settings.

FACILITY VISIT: SUB-DIVISIONAL HOSPITAL DANAPUR

Date: May 15, 2024

Location: Sub-Divisional Hospital, Danapur.

Facilitator: Prashant sir

This report is the details of my field visit to the Sub-Divisional Hospital in Danapur, where I had the opportunity to learn about the functioning of a government hospital in Bihar. Seema Ma'am, the hospital manager, graciously provided insights into the various services offered and the daily operations of the facility.

Understanding of Hospital Departments:

- **OPD (Outpatient Department):** This is the first point of contact for patients seeking medical consultation for non-emergency conditions.
- **IPD (Inpatient Department):** This department is for patients who require hospitalization for treatment or surgery.
- **Labor Room:** This specialized unit is equipped for childbirth and deliveries. It provides a sterile and well-equipped environment for mothers and newborns.
- **C-Section Room:** This dedicated room is designed for conducting cesarean sections, a surgical procedure for childbirth.
- **Immunization Room:** This department focuses on preventive healthcare by administering vaccines to children and adults according to recommended schedules.
- **Vaccine Storage Room:** This temperature-controlled room ensures proper storage and preservation of vaccines to maintain their effectiveness.

Family Planning and Antenatal Care:

The hospital offers family planning services to help individuals and couples make informed choices about their reproductive health. I learned about various family planning methods available like condoms, vasectomy, tubectomy, antaraa etc.

I also gained valuable insights into antenatal care, the crucial care provided to pregnant women throughout their pregnancy. This includes regular checkups, monitoring fetal development, and ensuring the well-being of both mother and baby. During these checkups, various measurements are taken, such as:

- Fundal height (distance between the pubic bone and the top of the uterus)
- Blood pressure
- Weight
- Fetal heart rate

Interaction with Staff and Nurses:

The hospital staff and nurses played a vital role in my learning experience. They generously elaborated on their specific roles and responsibilities within their respective departments. Their explanations provided a deeper understanding of the daily operations and the dedication required to serve patients effectively.

HOUSEHOLD SURVEY

Date: April 24, 2024

Location: Sahnaura, Barh District, (Patna)

Facilitator: Prashant sir

On a recent visit to Sahnaura village in Barh district, Patna, I had the opportunity to learn about the process of conducting a household survey with the guidance of an Anganwadi worker. The primary focus was on understanding how to create a comprehensive survey chart and the methodology for gathering accurate data. During this visit, I observed the usage of three different questionnaires tailored for infants aged 0-5 months, 6-11 months, and 12-23 months. . The interviews were conducted with mothers of children aged 0-23 months.

1) **0-5 months old:** Focused primarily on breastfeeding practices and postnatal care.
2) **6-11 months old:** Included questions about the introduction of complementary foods in addition to breastfeeding.
3) **12-23 months old:** Covered a broader range of topics including continued breastfeeding, family planning, variety in complementary foods, and growth monitoring.

What we learn ?

- How to make a complete survey chart
- understand the structure and sections of the questionnaire for different age groups of infants.

- observe the data collection process and interview techniques.

The survey is designed to gather comprehensive information about the health and well-being of infants in different age groups. The questionnaire is divided into several sections, each targeting specific aspects of maternal and child health. These sections include:

1) **socio-demographic information**

- This section collects basic information about the family, such as the parent's age, education, occupation, and household composition. This data helps in understanding the socio-economic context of the family.

2) **Antenatal care and birth preparedness**

- Questions in this section focus on the care received by the mother during pregnancy, including antenatal visits, vaccinations, and preparations made for the birth. This helps in assessing quality and accessibility of maternal health services.

3) **Birth history of youngest child**

- This part records details about the youngest child's birth, such as the place of birth, type of delivery, and any complications during birth. It provides insight into the birthing practices and outcomes in the community.

4) **Post-natal care and breast feeding**

- The postnatal care section includes questions about the care received by both mother and child after birth, while the breastfeeding section focuses on the initiation and exclusivity of breastfeeding.

5) **complementary feeding practices**

- This section gathers information on the introduction of complementary foods to infants, including the types of foods given, the frequency of feeding, and any difficulties faced by the caregivers. It helps in assessing the nutritional status of infants

6) **Family planning**

- Questions in this section address the family's knowledge and use of family planning methods, which is important for understanding reproductive health practices in the

community. 

At last, I want to conclude that the household survey visit to Sahnaura village provided a comprehensive understanding of how to conduct a detailed survey on maternal and child health. Learning to create a full survey chart, understanding the structure of the questionnaire, and observing the data collection process were invaluable experiences. The systematic approach to gathering information ensures that the data collected is reliable and useful for improving health interventions in the community.

Field Visit Report: Health And Wellness Center,Bhusaula,Danapur

Date of Visit: 18th June

Population Served: 10,206 people across 6 villages

On 18th June, a field visit was conducted to the Health and Wellness Centre (HWC) in Bhusaula Danapur. The purpose of the visit was to observe the services provided and to understand the operational structure of the center.

During the visit, I met with the following health professionals:

- **CHO (Community Health Officer)**
- **ANM (Auxiliary Nurse Midwife)**
- **ASHA (Accredited Social Health Activist) Worker**

They provided detailed information about the services offered at the center:

- **Family Planning:** The CHO provides advice on various family planning methods and ensures that people are informed about their options.
- **Antenatal Care:** Pregnant women receive regular check-ups and consultations to monitor their health and the health of the baby.

- **Immunization Support:** The ANM and ASHA workers play a crucial role in immunizing children and educating parents on the importance of vaccines.
  The health professionals encourage and assist pregnant women to opt for institutional deliveries to ensure safer childbirth with medical support.

1. **Outpatient Department (OPD):**

- The OPD provides general health consultations and treatments. It is equipped with telemedicine facilities, allowing patients to consult with specialists remotely.

2. **Non-Communicable Disease (NCD) Corner:**

- There is a dedicated area for managing and consulting non-communicable diseases, ensuring focused care for chronic conditions such as diabetes and hypertension.

