Certificate of Approval

The Summer Internship Project titled

"Introduction about RMNCH+N in context of Bihar"

at **"Piramal 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.

Dr Ratika Samtani

[Associate Professor]

[IIHMR Delhi]

Summer Internship Completion Certificate

The certificate is awarded to

Name: **SWEKSHA GUPTA**

In recognition of having successfully completed her internship in the department of **RMLE** and has successfully completed her Project on

Title: "Introduction about RMNCAH+N in context of Bihar"

Date: **21st June 2024**

Organization: **Piramal Swasthya Management and Research Institute**

She comes across as a committed, sincere & diligent person who has a strong drive & zeal for learning

We wish him/her all the best for future endeavours.

Organization Supervisor & Department Head

Dr Tanmay Mahapatra	Ms. Amita Shukla
Director, Data & Learning	Senior Program Manager - HR

Piramal Swasthya Management and Research Institutes

Piramal Swasthya Management and Research Institute
Head Office: 3rd Floor, No. 6-3-1112, Oyster Complex,
Greenlands Road, Somajiguda, Begumpet, Hyderabad – 500 016
piramalswasthya.org

FEEDBACK FORM (IIHMR MENTOR)

Name of the Student: Sweksha Gupta

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 Developement, 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:

- Desk review on "Socio-Demographic correlates of Child Health and Nutrition, made an evidence table, documented the findings, limitations and recommendations of this study in report.
- Participated in Data Collection in mini-household survey.
- Field visits in SDH Danapur and HWC, Bhansala. Also interacted with CHO and ASHA Workers in HWC.
- Documented the entire process and findings, including insights from the field visits in a detailed report.
- Basic Introduction about SAS, data cleaning & management and research methodology concepts.
- Worked on project titled "Girl Boss Rise".

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 public health research and implementation.

Suggestions for Improvement:

Scientific Writing, Programmatic Knowledge, Advance Analytics.

Signature of the Officer-in-Charge (Internship)

Date: 19/12/24

Place: Patna

FEEDBACK FORM

Name of the Student: Sweksha Gupta

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Deliverables: -

- Desk review on "Socio-demographic correlates of Child health and Nutrition", made an evidence table, documented the findings, recommendations, and limitations of this study in the report.
- Participated in Data collection in a mini household survey and analysed using SAS software on some key RMNCAH+N indicators in the context of Bihar.
- Field visits in Sub-District hospital in Danapur, Patna and Health and Wellness Center, Bhausala, Danapur. Also interacted with CHO and ASHA workers in HWC.
- Documented the entire process and findings, including insights from the field visits in a detailed report.
- Basic introduction about SAS, data cleaning and management and research methodology concepts.
- Worked on a project titled "Girl Boss Rise."

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Suggestions for Improvement:

Scientific writing, programmatic knowledge, advance analytics.

Signature of the Officer-in-Charge (Internship) 

Date: 12.12.24

Place: Patna

Summer Internship at PIRAMAL SWASTHYA, Bihar

(21th April 2024- 21st June 2024)

SOCIO-DEMOGRAPHIC CORRELATES OF CHILD HEALTH AND NUTRITION

BY:
Ms. Sweksha Gupta

Under guidance from:
Dr. Shuchi Sree Akhouri (RMLE Manager)
Dr. Ratika Samtani (Associate Professor, IIHMR Delhi

PGDM (Hospital and Health Management)
2023-2025

International Institute of Health Management Research, New Delhi

ACKNOWLEDGEMENT

I am immensely grateful for the internship opportunity I had with **Piramal Swasthya**, which provided an exceptional platform for learning and professional development. I consider myself fortunate to have been part of such a renowned organization, and I am thankful for the chance to meet and work alongside so many wonderful people and professionals who guided me throughout this period.

With this in mind, I would like to express my deepest gratitude and special thanks to **Dr. Shuchi Sree Akhouri (RMLE Manager)**. Despite her extensive responsibilities, she took the time to listen, guide, and ensure I stayed on the right path, enabling me to complete my project successfully within their esteemed organization. Her dedication and support have been truly inspiring, making this experience invaluable.

I wish to express my deepest gratitude to **Dr. Tanmay Mahapatra (Director, Data and Learning, Piramal Swasthya Management and Research Institute)** for his invaluable advice, guidance, and for arranging all necessary facilities to make my project easier. His active participation in decision-making and unwavering support were vital to the successful completion of my project. His guidance and encouragement provided a strong foundation for my work, making the journey both enriching and fulfilling.

I would also like to extend my heartfelt thanks to **Dr. Sutapa Bandyopadhyay Neogi (Director IIHMR Delhi), Dr. Sumesh Kumar (Associate Dean Academics and Students Affairs, IIHMR Delhi)** and my mentor **Dr. Ratika Samtani (Associate Professor IIHMR Delhi**).Their careful and invaluable guidance was instrumental to my study, both theoretically and practically.

This internship represents a significant milestone in my career development. I am committed to applying the skills and knowledge I have gained in the best possible way and continuing to improve upon them to achieve my career objectives. I look forward to the possibility of future cooperation with all of you.

Thank you once again for this incredible opportunity.

Sincerely,
Sweksha Gupta
PG/23/121

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ACRONYMS/ABBREVIATION

S.NO	ABBREVIATIONS	DESCRIPTION
1)	**ASHA**	**Accredited Social Health Activist**
2)	**HWC**	**Health and Wellness Centre**
3)	**RMLE**	**Research, Monitoring, Learning, and Evaluation**
4)	**RMNCHN**	**Reproductive, Maternal, Newborn, Child Health, and Nutrition**
5)	**RMNCAH+N**	**Reproductive, Maternal, Newborn, Child, Adolescent Health, and Nutrition**
6)	**JSSK**	**Janani Shishu Suraksha Karyakram**
7)	**ICDS**	**Integrated Child Development Services**
8)	**ARSH**	**Adolescent Reproductive and Sexual Health**
9)	**IFA**	**Iron and Folic Acid**
10)	**NFHS**	**National Family Health Survey**
11)	**SDG**	**Sustainable Development Goal**

ORGANIZATION PROFILE

India has embarked on the journey towards ensuring Universal Health Coverage and Piramal Swasthya is contributing with its experience & expertise of building innovative solutions that impact at scale.

Piramal Swasthya is focused on bridging public healthcare gaps by supplementing and complementing Government of India's vision to meet Universal Health Coverage. Piramal Swasthya is one of the largest not-for-profit organizations in India – in the primary public healthcare space with a focus on Maternal Health, Child and Adolescent Health, Non-communicable Diseases. Piramal Swasthya has over a decade-long experience in operating several healthcare innovations at scale, which are addressing the primary healthcare needs of most underserved and marginalized populations across India. Piramal Swasthya is operational in 21 States in India through 35 innovative public healthcare delivery programs and has served more than 112 Million beneficiaries so far.

Piramal Swasthya employs 2500+ employees (including over 250 medical doctors) who work with Seva Bhav.

Core Values:

- **Respect**, upholding the dignity of each individual.
- **Integrity,** adhering to an ethical code of conduct in all actions.
- **Commitment,** fulfilling our duties and social responsibilities.
- **Excellence,** setting high performance standards and being accountable to them.

Approach:

- Gender Equality
- Knowledge, Management and Learning

SECTION 1- OBSERVATIONAL LEARNING

A} DESCRIPTION OF THE 2 MONTHS INTERNSHIP JOURNEY

Spanning two enriching months from April 22 to June 22, my internship journey at Piramal Swasthya unfolded as a transformative experience in my professional growth. This period was defined by immersive learning opportunities, engaging projects, and insightful field visits that deepened my understanding of public health challenges and solutions.

1] Immersive Orientation and Training at Piramal Swasthya

Stepping into Piramal Swasthya, I began with a comprehensive orientation at Royal Bihar on April 22, 2024. Led by Dr. Tanmay Mahapatra and Dr. Shuchi Sree Akhouri, the sessions provided deep insights into the organization's mission, values, and ongoing projects. They set a strong foundation for understanding Piramal's impactful work in healthcare.

During orientation, we met our mentors and received our research topics. Tanmay Sir guided us on aligning our interests with career paths at Piramal Swasthya. He highlighted the organization's role in rural healthcare, transforming lives through comprehensive initiatives.We also met key team members, understanding their roles. Meetings with my supervisor and mentor clarified internship expectations, goals, and responsibilities, providing a clear roadmap.

2] Comprehensive Learning: Foundations in Healthcare Research, Data Management, and Skill Development

During my two-month internship, I had enriching learning sessions that deepened my understanding of healthcare research, data management,analysis and overall healthcare delivery. Each week, I attended three key sessions led by experts in their fields, which laid a strong foundation for my professional growth

- **Data Analysis-** The sessions, conducted on Mondays by Shuchi Ma'am, Manoj Sir, and Ashish Kashyap Sir, focused on mastering SAS, a powerful statistical software. These sessions explored essential techniques for using SAS to analyze large datasets, enabling us to extract meaningful insights from the data.
- **Research Methodology-** Dr. Tanmay Mahapatra on Wednesdays led sessions on research methodology, providing a comprehensive understanding of various research topics. We learned principles for conducting robust and ethical research, covering aspects from research design to measures of occurrence. Practical examples were used to illustrate the relevance of our studies, making the sessions both informative and applicable.

- **Data Cleaning and Management**- On Fridays, Kunal Roy Sir and Alok Sir led engaging sessions on data cleaning and management using Microsoft Excel. Under their expert guidance, we mastered techniques for cleaning and managing large datasets, including conditional formatting and pivot tables, to ensure data accuracy. The hands-on practice significantly improved our ability to organize data efficiently.
- **Literature Review**- An enlightening session with Irshad Sir focused on literature reviews, emphasizing effective techniques for searching scholarly articles using different search engines. The session also included instruction on citation methods, offering valuable guidance on organizing research.
- **Additional Session**- Devashish Sir provided insights into government healthcare programs, connecting theoretical knowledge with practical applications in healthcare settings.