3. **Laboratory:**

- The centre has a fully functional laboratory that conducts various diagnostic tests, facilitating timely and accurate diagnosis and treatment.

The Health and Wellness Centre in Bhusaula Danapur is playing a vital role in serving the health needs of the local population. With a dedicated team of health professionals and

well-equipped facilities, the centre ensures comprehensive healthcare services, from preventive to curative, including family planning, immunization, antenatal care, and promoting institutional deliveries. The integration of telemedicine and a functional laboratory further enhances the quality of care provided to the community.

SESSIONS LEARNINGS DURING INTERNSHIP PERIOD

Week 1:

- **Introduction to SAS Installation:** Learned how to install and set up SAS software.
- **Introduction to Data Cleaning and Management:** Covered basic techniques for cleaning and managing data.
- **Lecture on Literature Review:** Explored how to conduct a literature review of research papers.

- **Research Methodology Class:** Attended a session on prevalence, incidence rate, and risk ratio.

Week 2:

- **SAS Interface:** Detailed lecture on SAS interface, including log, result, and code windows; learned to create libraries and import data.
- **Data Cleaning in SAS:** Learned to clean and manage raw data; calculated BMI.
- **Research Methodology Class:** Continued learning about risk ratio, incidence proportion, exposed and unexposed groups, and population at risk.
- **Literature Review Class:** Learned to create MeSH terms related to our topics.

Week 3:

- **Excel Pivot Tables:** Created pivot tables and various charts.
- **SAS Functions:** Learned basic SAS functions such as PROC SORT, PROC FREQ, and PROC MEAN.
- **Questionnaire Design:** Understood the format of questionnaires and reviewed a toolkit for maternal and child health questionnaires.

Week 4:

- **Excel Conditional Formatting:** Applied conditional formatting in Excel.
- **Recoding in SAS:** Learned recoding techniques in SAS.
- **Study Designs:** Gained an understanding of various study designs, including cohort, case-control, cross-sectional, and ecological studies.

Week 5:

- **Data Validation in Excel:** Learned data validation techniques.
- **Sociodemographic Indicators:** Identified indicators from maternal and child health questionnaires.
- **Study Designs:** Continued discussions on different study designs.

Week 6:

- **Excel Functions:** Used SUBTOTAL, SUM, MAX, MIN, and AVG functions.
- **Recoding in SAS:** Recoded sociodemographic indicators and calculated frequencies.
- **Qualitative and Quantitative Studies:** Detailed lecture on these study types and their application in research.

Week 7:

- **VLOOKUP and HLOOKUP:** Learned these lookup functions in Excel.
- **Indicator Matrix:** Understood how to find variables and definitions for various indicators in maternal and child health questionnaires.
- **Incidence Rate and Confounding Factors:** Continued learning about these topics.
- **Mentor Meeting:** Discussed how to find indicators for various research topics.

Week 8:

- **Excel Functions:** Learned COUNTIF, SUMIF, and IF functions.
- **Research Methodology:** Covered topics like ecological fallacy, differential recall bias, data validity, precision, incubation period, latency period, and temporal ambiguity.
- **Descriptive Analysis in SAS:** Conducted descriptive analysis of various indicators using SAS software.

LIMITATIONS:

Within the two-month internship period, it is challenging to finish a research project on time. Even though we have access to the data collection needed for our research topic, doing proper analysis in a short amount of time is challenging. As part of our observational learning, we conducted home surveys at a rural community and an institutional delivery location. Accordingly, we have been working with the questionnaire instrument for a certain age group, although we are unaware of its development. Some limitations were noted during the study in relation to my research project on mmaternal health , namely the antenatal care amd birth preparedness, among infants aged 0 to 5 months.

Desk review on antenatal care and birth preparedness

BACKGROUND:

In developing countries, reducing mother and infant mortality rates and advancing women's reproductive health are important public health concerns*(1)*. The majority of maternal mortality is caused by problems related to pregnancy and childbirth*(2)*. Maternal mortality is extremely high. In 2020, there were 287,000 women who died during pregnancy and after giving birth. Approximately 95% of all maternal deaths in 2020 occurred in low- and lower-middle-income nations, and most of these deaths were preventable. In certain areas, high maternal mortality rates reveal income inequality by reflecting differences in access to high-quality healthcare. In 2020, the MMR was 13 per 100,000 live births in high-income countries and 430 per 100,000 live births in low-income countries. A Sustainable Development Goal (SDG) 3.1 has been established by the UN to lower the global maternal death ratio to less than 70 per 100,000 live births*(3).*

India's maternal mortality ratio declined from (130) in 2014–2016 to (97) in 2018–20, with a rate of (103) in 2017–19. There is a very high variation in MMR that can be seen among different states of India from (215) in Assam to (43) in Kerala per lakh live births (4). MMR per 100,000 live births was (197) in Uttar Pradesh, (173) in Madhya Pradesh, (164) in Rajasthan, (150) in Odisha, (159) in Chhattisgarh, and (149) in Bihar. The majority of these high MMR states are included in the (EAG) eight empowered action group states (Jharkhand, Bihar, Uttarakhand, Madhya Pradesh, Chhattisgarh, Orissa, and Rajasthan), which together with Assam make up approximately 48% of India's total population. These states are highly focused due to their comparatively low socioeconomic indicators as well as higher indicators of fertility and mortality*(4)*.

According to the World Health Organization (2018), the MMR in these states is similarly equivalent to the maternal mortality rates per 100,000 live births in a few low- and middle-

income countries, including Bangladesh (186), Nepal (258), Cambodia (161), South Africa (138), and Zambia (224). Furthermore, many developing countries' other socioeconomic indices and determinants exhibit the same traits as India's EAG states*(1)*.

Birth preparedness and complication readiness are the two main areas of participation in order to lower maternal and newborn mortality. Additionally, by promoting health-seeking behavior and the use of appropriately qualified personnel and healthcare facilities for delivery***(5)*.**

Birth Preparedness and Complication Readiness (BPCR) involves being prepared for a routine delivery as well as any potential emergencies. It involves proactive planning and decision-making to ensure a pregnant woman can access professional obstetric health services during labor. These actions collectively contribute to improving maternal health and reducing maternal mortality*(6)*.

There are three types of delays in seeking care for obstetric complications: (A) delaying making the decision to seek care; (B) delaying going to a health facility; and (C) delaying obtaining care while at the facility. The birth preparation and complication readiness matrix was created by the maternal and newborn health program of the Johns Hopkins Program for International Education in Gynecology and Obstetrics (JHIEGO) to address these three delays:*(5)*.

Understanding warning signs, the planned birth site, the preferred birth attendant, the nearest suitable care facility, funds for birth-related and emergency costs, a birth companion, help with taking care of the house and kids while the woman is away, transportation to a medical facility for the birth, transportation in the event of an obstetric emergency, and the identification of compatible blood donors in case of emergency are all components that should be included in a birth plan*(7)*.

Antenatal care (ANC) is important for pregnant women, their families, and the community. It helps prevent illness, promote health, and screen for any issues. Using ANC services properly can reduce maternal deaths and improve the health of mothers and babies*(8)*.

The World Health Organization (WHO) updated ANC guidelines in 2016. They emphasized personalized care and health, suggesting an increase in ANC appointments from four to eight or more. They also acknowledged the challenges of delivering and overseeing high-quality ANC in various health systems*(9)*.

Significant progress has been made in the past few decades to expand access to perinatal and maternal health care services in low- and middle-income countries (LMICs). Prenatal care (ANC) coverage has increased significantly, as indicated by the number of ANC visits a woman received. This, along with the coverage of skilled birth attendants, is a commonly used measure to assess the impact of maternal health programs(*10)*.

In India, the National Family Health Survey 2019-21 showed that 58.1 % of women had a minimum of four ANC visits. This involved care provided by qualified medical professionals, timely registration of pregnancy, the first ANC visit during the first trimester, four or more ANC visits, and appropriate information*(11)*.

There are various factors which influence maternal health, such as increased household wealth, parental education, belonging to other tribes or castes, a woman's ability to access a health facility, media exposure, and desire for pregnancy. These factors need to be addressed in order to improve maternal health*(8)*.

Underutilization of maternal healthcare services is a major contributing factor to maternal death rates in poor nations. These deaths can be prevented for expectant mothers who use skilled birth attendants (SBA), receive postnatal care (PNC), and have four or more Antenatal Care visits (ANC4+) *(1)*.

The National Family Health Survey-5 provides information on the current utilization of maternal health services in the BIMARU states (Uttar Pradesh, Madhya Pradesh, Rajasthan, and Bihar). The following are the rates of maternal service use: Bihar has 25.2% ANC4+, Madhya Pradesh has 57.5% ANC4+, Rajasthan has 55.3% ANC4+, and Uttar Pradesh has 42.4% ANC4+ *(12–15)*.

Among the BIMARU states, it is clear that Madhya Pradesh has the highest utilization and Bihar the lowest. The reasons for these states' low utilization of maternal healthcare services are not well studied. The purpose of this study is to ascertain the present state of

prenatal care and birth readiness behaviors among Bihar mothers of children ages 0–5 months.

RATIONALE OF THE STUDY:

A very less research study has been done in bimaru states in context of antenatal care and birth preparedness, as we know bihar has still high maternal and neonatal death comparison to other bimaru states and EAG satates so study aim to understand the current status of antenatal care along with the practices regarding birth preparedness among mothers of children aged 0-5 months in Bihar.

Methodology

I have conducted a literature review to evaluate existing research on antenatal care and birth preparedness. I used PubMed and Google Scholar as search engines to find research articles. The mesh terms I used are "antenatal care" and "birth preparedness." In total, I found 267 articles, out of which I selected 42 for my research.

KEY FINDINGS FROM LITERATURE REVIEW:

1. The study identifies a number of important factors that influence Indian women's use of prenatal care (ANC). Increased ANC utilization was found to be associated with higher household wealth status, parental education, membership in specific tribes or castes, women's autonomy in healthcare decision-making, living in Southern India, media exposure, contraceptive use, and a woman's desire for pregnancy. On the other hand, ANC usage that was suitable was hindered by domicile in Eastern and Central India, lesser household affluence, and a lack of autonomy for women. Addressing these determinants—which include bolstering basic healthcare in marginalized areas, lowering financial barriers, encouraging education, empowering women, improving family planning services,

and extending health promotion campaigns—should be the main goal of efforts to increase ANC uptake.

2. The study discovered that although most women attended their first antenatal appointment within the first 12 weeks of pregnancy, the percentage of women who completed the recommended four or more visits was lower in some areas than intended but equivalent to national statistics overall. The use of professional delivery services was, nevertheless, greater than the national average. Key danger indications during pregnancy, labor/birth, postpartum, and neonatal periods were not well known, despite greater healthcare service consumption. Just roughly half of pregnant women knew where they would give birth in advance, and very few made arrangements to donate blood. One important factor that was found to influence both the awareness and practices of complications readiness and birth preparedness was education. In general, more community capacity building and more awareness campaigns are required to improve birth preparedness and complication readiness.

3. The results of our study demonstrate how many data sources interact dynamically to alter our perception of Telangana's antenatal care (ANC) quality. This substantially broadens the body of knowledge already available on assessing ANC quality. Similar to other research, our results demonstrate a broad range of quality in ANC service across multiple dimensions. Our ability to identify quality gaps is improved when many data streams are integrated. For instance, a study carried out in rural Tanzania found a discrepancy between the high satisfaction levels reported by expectant mothers in their departure interviews and the deficiencies in ANC consultations that were found by facility audits and observational data. A common explanation for these gaps was pharmaceutical and screening test stockouts.