3] Engaging in Research: Exploring Socio-Demographic Correlates of Child Health and Nutrition

My involvement in research on "Socio-Demographic Correlates of Child Health and Nutrition" under the guidance of my mentor, Dr. Shuchi Sree Akhouri, was a stimulating experience during my internship. For this secondary research project, a thorough literature evaluation was carried out. I read through a number of academic papers and studies to get understanding of the variables affecting the nutritional and health outcomes for children.

A key aspect of this research was creating an evidence table. This table synthesized findings, conclusions, and limitations from reviewed papers, offering a structured overview of existing knowledge. This process deepened my understanding of the topic and taught me the intricacies of conducting secondary research.

4] Empowering Futures: The "Girl Boss Rise" Project

During my internship, I had the privilege of working on an inspiring project named "Girl Boss Rise" under the mentorship of Suchi Ma'am. This transformative initiative aims to empower rural adolescent girls by equipping them with essential 21st-century skills, ensuring they can flourish and excel in their careers.

Being a part of "Girl Boss Rise" was a deeply rewarding experience. This project not only improves career opportunities but also cultivates self-confidence and resilience, preparing participants for a promising future. I am grateful to have contributed to this empowering initiative, gaining valuable insights into the essential skills required for young women in the 21st century to excel in their careers.

5] Field and Facility Visits: Learning and Observations

- **Field Visit on 1st May 2024-** The visit was essential for gathering details on maternal and newborn care across three age groups (0-6 months, 6-12 months, and 12-23 months) for the ASSIST Study in Parsawa and Madadpur villages near Patna, directly observing the healthcare challenges local communities encounter. These visits involved face-to-face interviews and surveys to investigate maternal health practices, prenatal and postnatal care, delivery experiences, and newborn health indicators like immunization coverage and growth milestones..

- **Facility Visit on 14th May 2024 –** My visit to the Sub-Divisional Hospital (SDH) in Danapur gave me valuable insights into the challenges faced by healthcare providers. Operating under constraints such as limited resources and high patient volume, the experience emphasized the importance of resource management and innovative approaches in healthcare. observed the hospital's operations, including its immunization section, triage system, Kangaroo Mother Care (KMC) room, and operating theater (OT), which highlighted the complexities of delivering healthcare services.
- **HWC Visit on 18th June 2024** - The visit to Bhusaula HWC in Danapur Bihar emphasized the vital role of the HWC in providing accessible primary healthcare services. The center operates efficiently, offering critical services like NCD screening and teleconsultation.

7] Conclusion:

My internship at Piramal Swasthya has been an enriching chapter in my professional development. Through comprehensive orientation sessions led by esteemed experts, I gained a deep understanding of the organization's mission and values. Engaging in learning sessions on healthcare research, data management, and skill development equipped me with practical insights and tools essential for my career. Participating in impactful projects such as "Girl Boss Rise" and conducting research on child health and nutrition broadened my perspectives and deepened my commitment to addressing public health challenges. Field visits to rural communities and healthcare facilities provided invaluable firsthand experiences, reinforcing the importance of effective healthcare delivery and community engagement. Collaborating with diverse teams further expanded my knowledge and network in public health, preparing me to contribute meaningfully to improving healthcare outcomes in the future. My internship at Piramal Swasthya has not only enhanced my professional skills but also inspired me to pursue a career dedicated to making a positive impact on public health.

B} LEARNING FROM THE DIFFERENT SESSIONS

During my two-month internship, I participated in various learning sessions that greatly contributed to my professional development.Here's an overview of the different sessions that we had during the course of the 2 month internship.

Basic SAS Analysis	Ashish Kashyap and Manoj Kumari Singh
Research Methodology	Dr. Tanmay Mahapatra
Data cleaning and management	Mr. Kunal Roy and Mr. Alok Ranjan
Literature Review	Md. Irshad
Sessions on Public Health	Dr. Devashish Singh

Comprehensive Training in SAS Programming

This session was led by Ashish Kashyap and Manoj Kumari Singh, held every Monday throughout the two-month internship period.

Introduction to SAS In our initial session, I learned the basics of using SAS for data analysis, management, reporting, and graphics. Our mentor guided us through downloading and installing SAS OnDemand online, demonstrating how to log in and navigate the SAS environment. Key SAS tabs were introduced:

- **Editor Tab:** Where coding is executed.
- **Log Tab:** Displays errors after code execution.
- **Results Tab:** Shows the outcomes of executed code.

We also explored the differences between online and offline SAS functionality. Online SAS operates within a web-based environment, accessing and managing data and outputs remotely. In contrast, offline SAS installations run directly on a local machine, providing more control over data storage and access.

Practical Skills Development Subsequent sessions focused on practical skills such as creating SAS libraries for dataset storage. Temporary libraries like "Work" are available only during a SAS session and are lost when the session ends. Permanent libraries retain datasets even after SAS is closed. Our mentor emphasized coding conventions, such as:

- Limiting library names to eight characters without numbers.
- Ending each code line with a semicolon for execution.

Key Techniques Covered:

- Creating libraries using the libname statement.
- Importing data from sources like Excel using proc import.
- Exploring dataset details with proc contents.
- Maintaining the original order of data using proc contents varnum.
- Analyzing variable frequencies using proc freq.
- Removing duplicate observations with proc sort nodup and proc sort nodupkey.
- Calculating statistical measures like mean, median, and mode using proc means.

Distinction Between PROC Step and DATA Step: In SAS programming, the DATA step handles data manipulation tasks like creating variables and cleaning data, while the PROC step performs statistical analysis and generates reports. Understanding these distinctions is crucial for effective data manipulation and analysis.

Hands-On Learning and Application Our mentors provided us with an actual dataset comprising 2250 observations, accompanied by a codebook. We were also given tools designed for all three age groups. Under Ashish sir's guidance, I performed necessary recoding for sociodemographic indicators (income, religion, caste, mother's education, migration) present in the dataset, applying methods taught during our sessions.

Additionally, we were tasked with defining 14 indicators covering the entire MNCH program, including nutrition, family planning, newborn care, and maternal health. This involved familiarizing ourselves with each indicator to easily associate them with specific tools. Working collaboratively as a team, we conducted recoding for all 14 indicators.

During sessions, mentors encouraged us to share our screens, allowing them to review our work, provide corrections, and offer guidance to enhance our understanding.

Exploring Foundational Aspects of Research Methodology with Dr. Tanmay Mahapatra

In a recent insightful session conducted by the esteemed Dr. Tanmay Mahapatra, we explored into the foundational aspects of research methodology, which are essential for conducting rigorous and credible research. Dr. Mahapatra began by explaining various types of research methodologies, including qualitative, quantitative, and mixed-methods approaches. He emphasized the importance of selecting the appropriate methodology based on the research question and objectives, introducing us to numerous new terms and concepts related to research methodology.

Key Components of Research Design

Dr. Mahapatra began by explaining different research methodologies, emphasizing the importance of choosing the appropriate methodology based on the research question and objectives. He introduced us to:

- **Cross-Sectional Study**: Conducted at a single point in time, this study assesses both exposure and outcome simultaneously. It's useful for understanding the prevalence of a condition.
- **Case-Control Study**: This retrospective study starts with an outcome and traces back to determine whether the exposure is associated with the outcome. It's particularly useful for studying rare diseases.
- **Cohort Study**: This study can be retrospective or prospective. It begins with a cohort, or group of individuals with similar characteristics, and follows them over time to study outcomes and their association with specific exposures. Cohort studies are valuable for studying the natural history of diseases and identifying risk factors.
- **Ecological Study**: In this study, the unit of analysis is a population or group of individuals rather than individuals themselves. It's useful for identifying potential public health issues at the community level.

Proportion and Ratio: Sir also explained the basics of proportion and ratio, highlighting their differences

- **Proportion**: In this measure, the numerator is a part of the denominator (e.g., the proportion of males in a population represents the number of males divided by the total population).
- **Ratio**: Here, the numerator is not part of the denominator (e.g., the ratio of males to females in a population compares the number of males to the number of females).

He discussed various types of ratios and proportions, such as:

- **Odds Ratio**: A measure of association between an exposure and an outcome.
- **Incidence Proportion/Risk**: The probability of developing a disease over a specified period, calculated in the population at risk.
- **Prevalence Proportion**: The proportion of a population that has a particular disease at a specific point in time, calculated in the total population.
- **Incidence Rate**: The rate at which new cases of a disease occur in a population.
- **Prevalence Rate**: The total number of cases of a disease in a population at a given time.

Important Research Terms: He introduced several important terms and concepts

- **Validity**: This includes both external and internal validity, crucial for ensuring the accuracy and generalizability of research findings. External validity refers to the extent to which study findings can be generalized to other settings, while internal validity refers to the accuracy of the findings within the study context.
- **Ecological Fallacy**: This occurs when findings from an ecological study (group-level data) are incorrectly applied to individuals, leading to erroneous conclusions.
- **Temporal Ambiguity**: This refers to the difficulty in determining which variable occurred first when establishing associations between variables. It's a common issue in observational studies.
- **Models of Causality**: These are different frameworks that explain how various causes lead to a particular outcome. Understanding these models is crucial for establishing causal relationships in research.

Disease Periods: Three critical periods associated with diseases

- **Induction Time**: The interval between the appearance of the cause of a disease and the initiation of the disease.
- **Latency Period**: The interval between the initiation of the disease and its diagnosis. This period is crucial for understanding disease progression and for developing screening strategies.
- **Incubation Period**: Specific to infectious diseases, this is the interval between the appearance of the cause of the disease and the appearance of symptoms. It helps in understanding the transmission dynamics of infectious diseases.

Interactive Learning Experience

A standout feature of Dr. Mahapatra's sessions was his interactive teaching style. He frequently asked questions, keeping the class highly attentive and engaged. He ensured that all participants felt included by monitoring our progress through feedback from our mentors. He also dedicated 10-15 minutes before and after sessions to address any doubts. If there were no questions, he would pose questions to us, further deepening our understanding and encouraging critical thinking.