4. Consistent with results from a study conducted in Karnataka, women in the current study who had information about danger indications associated with pregnancy, delivery, and newborns were better equipped to handle emergencies. Similar to findings from another study, about 57.5% of respondents saved money for childbirth-related expenses.

Additionally, as demonstrated by studies from Karnataka as well as this study, awareness of government financial support corresponded with improved readiness.

5. The study discovered that improved Birth Preparedness, Complications Readiness (BCPR) practices depend on an understanding of danger indications during pregnancy. It is essential to teach families and moms about warning indicators. Poverty and a desire for public healthcare were associated with lower BPCR in rural locations. A lot of women were not aware of government programs that could assist with the cost of childbirth. Increasing knowledge about these initiatives may increase their use. Finding a matched blood donor in advance is crucial for emergencies, particularly in regions where blood is scarce. During prenatal care, conversations regarding pregnancy and BPCR should involve spouses and families. This is particularly crucial for young, underprivileged women. The usage of healthcare can also be impacted by cultural variables. On these community and cultural factors, more research is required. In general, the emphasis should focus on enhancing understanding, dialogue, and use of current resources to enhance maternal health results.

6. According to the study, taking 100 or more Iron and Folic Acid (IFA) tablets before becoming pregnant is associated with a decreased risk of maternal and infant death, which is consistent with national guidelines. It also draws attention to the growing frequency of needless cesarean section deliveries and the urgent need for improved monitoring and treatment of anemia in pregnant women. Enhancing prenatal and delivery care services and guaranteeing the availability of qualified medical personnel are essential for raising mother and child survival rates in rural India. Even though the study emphasizes the value of sufficient prenatal care (ANC) and delivery coverage, it also identifies several shortcomings, including a dearth of specific data on blood types and pregnancy problems, and calls for more research in these areas. Additionally, it highlights the significance of closely monitoring cesarean section deliveries and putting the best possible iron supplementation plans into place in order to significantly lower newborn and mother mortality.

7. The results of the study show that birth preparedness and complication readiness (BPCR) practices are similar in different locations, with methodological differences and sociodemographic factors perhaps accounting for differences. Although older age groups seem to be more likely to engage in BPCR practices, preparation for BPCR is greatly influenced by educational attainment and past antenatal care follow-up. Notably, a history of live births and deliveries at medical facilities enhances the chance of BPCR practice, indicating the importance of healthcare access and education in fostering readiness. These results highlight the significance of focused healthcare and education initiatives to promote BPCR practices and, eventually, mother and child health outcomes.

8. A study on Tanzania urban women's birth preparedness and complication readiness (BPCR) reveals significant findings. The degree to which women are free to choose where they were born has a big impact on family support. Unexpectedly, single status has a positive correlation with BPCR preparedness, maybe as a result of more autonomy in making decisions. Working has a detrimental effect on readiness, probably because of time constraints. Better preparedness is correlated with preference for family or traditional birth attendants over trained attendants, underscoring the importance of known assistance. Losing a baby has a detrimental impact on one's knowledge and preferences for a professional birth attendant, which suggests that specific help is required. The importance of healthcare accessibility is shown by the fact that living far from a medical institution reduces preparedness. mHealth technologies, such as smartphone apps, have the potential to be extremely important in improving pregnant experiences and spreading knowledge, especially for urban populations.

9. According to a study, men's involvement in maternal health care is largely to blame for the large gaps in knowledge regarding obstetric and neonatal danger indications that exist among expectant mothers and their partners. Although vaginal bleeding was acknowledged, there was a lack of general knowledge, which delayed receiving medical attention in an emergency. Negative memory for postpartum and neonatal warning indicators indicates a serious knowledge deficit. Preparing birthing supplies and saving

money were normal, but knowing where to give birth and setting up labor support were less typical. While partners' knowledge was mostly influenced by their educational position, women's knowledge was predicted by age, ethnic group, and level of health facility. Improving birth preparedness and complication readiness requires immediate action, particularly in rural regions with limited access to maternal health information.

10. The results of the study highlight two important ramifications for the Reproductive and Maternal Newborn Child Health Programme in India. First off, even in affluent states like Delhi, where ANC visits are likely to be appropriate, vulnerable pregnant women may still not have their needs met, calling for immediate legislative changes to close the healthcare gap. Second, ANC penetration was much higher in previously underserved areas, such as villages and urban resettlement colonies, probably as a result of easier access to primary care facilities. This emphasizes the significance of governmental initiatives meant to improve primary healthcare, as seen in comparable contexts in earlier research.

SECONDARY DATA ANALYSIS ON RNMCH IN CONTEXT OF BIHAR

INTRODUCTION

With an estimated 295,000 maternal fatalities, 2.4 million neonatal deaths, and 5.2 million under-five deaths each year, the Reproductive, Maternal, Neonatal, and Child Health (RMNCH) sector faces enormous problems on a global scale(16). For many years, Bihar's health system—one of the most impoverished and heavily populated states in India—has suffered from structural flaws(17).

Even so, Bihar, one of the most populated and economically challenged states in India, continues to bear a disproportionate share of the burden of RMNCH issues. The National Family Health Survey-5 (NFHS-5) conducted in 2019–2020 found that Bihar's MMR was 119 per 100,000 live births, which was far higher than the national average of 103 per 100,000 live births [4]. Comparatively speaking, the state's IMR was 32 per 1,000 live births as opposed to the 28 per 1,000 live births national average (18). In 2010, the Government of Bihar (GoB), in collaboration with CARE India, a prominent international humanitarian organization, and other non-governmental partners, launched the Ananya program. During that period, Bihar's public health facilities had several challenges in providing healthcare services, including a weak and inadequate infrastructure, a significant scarcity of qualified healthcare professionals, poor provider motivation, and a paucity of necessary(17).

Reproductive, maternity, neonatal, and child health and nutrition (RMNCHN) services were recognized to be insufficient in the state's public institutions, especially in rural areas where 90% of the population lives (18).