On a personal level, these interactive sessions significantly enhanced my learning experience. The continuous engagement through questions and discussions helped me grasp complex concepts more thoroughly. His approach of asking questions not only kept me attentive but also fostered a deeper curiosity about the subject matter. The opportunity to clarify doubts in real-time and the inclusion of practical problems to solve made the theoretical aspects of research methodology much more tangible and understandable. This method of interactive learning was instrumental in solidifying my knowledge and confidence in applying research methodologies effectively.

Mastering Data Cleaning and Management Techniques

This session, led by Mr. Kunal Roy and Mr. Alok Ranjan, was held every Friday throughout the two-month internship period. Throughout various sessions, I learned several crucial concepts and best practices to ensure the accuracy, reliability, and usability of data.

Good Data Management Practices: After developing a survey tool and questionnaire, conducting a pilot test with a small sample is crucial using SurveyCTO for data collection. This ensures issues are identified and corrected before full deployment. Review and revise questions for clarity and relevance, incorporating skip logic for a dynamic survey experience. Finalize the user-friendly interface, provide thorough training to data collectors, and establish a robust data management plan. Monitor field data collection, implement verification protocols for accuracy, and clean and analyze data systematically. Gather feedback to improve future surveys and document lessons learned.

Conditional Formatting: Conditional formatting in Excel helps highlight specific data points based on certain criteria. This can be incredibly useful in a survey context in several ways.

- **Identifying Errors**: Automatically highlight outliers or invalid responses, making it easy to spot and correct errors quickly.
- **Visualizing Trends**: Use color scales or data bars to visualize response trends or patterns at a glance.
- **Highlighting Duplicates**: Identify and address duplicate entries, ensuring data integrity.

Conditional formatting helps highlight cells based on specific conditions, such as:

- **Greater Than/Less Than**: Highlight cells with values greater or less than a specified number.
- **Finding Duplicates**: Automatically highlight duplicate values in your dataset.

Pivot Tables: These are great for summarizing and analyzing data

- **Summarizing Large Datasets**: Quickly condense large amounts of survey data into an understandable format, showing averages, sums, counts, and other aggregates.
- **Data Segmentation**: Break down responses by different categories such as demographics, time periods, or any other variable, providing deeper insights.
- **Identifying Trends and Patterns**: Easily see trends and patterns in the survey data, helping to draw meaningful conclusions.

Filtering Data: Filters in Excel help you view specific subsets of data. To add filters, select your dataset, go to the Data tab, and click Filter. You can then use the drop-down arrows in column headers to filter values based on your criteria.

Visualizing Data:Excel allows you to create various types of charts for data visualization.

- **Pie Charts**: Effective for visualizing data that represents parts of a whole, providing a clear visual representation of how individual segments compare to the overall dataset.
- **Bar Graphs**: Versatile tools for comparing different categories or groups within a dataset, allowing for easy comparison of quantities across different categories and identifying trends over time or across different groups.

Data Validation: In Excel,Data validation ensures data integrity by restricting the type of data entered in a cell. To set it up, select the cells you want to validate, go to the Data tab, and click Data Validation. Define your validation criteria, such as whole numbers, decimals, or dates. Our mentors provided us with a dataset, and I actively executed the syntax provided.

Creating Drop-Down Lists: You can create drop-down lists to restrict input to predefined options. Select the cell(s), go to Data Validation, choose List, and enter the allowed values.

Subtotal Function: The SUBTOTAL function in Excel calculates results based on filtered data. Unlike the SUM function, SUBTOTAL includes only visible cells, making it ideal for filtered datasets. It offers different arguments; argument 9 sums visible cells, excluding rows hidden by filters. Argument 109 also includes manually hidden cells but excludes filtered-out rows. This distinction is crucial for tailoring calculations to include or exclude specific types of hidden data while ensuring accuracy in data analysis within Excel.

VLOOKUP and HLOOKUP

- **VLOOKUP**: Searches for a value in the first column of a range and returns a value in the same row from a specified column.
- **HLOOKUP**: Searches for a value in the first row of a range and returns a value in the same column from a specified row.

IF, COUNTIF, and SUMIF Functions

- **IF**: Performs a logical test and returns one value if true and another if false.
- **COUNTIF**: Counts the number of cells that meet a specific condition.
- **SUMIF**: Adds the values in a range that meet a specified condition.

By mastering these techniques and tools, you can effectively manage and analyze data, ensuring high quality and facilitating insightful analysis.

Conclusion: Our mentors consistently guided us through practical exercises, encouraging us to share our screens as we worked with a dataset containing information from all 38 districts of Bihar. This dataset included details on total deliveries, stillbirths, and live births. To protect privacy, unique ID codes replaced full column headings in the final sheet. If we needed to understand the meaning of these codes, we referred to a provided codebook. After each session on data cleaning and management, we received tasks to apply what we had learned. This hands-on approach allowed us to deepen our understanding and proficiency effectively.

Comprehensive Literature Review Session with Expert Md. Irshad

In a session led by Md. Irshad, we delved into the art and science of conducting comprehensive literature reviews using powerful research tools like Google Scholar and PubMed. Md. Irshad demonstrated effective techniques for filtering and searching articles specific to our topics of interest, emphasizing the importance of recent publications from the past 10-15 years to ensure up-to-date research. He also highlighted the use of filters such as "Free Full-Text" and options for Article Type and Publication Date, enabling precise refinement of search results.

A key focus of the session was on MeSH terms (Medical Subject Headings), essential for indexing and searching articles in PubMed. These terms enhance the precision of our searches, ensuring we retrieve the most relevant literature. Md. Irshad also introduced Boolean Operators—"AND," "OR," and "NOT"—for refining search queries effectively. Additionally, he guided us on proper citation techniques using EndNote software, facilitating seamless integration of citations into our documents.

Furthermore, we explored forward and backward referencing strategies. Forward referencing in Google Scholar helps track citations of a particular publication by others, showcasing its impact. Backward referencing involves identifying all references cited within an article, providing foundational insights into the supporting literature. This dual approach deepens our understanding and ensures a thorough review of relevant research.

Insights from Public Health Experts at Piramal

During our in-person session with the esteemed faculty of Piramal, who possess extensive expertise in public health, we gained profound insights into the ground realities of the field. They shared the various challenges faced when interacting with communities, especially the social issues that hinder access to healthcare.

Implementing Healthcare Programs for Marginalized Communities

The faculty emphasized strategies for implementing healthcare programs that benefit marginalized communities. They provided a range of literature essential for professionals entering the field of public health, which is crucial for understanding and addressing these challenges effectively.

The MCP Card for Pregnant Women

One of the key topics discussed was the Mother and Child Protection (MCP) card issued by the Government of India to pregnant women who plan to deliver their babies in government facilities. This card contains all necessary information that the beneficiary or mother should know. It is also a valuable tool for healthcare professionals, enabling them to record essential details about the pregnancy, including antenatal care, care during pregnancy, any danger signs, post-natal care, parenting tips, and any signs of danger for the baby. Additionally, it includes a record of all vaccinations given to the baby.

IPHS Standards and Quality of Healthcare Delivery

We also learned about the Indian Public Health Standards (IPHS), which outline the norms and standards that healthcare facilities and hospitals must follow. These standards are designed to improve the quality of healthcare delivery across the country under the National Rural Health Mission (NRHM).

MNS Toolkit for Maternal, Newborn, and Child Health

The session introduced us to the Maternal, Newborn, and Child Health (MNS) Toolkit. This set of resources and tools is designed to support healthcare providers, managers, and policymakers in enhancing the quality of maternal, newborn, and child health services. The toolkit aims to improve healthcare delivery, health outcomes, and the overall well-being of mothers, newborns, and children.

Integrated Child Development Services (ICDS)

Lastly, we had a session on the Integrated Child Development Services (ICDS) program, launched in India in 1975. This comprehensive initiative aims to improve the health, nutrition, and development of children under six, as well as pregnant and lactating women. ICDS provides supplementary nutrition, immunization, health check-ups, referral services, pre-school education, and health and nutrition education through a network of Anganwadi centers managed by trained workers. By collaborating with other government programs, ICDS offers a holistic approach to child and maternal health, striving to reduce infant mortality, combat malnutrition, and support early childhood development and maternal well-being.

C} FIELD VISIT REPORTS

FIELD VISIT REPORT-ASSIST 2024

Date: 29th April 2024
Location 1: Parsawa , Patna, Bihar
Location 2: Madatpur, Patna, Bihar

This report outlines a household survey conducted on April 29, 2024, in two blocks of Patna, Bihar—specifically, Parsawa and Madatpur—as part of the Maternal and Child Health (MCH) program. The data collection for the ASSIST study was carried out with the participation of Prashant Singh, Senior Program Leader at Piramal, and Anil Kumar, a data collection expert.

During this field trip, I observed the implementation of three distinct questionnaires designed for children in different age groups: 0–5 months, 6–11 months, and 12-23 months. Additionally, I gained insights into the barriers and challenges faced by women and children in accessing healthcare, the role of ASHA workers, and various aspects of child and maternal nutrition status. This report incorporates my observations and learnings from the visit.

Listing and mapping:

A systematic approach was employed to map and list the households, ensuring an organized selection process. We began on the right side, choosing the 30th house as our starting point for the survey. We decided to skip four households between each selection. Starting with the first household, we counted four houses to the right of the main door and selected the fifth house for the survey. This process was rigorously followed; after surveying each chosen household, we skipped the next four and then selected the fifth for the survey.

Survey Introduction and Consent Process:

Before commencing each interview, respondents were informed that the data was being gathered for a survey conducted by the Piramal organization. They were assured that their responses would be recorded confidentially. The purpose of the survey was to evaluate community health status, assess the performance of ASHA and ANM workers, and gauge the availability of healthcare facilities. Interviews began only after obtaining the respondent's consent.

INTERVIEW 1

0-5 months

Tool sections:

-Basic Household Details
-ANC & Birth Preparedness
-Newborn Care (NBC)
-Postnatal & Breastfeeding Practices

Key findings:

- The ASHA provided iron and folic acid (IFA) tablets during the third trimester after the mother requested them, following her gynaecologist's recommendation from a private hospital. A total of three antenatal care (ANC) visits were completed; the first two were at a private hospital, while the final visit was conducted by the community ASHA.