However, there was a shocking disparity between the incredibly low coverage and quality of emergency obstetric and newborn care (EmONC) and the state-level estimates of maternal mortality (305 deaths per 100,000 live births) and neonatal mortality (35 deaths per 1000 live births) for 2010–2011 (19).

In order to increase the quality of RMNCHN services in Bihar's public facilities to the point where they could consistently and successfully reduce mortality rates, CARE India and the GoB launched a thorough quality improvement (QI) program in 2011. CARE India came to the conclusion that these metrics likely understated the severity of RMNCHN service delivery shortcomings (20).

In 2013, the Indian government introduced the RMNCHN + Adolescent Health (RMNCHN+A) plan, which comprised a thorough method for putting into practice successful treatments with an emphasis on a variety of health system elements. The Indian government also published National Quality Assurance criteria for healthcare facilities in the same year. The LaQshya recommendations, published by the Indian government in 2017, reiterated the importance of a QI approach for intrapartum care (21).

The GoB and other pertinent parties were drawn to the RMNCHN+A strategy's needs, which were considered "aspirational goals" in Bihar in 2013. This led to a flurry of activity aimed at enhancing the health system and RMNCHN service delivery in general. Another GoB program called Manav Vikas Mission, or Human Development Mission, set ambitious health goals like reducing maternal and newborn mortality.(20).

The national progress in RMNCH has been encouraging, but the burden remains disproportionately high in Bihar. Addressing the multifaceted challenges in the state requires a comprehensive and collaborative approach that combines targeted interventions, strengthened health systems, and a focus on addressing the social determinants of health. The objective of this study is to gain insight into key RMNCH practices among recently delivered women and children aged 0-23 months in rural Bihar during 2024.

METHODOLOGY

A brief overview of the methodology of study conducted to collect this data:

1. Study Area: 13 districts of Bihar selected randomly from 9 Commissionerate
2. Target population: mothers of 0-5, 6-11, 12-23 months old children
3. Sample size: of ~2,250 interviews per category (0-5 months, 6-11 months, and 12-23 months)
4. sass software is used for data analysis.

SOCIO-DEMOGRAPHIC INDICATOR

- **Gender**- The children's gender was divided into two categories: males and girls. Calculations were made for frequency, percentage, lower and higher confidence intervals.

- **Religion**- The mothers who had just given birth were categorized as Hindu and Others based on their religion. In a similar manner, calculations were made for frequency, percentage, lower and higher confidence intervals.
- **Age of the mother**- The mother's total age was divided into three age groups: under 24, 25–34, and 35 years of age and up. The entire number of observations was then used to compute their frequency, percentage, lower and upper confidence intervals.
- **Caste**- The variable was split into two labels, marginalized and non-marginalized, and frequency, percentage, lower and upper confidence intervals were computed for each kind of label.
- **Family type**- Another important factor under socio-demographic variables is the kind of family. It was divided into two categories: nuclear families and joint families. Calculations were made for frequency, percentage, lower and higher confidence intervals.
- **Education of the mother**- The mother's educational distribution was categorized into three groups: illiterate, up to the eighth grade, and above the eighth grade. In the total number of observations, frequency, percentage, lower and upper confidence intervals, and confidence intervals were calculated.
- **Father's education:** The father's education fell into the same categories: illiterate, up to the eighth grade, and more than the eighth grade. In a similar manner, calculations were made for frequency, percentage, lower and higher confidence intervals.

  Mother's occupation: Her work was divided into five categories: business, non-agricultural, agricultural, jobless, and salaried employee. Frequency, percentage, lower and higher confidence intervals for the labels were computed under the total observations.

  Father's occupation: In a similar vein, the father's occupation was separated into categories for business, salaried employees, agriculture, non-agricultural, and unemployed workers. We computed the frequency distribution, percentage, lower and upper confidence intervals.
- **Husband migration:** Women in the age range under study responded to questions concerning their husbands' migration status. The percentage, lower and upper confidence intervals, and frequency were computed based on the response.

  Membership in SHGs: Women in the age group under study or any women in their

family may or may not be members of social health groups. Once more, frequency, percentage, lower confidence interval, and higher confidence interval were computed using the various labels.

Living children: This indicates if the woman is the mother of one, two, three, or more living children. Frequency, percentage, lower and upper confidence intervals, and confidence intervals were computed with similar observations.

- **Location of delivery:** This indicates whether the children were delivered to homes, public spaces, or private spaces. Once more, figures for frequency, percentage, lower and higher confidence intervals were calculated.

Type of house: Kachcha, pucca, and semi-pucca were the three categories into which dwelling types were separated. Frequency, percentage, lower and higher confidence intervals for the labels were computed under the total observations.

RMNCH INDICATOR

MCP (mother and child protection): This refers to the proportion of expectant mothers who either received or did not obtain MCP cards. Different labels were used to compute the frequency and percentage.

Antenatal care: refers to the proportion of expectant mothers who obtained an antenatal examination during their previous pregnancy or not. To observe the distribution, frequency and percentage were also ascertained.

Received ANC 3 or more times: got antenatal care three or more times: The overall percentage of expectant mothers who got antenatal care three or more times was determined in this case. Measurements were also made of frequency, upper and lower confidence intervals, and confidence intervals.

Received ANC 4 or more times: This refers to the proportion of expectant mothers who had four or more prenatal visits. In a similar manner, calculations were made for frequency, percentage, lower and higher confidence intervals.

Received IFA tablet: The percentage of expectant mothers who received an IFA tablet during their previous pregnancy is calculated. Accordingly, several labels showed observations of frequency, percentage, lower and upper confidence intervals.

Received 90 or more IFA tablets: This refers to the proportion of expectant mothers who got 90 or more IFA tablets for infants between the ages of 0 and 5 months. Once more, under the total number of observations, frequency, percentage, lower confidence interval, and higher confidence interval were calculated.