- The baby was delivered at a government hospital, but the ambulance service was inadequate. The family had to wait nearly an hour for an ambulance, and when it took too long, they resorted to taking the mother, who was in pain, to the hospital by rickshaw.
- Post-delivery, the mother needed IFA tablets, but the ASHA could not provide them, so she had to purchase them from a pharmacy. Despite the delivery occurring at a government facility, the baby did not receive vitamin K immediately after birth.
- The mother did not receive the monetary benefits under the Janani Suraksha Yojana (JSY) scheme for either of her children. She applied for the benefits but received only 2000 rupees in total. At none of the appointments was the baby's weight checked.
- After the birth, the mother did not receive the Mother and Child Protection (MCP) card; the only record was the outpatient department (OPD) card. The mother consulted a doctor due to difficulties with breastfeeding, and following the doctor's suggestion, the baby was occasionally bottle-fed.
- The Anganwadi center did not perform the Godbharai ceremony for the pregnant woman, and she was unaware that such a ceremony should have been conducted. The Godbharai ritual provides the expectant mother with necessary fruits, medications, and guidance.

INTERVIEW 2

12-23 months

Tool sections:

-Household and Respondent Characteristics
-Immunization
-Complementary Feeding Practices
-Postnatal Contraception and Family Planning

Key findings:

- The mother was accompanied by two of her fathers-in-law, and due to traditional norms requiring them to remain silent in the presence of the family head, she was unable to respond to the questions appropriately.
- At the time, the mother was expecting her fourth child. At only 21 years old, with no intervals between pregnancies, she was physically unfit for another pregnancy. This left her extremely weak and deficient in essential vitamins and minerals.
- They were not receiving rations under the "take-home ration" plan due to conflicts with the Anganwadi workers, although they were aware of all current policies and programs for their children's development.
- Because of her lack of knowledge and disagreements with the Anganwadi worker, her infant did not receive any of the immunizations listed on the MCP card, which she also did not have.
- When questioned about their eating habits, the mother mentioned only two or three nutrient-deficient foods, indicating that the children were not fed adequately and were deficient in vitamins and nutrients.
- We had to discontinue the survey because the mother was not answering our questions honestly, relying instead on her father-in-law for responses, despite being informed that the session would be recorded and assured of its confidentiality.

INTERVIEW 3

6-11 months

Tool sections:

-Household and Respondent Characteristics
-Breastfeeding and Complementary Feeding Practices

-Immunization and Childhood Disease
-Postnatal Contraception and Family Planning

Key findings:

- The family was quite knowledgeable about the schemes aimed at women and child development.
- After the delivery at a private hospital, the infant's weight was recorded at 2.75 kg.
- Although neither the ASHA nor the ANM visited, the family understood the importance of monitoring the baby's weight to assess overall growth and development. Consequently, they scheduled regular check-ups, during which the baby's weight was tracked. At the time of the survey, the infant weighed approximately 7 kg.
- Since the infant was 10 days old, he had been exclusively fed cow's milk from a bottle because he was unable to suck.
- The infant, now about eight months old, had been fed only cow's milk. We advised the family to start with semi-solid foods and gradually introduce fruits and other appropriate foods. The family mentioned that they had tried feeding him solid food, but he could not digest it. After a few unsuccessful attempts, they did not persist.
- The family had to purchase IFA syrup from the pharmacy because the ASHA did not provide any for the baby.

INTERVIEW 4

0-5 months

Tool sections:

-Basic Household Details
-ANC & Birth Preparedness
-Newborn Care (NBC)
-Postnatal & Breastfeeding Practices

Key findings:

- The mother was not sufficiently alert during the interview as she had just arrived the day before with her 10-day-old baby.
- The respondent's elders supported her younger sister-in-law's dominating behavior because the sister-in-law had a son, while the respondent had only daughters. During the interview, the respondent frequently made eye contact with her sister-in-law to seek permission to answer questions.
- Despite having undergone a painful C-section, the family displayed insensitivity by not offering her any comfort and making her sit on the floor for the interview. We provided her with a chair and adjusted our positions to ensure she was comfortable enough to answer all the questions, given the lengthy duration of the interview.
- When asked about her antenatal care (ANC), she mentioned that she had gone for a checkup at a private facility and paid a substantial amount of money. This raised suspicion among the interviewers, and upon asking for the checkup reports, it was revealed that she had undergone a sex determination test.
- They did not receive rations under the "take home ration" plan from the Anganwadi workers, but they were aware of all current policies and programs for their children's development.
- The respondent's husband was eavesdropping from the next room. When he learned that she had disclosed the sex determination test, he angrily burst in and ordered her to stop answering questions. Despite his anger, she continued to speak, which hurt his ego. In a rage, he violently slapped her in front of us. Shockingly, the family members remained silent, implicitly supporting his violent behavior.
- After this insensitive act, the mother-in-law intervened, asking her son to return to the room and allowing us to continue the interview. However, seeing that the respondent was in pain and frightened, we decided to discontinue the interview. It was evident that she was regularly subjected to domestic violence, as her family believed she was incapable of delivering a baby boy. Continuing the interview might have led to

more violence, especially since the neighbors informed us that the respondent's husband was mentally unstable.

INTERVIEW 5

12-23 months

Tool sections:

-Household and Respondent Characteristics
-Immunization
-Complementary Feeding Practices
-Postnatal Contraception and Family Planning

Key findings:

- The baby was delivered at the nearby government hospital.
- Initially, the mother was shy, and her mother-in-law was answering all the questions. However, we asked the mother-in-law to leave and reassured the mother that the interview would remain confidential and that no issues would arise against her.
- Since the ASHA was a close relative of the mother, all ANC checkups were performed on schedule with careful attention to detail.
- The mother received all her rations on time as part of the "Take Home Ration" initiative.
- Despite the ASHA providing her with IFA tablets, the mother chose not to take them due to side effects, such as headaches and nausea.
- Although the baby was delivered prematurely, the baby's health was excellent because the family had been taking good care of her.
- The baby's height and weight were checked regularly.
- The MCP card listed every vaccination the baby received, and they were all administered on time.
- While the baby continued to be breastfed, we suggested that the mother introduce more semi-solid or solid foods.
- The respondent received information about family planning methods from the local ASHA.

INTERVIEW 6

6-11 months

Tool sections:

-Household and Respondent Characteristics
-Breastfeeding and Complementary Feeding Practices
-Immunization And Childhood Disease
-Postnatal Contraception and Family Planning

Key findings:

- When we initially arrived, the respondent declined our interview because her mother-in-law, who also served as the ASHA for the Madadpur block, was not at home. This highlighted the significant influence the mother-in-law had on family decision-making.
- Upon our return when the mother-in-law was present, we were granted the interview with the respondent. However, throughout the interview, the mother-in-law repeatedly interrupted and answered questions herself, making it difficult for the respondent to provide coherent responses.
- The child received vaccinations on schedule, and the mother possessed an MCP card.

- During interviews with neighbors in the same block, we discovered that they had indeed received rations under the "take home ration" scheme, contradicting what the ASHA or mother-in-law had told us.
- Based on the mother-in-law's responses, it was evident that the mother and child were receiving a nutritious diet, regularly consuming fruits, milk, and raisins.
- According to the mother-in-law, the respondent had not received any funds under the JSY system, which is typically offered for the second child.

INTERVIEW 7

12-23 months

Tool sections:

-Household and Respondent Characteristics
-Immunization
-Complementary Feeding Practices
-Postnatal Contraception and Family Planning

Key findings:

- The respondent confidently answered the interviewer's queries.
- The respondent felt comfortable speaking freely because she was contributing to her family's finances.
- The mother informed us that she had received two installments of 2000 rupees each under the JSY plan for her first child, but the third installment was still pending. She was knowledgeable about various government programs and schemes.
- The infant was not receiving adequate food. When asked about the child's diet, the mother mentioned that they only fed her milk from a bottle and did not offer semi-solid or solid food separately.
- We advised the mother to introduce semi-solid food to the infant to ensure proper nutrition for healthy growth and development.
- The local ASHA accurately completed the vaccination records on the MCP card, ensuring all immunizations were administered on time.
- The respondent's four ANC visits were scheduled and completed promptly by the local ASHA.
- The baby's weight and height were not measured during any of the appointments, which are critical for assessing the infant's developmental progress relative to their age.

CONCLUSION

This field visit for the ASSIST study provided us with valuable insights into how we gather information about the health of mothers and children. We witnessed firsthand how surveyors interacted with people and learned about the challenges and best practices in collecting data in the field. The survey highlighted areas where improvements are needed for women and children in Parsawa and Madadpur. With this newfound knowledge, we can develop plans to better support them.

This visit underscored the importance of careful data collection and analysis in healthcare programs. By using reliable data to inform our decisions, we can identify effective strategies to enhance the health and nutritional well-being of women and children in these communities.

Sub-Divisional Hospital Visit Danapur

Date of Visit: May 14, 2024
Location: Patna, Bihar

Population Served: approximately 450,000
Purpose of Visit:
To gain an understanding of the operations, infrastructure and workflow of Sub-Divisional Hospital, Danapur, including patient care processes, departmental functions, inter-departmental coordination and overall efficiency.

{1} Introduction:
This report details a comprehensive facility visit conducted at Sub-Divisional Hospital Danapur, Patna, Bihar on May 14,2024 with the objective of assessing its operational effectiveness and overall healthcare delivery. The Hospital is generally well-maintained and serves a vital role in its locality by catering to approximately 450,000 population, offering essential healthcare services ranging from emergency care, outpatient consultations to specialized treatments ,as told by the Hospital Manager.

Facility Services Description:

Population Served	Approximately 450,000
OPD (Out-Patient Department)	Covers 15000-16000 patients per month
IPD (In-Patient Department)	Covers 800-900 patients per month
Total Number of Deliveries	200-300 per month
Immunization Coverage	700-800 per month

Facility Infrastructure Description:

Number of Floors	2
Ground Floor	Registration Counter Pharmacy ANC Room Family Planning Corner MCH WING: • Triage Room • Pre-Natal Ward • Labour Room • KMC Room • Post Natal and Recovery Room
First Floor	Immunization Center Cold Chain Management

{2} <u>Arrival:</u>
Time: 10:00 AM
I arrived at the hospital alongwith Mr /Dr **Prashant Singh** who is a Senior Program Leader at Piramal Foundation and upon arrival we were greeted by **Seema Suman Kumari, H**ospital Manager at Sub District Hospital, Danapur who provided an overview of the hospital's history, services, current initiatives and status .

{3} <u>First Observation</u>:
We observed that all medical staff members were quite busy when we arrived at the hospital, with patients either waiting in lines for treatment or receiving medication, or their family members waiting in the waiting room. Calls regarding the hospital's current situation were being received by manager ma'am, who was also giving orders to various workers regarding the work that was being done and whether any additional assistance was required.

{4} <u>Meeting With Seema Suman Kumari</u> :

Seema Ma'am provided an insightful briefing about the hospital's operations and services. Her detailed overview included the following key points:

- **COVID-19 Response:**

During the height of the COVID-19 pandemic, the hospital swiftly adapted by converting nursing wards into COVID-19 wards, demonstrating remarkable flexibility and dedication.The hospital played a pivotal role in safeguarding the community's health during this challenging period, underscoring its importance as a frontline healthcare provider.

- **Model Immunization Center:**

The hospital boasts a model immunization center, equipped with state-of-the-art guidelines and machines.Nurses utilize a 24/7 monitoring tab to receive real-time updates on the condition of vaccines, ensuring their safety and efficacy.

- **Addressing LAMA (Leave Against Medical Advice) Cases:**

Seema Ma'am shared insights from a recent report on LAMA cases, focusing on 16 pregnant women who left the hospital against medical advice.
The hospital conducts thorough investigations in such cases, holding the responsible nurse or medical staff accountable.A platform is provided for staff to present evidence explaining the circumstances of each LAMA case, ensuring transparency and accountability.
These measures have led to a significant decrease in LAMA cases, reflecting the hospital's commitment to patient retention and care quality.

- **New Infrastructure Development:**

To address patient overload, a new building has been constructed adjacent to the existing facility.The new building features an elevator and improved facilities, enhancing the hospital's capacity to provide high-quality healthcare services.

{5} Hospital Tour and Departmental Insights:
During our visit, we were privileged to be guided by **Yagesh Rani**, a distinguished Senior Program Leader at the Piramal Foundation. Her extensive knowledge and expertise provided us with a comprehensive understanding of the hospital's inner workings. As we explored the various departments, we observed their functionality, maintenance standards, staffing requirements, and the progress made over time. Additionally, we identified areas that require further enhancement to optimize healthcare delivery.

GROUND FLOOR

- **Registration Counter**: The registration counter is thoughtfully designed with designated areas for pregnant women, effectively preventing overcrowding during emergencies. A token system is implemented to manage patient flow, assigning numbers for treatment checkups in an orderly fashion. This system not only reduces noise but also minimizes the risk of patient disputes. The orderly lines contribute to the overall efficient functioning of the hospital.

- **Pharmacy**: The pharmacy visit confirmed the availability of essential medications for a variety of ailments. Although a detailed inventory of medications was not available during this visit, it was noted that the Pharmacist Officer oversees the overall functioning and maintenance of the pharmacy, ensuring that all essential medicines are well-stocked and up-to-date. Observations indicated that all necessary guidelines are strictly followed, ensuring the pharmacy's smooth operation.

- **ANC Room:** The Antenatal Care (ANC) room provides comprehensive services including regular monitoring of blood pressure, weight, and overall health. The hospital offers essential tests such as CBC, Hb levels, blood grouping, Rh factor, HIV, and Hepatitis. High-risk pregnancies are closely monitored, with separate registers maintained for tracking patients in different trimesters—one for after 36 weeks and another for the second and third trimesters. Pregnant women receive 180 IFA (iron folic acid) and calcium tablets. Nutritional advice, diet booklets, and MCP cards are distributed during the first visit. The ANC room also administers necessary vaccines to protect both mother and baby. A color-coded bed arrangement prioritizes care, with red indicating immediate attention needed for severe complications, yellow for moderate risk, and green for low risk. Follow-up and scheduled visits are meticulously tracked to monitor pregnancy progress.

- **Family Planning Corner:** The Family Planning Counselling Room provides comprehensive support for pregnant women, known as Kishori, both before and after pregnancy, as well as for general counselling needs. It offers a "Basket of Choice" for contraceptive methods, including Condoms, Antara, Mala M, Nirodh, Chaya, and Implants for women aged 15-49. Counselling services also extend to postnatal care, assisting mothers with recovery and addressing gender issues if needed. The corner promotes the slogan "SWASTH MAA, SWASTH BACCHA, TABHI SUKHI PARIVAR" (Healthy Mother, Healthy Child, Only Then a Happy Family), emphasizing the importance of maternal and child health for family well-being.

- **MCH Wing:** Maternal and Child Health (MCH) Wing includes several critical areas:

- **Triage Room & Mini Delivery Room:** These rooms are designed for emergency preparedness and initial assessment of pregnant women, sorting them into three categories using a color-coded system. The rooms are well-equipped with essential medical equipment to handle emergencies and conduct necessary procedures, including emergency deliveries. This system ensures that each patient receives the appropriate level of care promptly.

- **Pre-natal Ward:** This ward caters to both high and low-risk pregnant women, featuring three beds allocated based on the severity of the patient's condition. The color-coded triage system includes:

Yellow Beds (2): Designated for expectant mothers with serious but not immediately life-threatening conditions.
Red Bed (1): Reserved for patients with severe, potentially life-threatening conditions. These patients receive the highest priority for care and resources.
This structured approach ensures that all pregnant women receive the necessary attention and care based on their specific needs, contributing to better health outcomes for both mothers and babies.

Labour Room: The Labour Room is a critical area of the hospital, meticulously equipped to handle imminent deliveries. With three beds dedicated to immediate cases, identified by red wristbands, it ensures prompt attention to those about to give birth.

- APGAR Score and Delivery Preparation: The APGAR score system is rigorously applied to assess newborn health immediately after birth.Detailed preparations for deliveries and strategies for preventing postpartum hemorrhage (PPH) are thoroughly implemented.
- Postpartum Hemorrhage Prevention: Preloaded Oxytocin is the primary drug used to prevent PPH, a leading cause of maternal mortality. An ECLAMPSIA Tray is maintained, and delivery instruments are sterilized on-site using autoclaves.
- True Labour Pain Assessment: True labour pain is confirmed when cervical dilation reaches 4-10 cm, with full dilation at 10 cm indicating imminent delivery.
- Partograph for Monitoring: The partograph is an essential tool in the labour room, used to monitor maternal and fetal well-being during the active phase of labor.It helps track cervical dilation and labor progress, enabling timely interventions when abnormalities are detected.

- Cord Clamping and Newborn Care: Delayed cord clamping (1-3 minutes) is practiced for healthy babies, while immediate clamping is performed for those with low survival chances.Post-birth, mothers are trained in skin-to-skin contact and kept under close observation to ensure both mother and baby are stable.
- Sterilization and Medication Storage: Sterile instruments are maintained on a table marked with autoclave signal tape.Instruments such as scissors are disinfected in a Cidex solution and sterilized in normal saline before use.Medications are stored in a designated freezer, with a comprehensive list of injections posted on its front door for easy reference.
- Episiotomy Procedure: When necessary, an episiotomy is performed to facilitate delivery and prevent severe tearing, making childbirth safer for both mother and baby.
- High-Risk Pregnancies: Pregnant women requiring blood transfusions are managed under Comprehensive Emergency Obstetric Care (CEmOC) and Level 3 (L3) care protocols.These high-risk cases are often transferred to a medical hospital for specialized care.
- Case Sheets and Discharge Protocol:Detailed case sheets include GPLA details: Gravida (number of pregnancies), Preterm (number of preterm births), Living Child (number of living children), and Abortion (abortion history).

The labour room registrar maintains meticulous records. The discharge sheet consists of 88 columns, with columns 1-33 filled before delivery. If a patient is referred to another hospital, columns 34-88 remain blank.
A refrigerator in the corner of the room stores all necessary medications, with a side note of all medications pasted on the front door for a clear overview.
By implementing these structured practices and maintaining high standards of care, the Labour Room ensures that both mothers and newborns receive the best possible care during one of the most critical times of their lives.

- **KMC Room (Kangaroo Mother Care Room):** The KMC Room is a dedicated cabin equipped with two beds, designed specifically for low birth weight babies who have poor sucking abilities. This specialized care unit supports the unique needs of these infants, providing a nurturing environment where mothers can practice Kangaroo Mother Care. This method involves skin-to-skin contact between the mother and the baby, which helps regulate the baby's body temperature, promotes breastfeeding, and enhances bonding.
- **Postnatal Exercise and Recovery Room:** The Postnatal Exercise and Recovery Room offers a vital service to new mothers, helping them regain their physical strength and fitness post-delivery. Equipped with physio balls and other exercise equipment, this room provides access to physiotherapy and guided exercises tailored to postpartum recovery. These exercises are crucial for preventing complications such as deep vein thrombosis, promoting overall well-being, and ensuring a swift recovery.

FIRST FLOOR

Immunization Model Center & Cold Chain Management

The Immunization Room stands out as one of the hospital's premier services, boasting a vibrant and child-friendly ambiance adorned with delightful cartoon posters. This welcoming environment helps ease the anxiety of young patients and fosters a positive experience during their vaccination visits. The meticulous maintenance of daily registers ensures accurate tracking of immunization records, guaranteeing comprehensive and timely coverage for every child.