Consumed 90 or more IFA tablets: This refers to the proportion of expectant mothers who either took 90 or more IFA tablets or did not. We estimated the frequency, percentage, upper, lower, and confidence interval distributions for each label.

Received Take Home Ration (THR): This represents the overall proportion of pregnant women who received THR for their previous pregnancy. In a similar vein, measurements were made of frequency, percentage, lower and higher confidence intervals.

Institutional delivery: This refers to the percentage of births under the age of five that occur in any type of institution, whether public or private. Once more, under the total number of observations, frequency, percentage, lower confidence interval, and higher confidence interval were calculated.

Skin to Skin Care (STSC): This refers to the proportion of newborns, aged 0 to 5 months, who got skin-to-skin care. Accordingly, several labels showed observations of frequency, percentage, lower and upper confidence intervals.

Baby weight: The percentage of a kid weighing at birth who is between 0 and 5 months old is used to calculate this. Frequency, percentage, lower confidence interval and upper confidence interval were calculated on different labels.

Timely initiation of breastfeeding: This refers to the proportion of children aged 0 to 5 months who started breastfeeding within an hour of their birth. In a similar vein, measurements were made of frequency, percentage, lower and higher confidence intervals.

Exclusive breastfeeding: The percentage of children between the ages of 0 and 5 months who experienced exclusive nursing within the previous 24 hours is measured here. Under various labels, the distribution of frequency, percentage, lower and upper confidence intervals, and confidence intervals were computed.

Breastfeeding under the 6–11 month age group: This refers to the proportion of children in this age group that either breastfed or did not. It was determined what the frequency, percentage, upper and lower confidence intervals were.

Complimentary feeding: The percentage of children between the ages of 6 and 11 months who started receiving complimentary feeding is known as the complimentary feeding rate. That refers to a youngster who, aside from breastfeeding, used to have their first meal. Frequency, percentage, lower and higher confidence interval distributions, and total observations were computed.

Contraceptive method: The percentage of mothers who recently gave birth and whose children are in the 12- to 23-month age range who are currently using a contraceptive method or not is calculated. Likewise, distinct labels were applied to the measurements of frequency, percentage, lower and higher confidence intervals.

Use of modern contraceptive technique: This is the proportion of recently delivered moms whose infants are in the 12- to 23-month age range who use modern contraceptive method or do not. Once more, calculations were made for frequency, percentage, lower and higher confidence intervals.

Modern contraceptive method: This refers to the proportion of recently delivered women whose children fall within the 12- to 23-year-old age range who are currently using any kind of traditional contraceptive method or not.

RESULT

Three age groups of new mothers with infants—0–5 months, 6–11 months, and 12-23 months—were participants of our data collection. We examined the findings in two domains: RMNCHN (Reproductive, Maternal, Newborn, Child, and Nutrition) indicators and sociodemographic variables.

SOCIODEMOGRAPHIC INDICATOR

Description	Frequency(n)	Percenta ge (%)	Lower confiden	Upper confiden

			ce limit (LCL)	ce limit (UCL)
Age of mother				
<=24	1426	63.38	61.39	65.37
25-34	770	34.22	32.26	36.18
>=35	54	2.40	1.77	3.03
Gender of child				
Boys	1194	53.07	51.00	55.13
Girls	1056	46.93	44.87	49.00
Religion				
Hindu	1930	85.78	84.33	87.22
Caste				
Marginalized	685	30.44	28.54	32.35

Family type				
Nuclear	883	39.24	37.23	41.26
Mother's education				
Illiterate	782	34.76	32.79	36.72
Upto 8th	510	22.67	20.94	24.40
More than 8th	958	42.58	40.53	44.62
Father's education				
Illiterate	687	33.16	31.13	35.19
Upto 8th	487	23.50	21.68	25.33
More than 8th	898	43.34	41.20	45.48
Mother's occupation				
	2140	95.11	94.22	96.00
	23	1.02		1.44

Unemployed	38	1.69	0.61	2.22
Agricultural	22	0.98	1.16	1.38
Non-agricultural	27	1.20	0.57	1.65
Business			0.75	
Salaried				
Father's occupation	79	3.54	2.77	4.31
Unemployed	189	8.48	7.32	9.63
Agricultural	1063	47.67	45.59	49.74
Non-agricultural	308	13.81	12.38	15.24
Business	591	26.50	24.67	28.34
Salaried				
Husband's migration	1966	87.38	86.00	88.75
Non-migrant	284	12.62	11.25	14.00

Migrant				
SHG membership **Yes** **No**	1120 1130	49.78 50.22	47.71 48.15	51.85 52.29
Living child **1 child** **2 children** **3 children** **More than 3 children**	758 674 461 357	33.69 29.96 20.49 15.87	31.73 28.06 18.82 14.36	35.64 31.85 22.16 17.38
Place of delivery **Public** **Private** **Home**	1457 484 309	64.76 21.57 13.73	62.78 19.81 12.31	66.73 23.21 15.16
Type of House	398	17.69	16.11	19.27

Kutcha	1270	56.44	54.39	58.49
Semi-Pucca	582	25.87	24.06	27.68
Pucca				

The socio-demographic characteristics of the study participants are detailed in Table 1.

Gender Distribution :- Out of the total participants, 53.07% (n=1194) were boys, while 46.93% (n=1056) were girls.

Mother's Age :- A significant proportion of the mothers, 63.38% (n=1426), were aged 24 years or younger. Those aged between 25 to 34 years constituted 34.22% (n=770), and a smaller fraction, 2.4% (n=54), were aged 35 years or older.

Religion :- The majority of the participants identified as Hindu, making up 85.78% (n=1930) of the sample. The remaining 14.22% (n=320) were from non-Hindu religious backgrounds.

Caste :- In terms of caste distribution, 30.44% (n=685) belonged to marginalized castes, While The Majority, 69.56% (N=1565), Were From Non-Marginalized Castes.