In the realm of Cold Chain Management, the hospital excels in ensuring the integrity and potency of vaccines through state-of-the-art facilities. Multiple storage units are meticulously maintained to uphold temperatures between +2°C and +8°C, safeguarding the efficacy of various vaccine formulations. Neha, the adept head of cold chain management, enlightens us on the utilization of cutting-edge eVIN

technology. This innovative tool enables real-time monitoring of vaccine coverage, ensuring efficient distribution and utilization across the community.

Conclusion:

The visit to Sub-Divisional Hospital Danapur provided an insightful overview of its operations, infrastructure, and patient care processes, revealing a commendable level of dedication and efficiency in healthcare delivery. The hospital's adaptability during the COVID-19 pandemic, implementation of a model immunization center, and innovative use of an online portal for managing hospital requirements underscore its commitment to quality care and continuous improvement. The facility's infrastructure, including specialized units like the KMC Room and the comprehensive maternity and child health services, reflects a well-structured approach to addressing the diverse healthcare needs of the community. However, areas for further enhancement were identified, particularly in inventory management and further integration of digital health technologies. Overall, the hospital demonstrates a strong foundation in providing essential healthcare services to a significant population, with a clear focus on patient-centered care and operational excellence.

Report on Visit to Health and Wellness Centre in Bhusaula HWC,Danapur, Bihar

Date: 18 June 2024

Location: Bhusaula HWC ,Near AIMS Golambar , Phulwari Sharif, Danapur, Patna , Bihar

Introduction:

This report provides an overview of the observations and findings gathered during a recent visit to the Health and Wellness Centre (HWC) located in Bhusaula, Danapur, Bihar. We were accompanied and guided by Mithilesh Kumar, Senior Analyst at Piramal, during our visit.

The center caters to a population of approximately 10,206 residents across six villages. During the last month, the outpatient department (OPD) attendance was 633, and there were 250 teleconsultations conducted. The HWC plays a crucial role in delivering essential healthcare services, encompassing health promotion, early detection, treatment, follow-up care, and referrals to higher-level facilities such as CHC Pulwasharif.

Overview of Danapur Health and Wellness Centre:

Located in Danapur district, the Health and Wellness Centre (HWC) operates efficiently under the supervision of the Chief Health Officer (CHO). This center addresses primary healthcare needs with a steady patient flow of 20 to 30 individuals daily, open from 10 AM to 5 PM. It features two rooms, the first designated for regular check-ups by the CHO, along with a small section serving as a laboratory. Additionally, there are color-coded dustbins, a rack stocked with essential drugs and medicines, a washroom, and several boards and posters outlining the services offered by the HWC and the second room was for OPD.

A notable observation during my visit was the CHO's deep familiarity with the villagers and her compassionate approach towards them. She listened patiently to their concerns, which seemed to encourage both elders and children to visit the HWC independently, without any hesitation or the need for accompanying company.

Services Provided:

1) **Health Promotion and Early Identification:**
   - Regular initiatives promote preventive healthcare practices.
   - Early detection of health issues through screenings and educational sessions.
2) **Treatment and Follow-up Care:**
   - Provides treatment for common ailments such as fever, cough, cold, and heatwaves.
   - Ensures continuity of care through follow-up services.
3) **Referrals and Teleconsultation:**
   - Refers patients to CHC Pulwasharif for specialized care.
   - Conducts teleconsultations; last month saw 250 sessions focusing on Non-Communicable Diseases (NCDs).
4) **NCD Screening Corner:**
   - Dedicated area for screening and managing Non-Communicable Diseases, emphasizing early detection and management.
5) **Essential Drugs and Medicines:**
   - Maintains essential drugs like Aspirin, Amlodipine, Calcium, and others as per the Essential Drug List.
6) **Infrastructure and Facilities:**
   - Adheres to IPHS guidelines with well-maintained facilities.
   - Equipped with all 14 essential drugs and robust teleconsultation equipment.
7) **Hygiene and Environmental Practices:**
   - Implements effective waste management with color-coded dustbins:
     - **Black** for general waste (e.g., medicine wrappers, dry waste).
     - **Yellow** for items with blood drops, medical wraps.
     - **Red** for contaminated plastic waste (e.g., disposable syringes, saline bottles).
     - **Blue** for glass items (e.g., slides, broken glass, medicine/syrup bottles).
8) **Staffing and Community Engagement:**
   - Staff includes dedicated ANMs contributing to operational efficiency.
   - Prominently displays ANM contacts for community interaction and feedback.

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Conclusion:

The visit underscored the pivotal role of the Health and Wellness Centre in Danapur, Bihar, in providing accessible and comprehensive healthcare services to the local community. Its efficient operation, adherence to standards, and provision of critical services such as NCD screening and teleconsultation are commendable. Opportunities for improvement include extending service hours, enhancing telemedicine infrastructure, and boosting community outreach initiatives. Continued investment in primary healthcare facilities like the Danapur HWC is crucial for advancing health outcomes and effectively meeting the diverse healthcare needs of the population.

In-Person Meeting Report with ASHA Worker in Danapur District, Bihar

Name of ASHA- Hemanti Devi

Introduction:

This report documents insights gained from an in-person meeting with the Accredited Social Health Activist (ASHA) in Danapur District, Bihar, during a visit to the Health and Wellness Centre (HWC). ASHA, with 19 years of service, plays a pivotal role in bridging the healthcare gap between the community and healthcare facilities.

Overview of ASHA's Role and Responsibilities:

- **Community Trust and Experience:** ASHA has earned the trust of the community through nearly two decades of dedicated service. Her extensive experience equips her to effectively address the healthcare needs of the community.
- **Challenges Faced:** ASHA highlighted several challenges, including cultural barriers that hinder women from accessing healthcare services and financial hardships due to the incentive-based nature of her work.

Key Responsibilities and Activities:

- **Health Awareness and Education:** ASHA focuses on raising awareness about pregnancy care, ensuring women attend antenatal check-ups, and educating the community on health determinants like nutrition, sanitation, hygiene, and healthy living.
- **Counseling and Community Mobilization:** She provides essential counseling on birth preparedness, safe delivery, breastfeeding, immunization, and family planning. ASHA mobilizes the community to utilize health services available at various centers.
- **Meetings and Training:** ASHA participates in monthly meetings to report her activities and receive feedback. She undergoes regular training to enhance her community mobilization skills and knowledge.

Special Programs and Events:

- **Godhbharayi Event:** This event aims to improve maternal nutrition levels through the distribution of nutritious food and education on prenatal care.
- **Saas Bahu Sammelan:** ASHA advises newly married women on family planning and the importance of birth spacing for better health outcomes.
- **Village Health, Sanitation, and Nutrition Day (VHSND):** ASHA plays a crucial role in organizing VHSND, focusing on child immunization and maintaining immunization records.
- **Malnutrition Reporting:** She identifies malnourished children and ensures they receive necessary care at Nutritional Rehabilitation Centres.

Gaps and Challenges:

- **Community Challenges:** ASHA noted persistent resistance to certain health practices within the community, emphasizing the need for continued education.
- **Financial Hardship:** The incentive-based payment structure poses financial challenges. ASHA receives nominal payments for ANC check-ups and deliveries.

- **App Usage and Training:** Though trained to use an app for reporting and record-keeping, ASHA faces efficiency issues due to the app's malfunctioning over the past two months.

Conclusion:

The in-person meeting with ASHA in Danapur District underscored her indispensable role in the local healthcare system. Despite facing challenges, her dedication to improving community health remains resolute. Addressing financial constraints and operational issues, including app functionality, is essential to enhance ASHA's effectiveness in facilitating healthcare access and promoting better health outcomes in the community. Continued support and investment in ASHA workers are crucial for bridging healthcare disparities and achieving comprehensive community health goals.

C} HANDS-ON-PROJECT

Girl Boss Rise: Empowering Future Leaders

Program Overview Girl Boss Rise is a comprehensive 40-hour program designed to empower adolescent girls to transition smoothly from school to the workplace. The program equips participants with entrepreneurial and

work-readiness skills tailored to their unique needs. It enables them to set professional goals, create concrete future plans, and build strong support systems. Additionally, it fosters community engagement through projects and workshops involving parents and community members. By challenging gender stereotypes and building confidence, Girl Boss Rise prepares girls to confidently step into the professional world.

Project Aim The project aims to develop a comprehensive tool to measure various domains crucial for the personal and professional growth of young women participating in the Girl Boss Rise program. This tool will provide accurate and actionable insights into the participants' progress, ensuring that interventions and support are effectively tailored to their needs.

Domains of Focus

1. **Self-Efficacy and Confidence**: Assessing belief in one's ability to succeed in specific tasks.
2. **Financial Literacy**: Measuring knowledge and skills in managing personal finances, budgeting, and financial concepts.
3. **Leadership Skills**: Evaluating abilities in leading groups, decision-making, and motivating others.
4. **Career Readiness**: Gauging preparedness for the workforce, including job-seeking skills, resume writing, and interview techniques.
5. **Mental and Emotional Well-being**: Assessing psychological health, stress levels, and emotional resilience.
6. **Social Support Networks**: Measuring the strength and reliability of personal and professional support systems.

Current Status The project is in the planning phase. Measurement scales have been identified and adapted, and pilot testing is completed. The next steps involve developing the digital tool, integrating the scales, and preparing for full-scale implementation.

Conclusion My internship experience with Girl Boss Rise has been profoundly enriching. I applied my research skills to a meaningful project aimed at empowering young women. Developing this measurement tool is a significant step toward enhancing the program's effectiveness, helping participants achieve their full potential.

Learning Experience Working on the Girl Boss Rise measurement tool project has been an incredible learning journey. I delved into the process of finding and validating tools for self-confidence, financial knowledge, and leadership skills. Assessing the reliability and accuracy of these tools taught me the importance of adapting them to the participants' needs.

During the pilot testing phase, I gained hands-on experience collecting and analyzing data. This was crucial for understanding research processes and refining tools to ensure effectiveness and usability. Collaborating with experts and the technical team underscored the importance of teamwork and clear communication. Designing the framework for the measurement tool honed my strategic thinking and attention to detail, essential for project management.Overall, this project improved my research, analytical, and teamwork skills, providing a solid foundation in designing and validating measurement tools. The lessons learned during this internship are valuable for both my academic and professional growth, giving me the confidence to tackle complex challenges in the future.