Family Type :- Most participants came from joint families (60.76%, n=1367), compared to 39.24% (n=883) who lived in nuclear families.

Mother's education :- Regarding mothers' educational attainment, 34.76% (n=782) were illiterate, 22.67% (n=510) had education up to 8th grade, and 42.58% (n=958) had education beyond the 8th grade.

Mother's occupation :- A vast majority of the mothers, 95.11% (n=2140), were unemployed. Among those employed, 1.02% (n=23) were agricultural laborers, 1.69%

(n=38) were non-agricultural laborers, 0.98% (n=22) were engaged in business, and 1.2% (n=27) held salaried positions.

Father's education :- For fathers' education levels, 33.16% (n=687) were illiterate, 23.5% (n=487) had education up to 8th grade, and 43.34% (n=898) had education beyond the 8th grade.

Father's occupation :- Among fathers, 3.51% (n=79) were unemployed. A significant portion, 47.24% (n=1063), were non-agricultural laborers, 8.4% (n=189) were agricultural laborers, 13.69% (n=308) were engaged in business, and 27.16% (n=611) held salaried positions.

Place of delivery :- In terms of place of delivery, 64.76% (n=1457) of births occurred in public health facilities, 21.51% (n=484) in private health facilities, and 13.73% (n=309) took place at home or in transit.

House type :- Regarding the type of housing, 17.69% (n=398) lived in kachcha (temporary) houses, 56.44% (n=1270) in semi-pucca (semi-permanent) houses, and 25.87% (n=582) in pucca (permanent) houses.

Self-help group membership :_ The distribution of Self-Help Group membership was nearly even, with 49.78% (n=1120) being members and 50.22% (n=1130) not being members. The distribution of Self-Help Group membership was nearly even, with 49.78% (n=1120) being members and 50.22% (n=1130) not being members.

Number of living children :- Examining the number of living children per family, 33.69% (n=758) had one child, 29.96% (n=674) had two children, 20.49% (n=461) had three children, and 15.87% (n=357) had more than three children.

RMNCHN INDICATOR

Label	FREQUENCY(n)	PERCENTAGE (%)	LCL	UCL
pregnant women received MCP cards	1851	82.2667	80.6873	83.8461
pregnant women received any antenatal checkup during your last pregnancy	2221	98.7111	99.2447	99.1775
pregnant women received 3 or more antenatal checkup during your last pregnancy	1519	68.3926	66.4575	70.3277
pregnant women received 4 or more antenatal checkup during your last pregnancy	964	43.4039	41.341	45.4667

pregnant women received IFA tablet during your last pregnancy	2035	90.4444	89.2288	91.6601
pregnant women received 90 or more IFA tablet during your last pregnancy	591	26.6096	24.7704	28.4489
pregnant women consumed 90 or more IFA tablet during your last pregnancy	339	83.1762	81.5415	84.8109
pregnant women received THR during your last pregnancy	908	40.3556	38.3268	42.3843
institutional delivery	1941	86.2667	84.8434	87.69
child aged 0-5 month received	1295	65.4371	63.34	67.5342

immediate Skin to skin care after birth				
child aged 0-5 month weighted at birth	1801	82.9572	81.3742	84.5401
child aged 0-5 month received Timely Initiation of Breast Feeding (TIBF) within 1 hrs.	1491	66.2667	64.3116	68.2217
child aged 0-5 month received exclusive breastfeeding (last 24 hours)	1136	50.4889	48.4214	52.5563
child aged 6-11 month Currently receiving breast feeding	2104	93.5111	92.4925	94.5297
children aged 6–11 months who Initiated complementary feeding	1472	65.4222	63.4555	67.389

recently delivered women currently using any contraceptive method	452	22.8629	21.0102	24.7157
recently delivered women currently using modern contraceptive method	438	22.1548	20.3226	23.987
recently delivered women currently using traditional contraceptive method	15	0.7587	0.3759	1.1416

The study found that most pregnant women are very engaged in antenatal and postnatal health practices. During their last pregnancy, 98.71% of women had some kind of antenatal checkup. Out of these, 68.39% went for three or more checkups, and 43.40% had four or more checkups.

Many women also received iron-folic acid (IFA) tablets, with 90.44% getting them. However, only 26.61% received 90 or more tablets. Among those who got 90 or more tablets, 83.18% took all of them.

Around 40.36% of pregnant women received nutritional support from the Take-Home Ration (THR) program. Most births, 86.27%, happened in medical institutions. After birth, 65.44% of babies aged 0-5 months got immediate skin-to-skin care, and 82.96% were weighed. About 66.27% of mothers started breastfeeding within the first hour. Half of the mothers (50.49%) exclusively breastfed their infants aged 0-5 months in the last 24 hours. Among infants aged 6-11 months, 93.51% were still being breastfed, and 65.42% of mothers had started complementary feeding for them.

Among women who recently had a baby, 22.86% said they were using some form of birth control. Of these, 22.15% were using modern methods, and 0.76% were using traditional methods. These numbers show that while many are using modern contraceptives, there is still room to improve maternal and child healthcare in this group.

DISCUSSION

The research provides valuable insights into healthcare practices among mothers and children, revealing that 85.78% are Hindu, 30.44% are marginalized, and 69.56% are non-marginalized. These results have significant ramifications for enhancing the health of mothers and children.The study highlights a significant prevalence of young mothers and the

considerable influence of Hinduism on healthcare decisions, indicating the necessity of culturally sensitive healthcare policies and practices.

Furthermore, the research underscores the influence of socio-economic status, particularly among non-marginalized backgrounds, on resource access and overall healthcare. This highlights how crucial it is to overcome socioeconomic inequality in order to guarantee equitable access to healthcare. The study also identifies wide variation in maternal education and a substantial number of unemployed mothers, underscoring the need for improved educational and employment opportunities.