SECTION 2- DESK REVIEW

A} BACKGROUND

Nutrition is central to the achievement of the Sustainable Development Goals (SDGs) of the 2030 Agenda, and at least 12 of the 17 SDGs include indicators relevant for nutrition. In addition, the World Health Assembly in 2012 unanimously endorsed 6 ambitious maternal, infant, and young child nutrition targets .(1)

UNICEF is custodian for global monitoring of two indicators that measure progress towards Goal 3: GOOD HEALTH AND WELL-BEING (Ensure healthy lives and promote well-being for all at all ages) as it relates to children: Indicator 3.2.1 Under-five mortality rate and Indicator 3.2.2 Neonatal mortality rate. (2)
SDG3 TARGET 3.2 is-By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births. (2) SDG Target 2.2 is to End all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age . (3)

Proper nutrition in early childhood is vital for physical and mental growth and development . Children need adequate nutrients (carbohydrates, proteins, fats) and micronutrients (minerals, vitamins) for proper body functioning, immune system development, and overall growth. (4)

The World Health Organization (WHO) and United Nations Children's Fund (UNICEF) jointly developed the global strategy for infant and young child feeding practices (IYCF). This strategy recommends initiation of breastfeeding within 1 hour of birth, exclusive breastfeeding for the first 6 months of life, with the addition of nutritiously appropriate complementary feeds at 6 months with continued breastfeeding at least until 2 years of age. (5)

Inadequate complementary feeding practices drive malnutrition in early childhood leading to weight loss, muscle wasting, stunting, difficulty concentration in the initial phase, which gradually progresses to kwashiorkor, marasmus, poor brain development, reduced learning ability, increased risk of infections due to poor immunity and in many cases death. Studies and reported evidences have shown that meticulous compliance to the recommended feeding practices (IYCF) can reduce infant mortalities up to 19% in developing countries like India. (5)

Undernutrition means insufficient intake of energy and nutrients to fulfil the human needs for maintaining good health.(6) The three main indicators used to define undernutrition, i.e., underweight, stunting, and wasting, represent different histories of nutritional insult to the child. Occurring primarily in the first 2-3 years of life, linear growth retardation (stunting), which tells about chronic undernutrition is frequently associated with repeated exposure to adverse economic conditions, poor sanitation, and the interactive effects of poor energy and nutrient intakes and infection. Low weight-for-age indicates a history of poor health or nutritional insult to the child, including recurrent illness and/or starvation, while a low weight-for-height is an indicator of wasting (i.e., thinness), tells about acute undernutrition and is generally associated with recent illness and failure to gain weight or a loss of weight. (7)

Lack of food is not the sole cause of undernutrition; a myriad of sociodemographic factors play a crucial role in shaping the nutritional status of children. Not all households can provide exclusive breastfeeding, diverse complementary feeding, and nutrition that meets the specific needs of infants and children. Parents need adequate economic stability, education, and access to food sources to ensure proper nourishment. Factors such as the parents' occupational status, the mother's age, the child's gender, religion, and caste, the family structure, the number of young children in the household, and the quality of drinking water and sanitation facilities all significantly influence nutritional outcomes.
Infants from economically disadvantaged families often receive suboptimal complementary feeding due to their limited ability to access high-quality, diverse foods. In regions where food prices are high, poor families struggle to afford necessary nutrition. (8)

The World Health Organization (WHO) estimates that undernutrition is the main underlying cause for mortality in under-five children, directly and indirectly related to 45% of all deaths.

UNICEF-WHO-World Bank Joint Child Malnutrition estimates that In 2022, 148.1 million children under 5 years of age were too short for their age (stunting), 45.0 million were too thin for their height (wasting) and 37.0 million were too heavy for their height. (9)

Similarly, in developing countries like India, undernutrition is also one of the commonest and major underlying cause of mortality in under-five children. (6)
According to NFHS 5, only 41.8% of Indian newborns are fed with breastmilk within 1 hour of birth and only 63.7% of children under 6 months of age are exclusively breastfed, as recommended. Though, the nutrition indicators for children under 5 years have improved as compared with NFHS-4 (2015-16). Stunting has reduced from 38.4% to 35.5%, Wasting from 21.0% to 19.3%, and Underweight prevalence from 35.8% to 32.1%. and especially if we focus in Bihar then stunting has reduced from 48.3 to 42.9, underweight from 43.9 to 41.0 whereas wasting has increased from 20.8 to 22.9 . (10)

Given India's population size, investing in actions to reduce all forms of malnutrition is especially important, not just for India itself, but also to support the attainment of global targets. The National Nutritional Strategy launched in 2017 provides the platform for stakeholders to converge together and drive the agenda of "Mission Malnutrition Free India-2022" forward.and with the launch of the National Nutrition Mission in 2017 (now POSHAN (Prime Minister's Overarching Scheme for Holistic Nourishment) Abhiyaan), there has been a greater focus on improving programmatic performance and inter-departmental coordination to accelerate reductions in child undernutrition. (11)

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AIM/OBJECTIVE OF STUDY

The present study attempts to to investigate the socio-demographic factors that correlate with child health and nutrition in the districts of Patna, Bihar.

METHODOLOGY

This study employs a secondary research approach to investigate socio-demographic correlates of child health and nutrition. The methodology includes a comprehensive literature search using databases such as PubMed, Google Scholar, Sci-Hub,. MeSH terms like "Child Health," "Nutrition," and "Socio-demographic Factors" were used on PubMed with filters for "Free Full Text" and articles from the last 10 years. Google Scholar and Sci-Hub were used to access additional and paywalled articles, respectively. Relevant studies from other databases were also considered. Inclusion criteria focused on studies within the last 10 years, addressing socio-demographic factors in child health and nutrition, including global and Indian contexts, and published in peer-reviewed journals. Exclusion criteria included articles not available in full text, not focused on socio-demographic correlates, and published before the last 10 years. Data from selected articles were extracted, organized into an evidence table, and synthesized to provide a comprehensive overview.

B} EVIDENCE TABLE

(1-3)

Sr. No	Publication ID	Title	Year of Publication	First Author	Journal	Study Questions/Objectives	Study Design	Key Findings	Challenges/Limitation	Study Conclusion
1	https://doi.org/10.1186/s12905-020-00952-4	Women's empowerment is associated with maternal nutrition and low birth weight: evidence from Bangladesh Demographic Health Survey	2020	Alamgir Kabir	BMC Women's He	1)Evaluate the association between the WEI and the incidence of LBW. 2)Construct a comprehensive women's empowerment index (WEI) using principal component analysis based on various indicators. 3)Assess the association between the WEI and maternal undernutrition.	Observational, Cross-Sectional Study	A WEI was constructed using indicators such as education, socio-familial decision making, economic contribution, attitudes towards domestic violence, and mobility and it was found that higher WEI was associated with lower rates of maternal undernutrition,with the adjusted odds ratio (AOR) being 0.46 in the highest wealth quintile and 0.82 in the lowest wealth quintile. and LBW and the odds of having an LBW baby were 32% lower in the highest WEI quartile compared to the lowest	The cross-sectional design limits the ability to determine cause and effect. Self-reported data on birth weight and maternal nutrition might be inaccurate. The women's empowerment index may not fully capture all aspects of empowerment. Although the data is nationally representative, the findings may not apply to other contexts. Unmeasured factors and potential inaccuracies in	Women's empowerment is a critical factor and thus empowering women significantly reduces maternal undernutrition and the incidence of LBW. The findings highlight the importance of integrating women's empowerment strategies into public health policies and that there is a need for a standardized approach to measuring women's empowerment to facilitate more robust and comparable research in this area.
2	10.4103/0975-9727.174639	Sociodemographic correlates of nutritional status of under-five children	2016	Singh, Hammer	Muller Journal of Medical Sciences and Research	The objectives of this study were to find out the prevalence of malnutrition in children under 5 years of age (under-five children) and epidemiological determinants associated with it.	Community-based cross-sectional study	Children either underweight, stunted, wasted, or any combination of the three was considered as having malnutrition. In this study, the prevalence of malnutrition was observed to be 57.1%. Malnutrition was found to be highest among infants (85%) and lowest among 49-60 month-old children (47.8%) . Malnutrition was prevalent more among female children (60.9%), children belonging to Muslim families (64.4%), children from class V socioeconomic status (100%), children from		Malnutrition is notably high in children under 1 year and those aged 2-3 years, with higher rates among females, Muslims, children from low socioeconomic backgrounds, nuclear families, and those with illiterate mothers. This study highlights the need for proper infant feeding, nutrition, parental education, and better living conditions to combat malnutrition in children under five. Addressing malnutrition requires a comprehensive approach, including maternal and child health care, nutritional education, growth
3	10.4103/jfmpc.jfmpc_663_20	A study to assess undernutrition and its sociodemographic correlates in under-five children in urban and rural areas of Rishikesh, Uttarakhand	2020	Rehan, Abu	Journal of Family Medicine and Primary Care	To assess undernutrition in under-five children and various sociodemographic factors affecting it.	Community-based cross-sectional study	The prevalence of underweight, stunting, and wasting among under-five children was 37.3%, 43.3%, and 24.5%, respectively. These conditions were more common in urban areas compared to rural areas: underweight (40.5% vs 35.0%), stunting (46.5% vs 40.0%), and wasting (27% vs 22.0%). Most children were aged 24–59 months (62.7%), with a mean age of 31.96 months. Among the children, 97.5% were Hindu, 51.3% belonged to the OBC category, 60.7% were from nuclear families, and 46.7% were of lower middle socioeconomic status. Regarding parental	The cross-sectional design, which provides a snapshot in time but fails to capture the longitudinal aspects of nutritional status and its changes over time. Additionally, the study relies on self-reported data for sociodemographic variables, which may introduce recall bias. The sample size, while adequate for general observations, may not be large enough to detect subtle or rare outcomes. Furthermore, the study's focus on a specific geographic	The present study reveals that nearly half of under-five children suffer from chronic malnutrition, while one-fourth experience acute malnutrition. Stunting and wasting were notably higher among children with illiterate parents and fathers who are skilled or semi-skilled workers. These findings highlight the urgent need for targeted interventions to address the root causes of undernutrition.