The study found high rates of antenatal care adherence, with a high percentage of pregnant women receiving iron and folic acid (IFA) tablets. However, there was a significant gap in nutritional support for pregnant women, highlighting the need for comprehensive prenatal care. Additionally, the majority of births occurred in hospitals, indicating good access to institutional delivery services. Despite early initiation of breastfeeding being common, challenges were identified in sustaining breastfeeding rates and introducing complementary foods in a timely manner, calling for continued support and education for mothers.

In terms of family planning, the research revealed that 23% of women utilized contraception after childbirth, with a preference for modern methods, suggesting a need for improved family planning services.

CONCLUSION:

The study provides valuable insights into healthcare practices among mothers and children. It highlights the prevalence of young mothers and the influence of Hinduism on healthcare decisions. Furthermore, it underscores the impact of non-marginalized backgrounds on socio-economic status and access to resources. Maternal education levels varied, and a majority of mothers were unemployed. During pregnancy, there were high rates of check-ups and intake of IFA tablets. Additionally, 40% of pregnant women received nutritional

support, and most births occurred in hospitals. After birth, early initiation of breastfeeding was common, but sustaining breastfeeding rates and timely introduction of complementary foods were identified as challenges. In family planning, 23% of women used contraception after childbirth, with a preference for modern methods. Overall, the study offers a comprehensive understanding of healthcare practices among this group, pointing to areas for improvement in maternal and child health outcomes.

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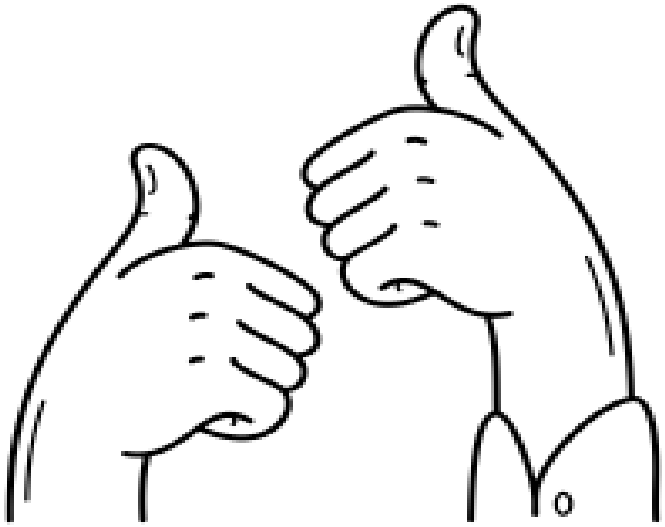

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(Completion of Summer Internship from respective organization)

The certificate is awarded to

Name: Shivam Kumar Sharma

In recognition of having successfully completed his/her
Internship in the department of RMLE

Title: Introduction about RMNCHN in context of Bihar

and has successfully completed his/her Project on Introduction about RMNCHN in context of Bihar

Date: 21/06/2024

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FEEDBACK FORM

(Organization Supervisor)

Name of the Student: Shivam Kumar Sharma

Summer Internship Institution: Piramal Swasthya Management and Research Institute

Area of Summer Internship: Public Health with a special focus on RMNCH+N

Attendance: Perfect adherence to internship norms.

Objectives met: Learnt Literature Review, Evidence Table Generation, Reference Management, Tool Development, Epidemiological concepts, Digital Data Management & Quality control, Determining the Themes and Sub-themes, Developing Code Dictionary, Data Collection, Data Management, Basic Quantitative Analysis and Thematic Extraction of Information from Qualitative Data.

Deliverables:

- Carried out desk-review on "Antenatal Care and Birth-Preparedness among pregnant women of rural Bihar".
- Made an evidence table.
- Engaged in data-collection in mini household surveys.
- Carried out data-analysis using SAS software on some key RMNCHN indicators in the context of Bihar.
- Field visits in Sub-District hospital in Danapur and Health & Wellness Center.
- Prepared a detailed report on RMNCHN
- Developed the basic concepts of Data Cleaning, Data Management and Research Methodology.

Strengths: During this period, she displayed diligence, sincerity, cognitive excellence, protocol adherence, eye for detail, analytical skills with great learning abilities. Based on her efforts, it appears that, given the level of aptitude she has, given chance, she can become an important asset of the public health research and implementation fraternity.

Suggestions for Improvement:
Scientific writing, programmatic knowledge, advance analytics.

Signature of the Officer-in-Charge (Internship)

Date: 12.12.24
Place: Patna

FEEDBACK FORM

(IIHMR Mentor)

Name of the Student: Shivam Kumar Sharma

Summer Internship Institution: Piramal Swasthya Management and Research Institute

Area of Summer Internship: Public Health with a special focus on RMNCH+N

Attendance: Perfect adherence to internship norms.

Objectives met: Learnt Literature Review, Evidence Table Generation, Reference Management, Tool Development, Epidemiological concepts, Digital Data Management & Quality control, Quantitative Analysis.

Deliverables:

- Carried out desk-review on "Antenatal Care and Birth-Preparedness among pregnant women of rural Bihar".
- Made an evidence table.
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- Field visits in Sub-District hospital in Danapur and Health & Wellness Center.
- Prepared a detailed report on RMNCHN
- Developed the basic concepts of Data Cleaning, Data Management and Research Methodology.

Strengths: Regular, disciplined
Hardworking

Suggestions for Improvement:

Signature of the Officer-in-Charge (Internship)

Date: 02/01/2025

Place:

Certificate of Approval

The Summer Internship Project of titled **"Reproductive, Maternal, Newborn, Child, Adolescent Health and Nutrition Practices among recently delivered mothers of children aged 0-23 months in rural Bihar"** at **Piramal Swasthya Foundation** is hereby approved as a certified study in management carried out and presented in a manner satisfactorily to warrant its acceptance as a prerequisite for the award of **Post Graduate Diploma in Health and Hospital Management** for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed, or conclusion drawn therein but approve the report only for the purpose it is submitted.

Name of the Mentor Dr. Preetha GS

Designation Professor

IIHMR, Delhi