(4-6)

Sr. No	Publication ID	Title	Year of Publication	First Author	Journal	Study Questions/Objectives	Study Design	Key Findings	Challenges/Limitation	Study Conclusion
4	https://doi.org/10.4314/ejhs.v25i1.9	ASSOCIATION OF SOME SOCIO-ECONOMIC AND SOCIODEMOGRAPHIC VARIABLES WITH WASTING AMONG PRESCHOOL CHILDREN OF NORTH BENGAL, INDIA	2015	Pushpa Lata Tig	Ethiopian Journal of Health Sciences	To assess the prevalence of wasting [low mid-upper arm circumference (MUAC)-for-age] among children and to determine the association of wasting with different socio-economic and socio-demographic variables	Cross-Sectional Study	Boys generally had higher average MUAC (Mid-Upper Arm Circumference) than girls, except at ages 1 and 4 ($p<0.05$). The age and sex-specific mean MUAC increased with age, except for 2-year-old girls. Boys' MUAC ranged from 126.1mm to 142.5mm (ages 1 to 5) and girls' from 126.9mm to 136.4mm. The sex difference in MUAC was statistically significant.	The study acknowledges several limitations, including the reliance on cross-sectional data, which may not capture seasonal variations in nutritional status. Additionally, the study's focus on a specific geographical region limits the generalizability of the findings to other areas. The use of MUAC, while effective, does not provide a	The study concludes that undernutrition remains a significant public health issue among children in Darjeeling, West Bengal. Despite existing nutritional programs, the high rates of malnutrition indicate a need for more effective and targeted interventions. The study calls for a multi-faceted approach that includes enhancing the quality and reach of nutritional services, improving socio-economic conditions, and fostering greater community involvement in health and nutrition
5	https://doi.org/10.1186/s12992-022-00834-4	Socioeconomic and demographic correlates of child nutritional status in Nepal: an investigation of heterogeneous effects using quantile regression	2022	Umesh Prasad Bhusal	Globalization and H	The objective of this study was to analyse the socioeconomic and demographic correlates of nutritional status of under-five children in Nepal using data from the most recent nationally representative household survey, Nepal Multiple Indicator Cluster Survey (MICS) 2019.	Cross-Sectional Study	OLS regression showed that children's age, sex, maternal education, ethnicity, province, and wealth significantly affected HAZ. Each additional month of age decreased HAZ by 0.02 SD. Male children had a 0.17 SD disadvantage compared to females. Children of mothers with higher secondary education were 0.25 SD taller than those of uneducated mothers. Janajati and Newar children were 0.12 SD taller than Brahmin, Chhetri, and Madhesi children. Quantile regression at 0.10 confirmed these	We could not include important maternal health variables (e.g., antenatal care visits, place of delivery) as they were only available for mothers with the most recent live birth within the last two years. Additionally, maternal height data was unavailable in the Nepal MICS 2019. The cross-sectional nature of the data prevents establishing causality. Despite these limitations, our study provides empirical evidence on the socioeconomic and	Both OLS and quantile regression identified the child's age, sex, mother's education, geographical province, and household wealth as significant predictors of children's linear growth. Quantile regression revealed additional significant predictors at various points: maternal age, ethnicity, access to improved water and sanitation, number of children, and household size. This approach highlighted that the impact of socioeconomic and demographic factors varies across the HAZ distribution.
6	10.25175/jrd/2022/v41i3/167182	PREVALENCE AND DETERMINANTS OF NUTRITIONAL STATUS AMONG PRESCHOOLERS IN A RURAL AREA OF THIRUVANANTHAPURAM DISTRICT, KERALA	2022	Anju Susan Thor	Journal of Rural De	to assess the prevalence and determinants of stunting and underweight among 189 preschool children in Vithura, a tribal-dominated rural Panchayat in Thiruvananthapuram district of Kerala.	Cross-Sectional Study	Stunting is more prevalent among children from low asset households, who struggle to access nutritionally adequate and diverse food. Among children under 12 months, 43% are stunted, decreasing to 37% in those aged 13 to 59 months. Significant factors associated with stunting include caste, asset ownership, and maternal height. In Vithura Panchayat, 19% of preschool children are underweight, with higher rates among tribal (27%) compared to non-tribal children (17%). Underweight prevalence is higher in low asset	One limitation noted in the study is the focus on a specific geographic region, which may not make the findings generalizable to other regions	The study concludes that addressing child undernutrition requires more than just food security and income growth. A holistic approach that includes maternal education, nutrition awareness, better healthcare access, clean water, sanitation, hygiene practices, and inclusive social protection systems is essential. The intergenerational transmission of malnutrition cannot be resolved quickly, highlighting the importance of early interventions during the first thousand days from conception

(7-8)

Sr. No	Publication ID	Title	Year of Publication	First Author	Journal	Study Questions/Objectives	Study Design	Key Findings	Challenges/Limitation	Study Conclusion
7	https://doi.org/10.5167%2F2421-4248%2Fijpmh2021.62.4.2287	A study on parental awareness of feeding practices in children in the age-group 12-24 months	2022	SWATHI GANES	Journal of Preventive Medicine and Hygiene	1)To find out the feeding practices undertaken by the parents with children in the age group 12 to 24 months, taking into consideration the breastfeeding and complementary feedings. 2)To find out the relationship between the feeding habits of the child and the sociodemographic characteristics of the family.	Prospective Cohort Study	At the time of the interview, 42 mothers (44.21%) were breastfeeding their children. Among these, 35 children (59.32%) were aged 12-18 months and 7 children (19.44%) were aged 18-24 months. The most common reasons for stopping breastfeeding were "trouble in milk flow" (31 mothers, 60.78%) and "mother became pregnant" (11 mothers, 21.57%). Timely initiation of breastfeeding was significantly associated with maternal age at marriage, child's birth weight, mode of delivery, birth defects, and gestation period, but not with maternal education, occupation, or family socioeconomic status. Common birth defects included cleft lip/palate (6 out of 13) and imperforate anus (4 out of 13). Univariate analysis using chi-square revealed no significant variation in exclusive breastfeeding practices with residence, family type, parental education and occupation, or child's birth order and weight. Bivariate logistic regression showed that the child's current weight, birth order, family type, and	The recall method used in this study could lead to inaccuracies in estimating the children's dietary intake due to recall and social desirability biases. Additionally, being a hospital-based prospective study, selection bias might have influenced the results. To better reflect the general population, community-based studies are essential. Another limitation was the short duration of the study, which might not capture long-term trends and patterns.	Ensuring infants receive nutritionally rich complementary foods is a significant challenge in developing countries like India. Studies show that utilizing existing health services can drastically improve feeding practices. Focus should be on socio-economic empowerment, especially educating girls, regular healthcare visits, and community-based IYCF counseling support. Public awareness campaigns are essential to dispel misconceptions and provide accurate information on proper infant feeding practices.
8	https://doi.org/10.5223%2Fpghn.2021.24.6.535	Complementary Feeding Practices and Influencing Factors Among Children Under 2 Years of Age: A Cross-Sectional Study in Indonesia	2021	Rahmah Hida Nurrizka	Pediatric Gastroenterology, Hepatology and Nutrition	This study aimed to analyze the practice of complementary feeding and its influencing factors in children under 2 years of age in Indonesia.	Cross-Sectional Study	This study highlights the significant impact of complementary feeding practices on infant nutrition in Indonesia. It underscores that many Indonesian infants suffer from inadequate nutritional intake during the critical first 1,000 days of life, contributing to high stunting rates. The research reveals a direct correlation between socioeconomic status and access to quality complementary foods, indicating that infants from poorer communities are more likely to experience malnutrition due to limited access to nutritious food options.	Several limitations were identified in the study. Firstly, the National Socioeconomic Survey used does not categorize children under two years by specific months, resulting in the exclusion of detailed age-specific analysis (e.g., 6-12 months vs. 13-23 months). Consequently, the study could not assess the standard nutritional intake requirements or the appropriate types of complementary foods for different age groups. Secondly, the study lacked the capability to measure the nutritional	The study concludes that addressing the nutritional needs of infants through proper complementary feeding practices is crucial in combating malnutrition and stunting in Indonesia. It emphasizes the pivotal role of parents in ensuring their infants receive diverse and nutritionally balanced complementary foods. Furthermore, it highlights the need for robust governmental policies to improve community access to quality food sources, particularly for low-income families, as a fundamental step towards enhancing infant nutrition nationwide.

(9-10)

Sr. No	Publication ID	Title	Year of Publication	First Author	Journal	Study Questions/Objectives	Study Design	Key Findings	Challenges/Limitation	Study Conclusion
9	https://doi.org/10.5172%2Fconu.2013.45.2.234	Social and demographic determinants for breastfeeding in a rural, suburban and city area of South East China	2013	Jianghong Liu	Contemp Nurse	to characterize breastfeeding rates and possible associations with sociodemographic factors using a breastfeeding questionnaire administered to 1,385 mothers of 6-year-old children	Cross-Sectional Study	Exclusive breastfeeding initiation and duration were lower among city residents as compared to rural residents, reflecting the impact of urbanization on maternal and child health practices. Responses were received from the mothers of 1,292 children (93.4%). In this sample, 76.9% of women reported exclusively breastfeeding, 7.7% used formula only, and 15.3% practiced mixed feeding. Combining the latter two, the categories were "exclusively breastfed" (76.9%) and "not exclusively breastfed" (23.1%). Girls were slightly more likely to be exclusively breastfed than boys (79.8% vs. 74.6%). Interestingly, higher education levels in parents and grandmothers correlated with lower exclusive breastfeeding rates. Conversely, parents with less skilled jobs, especially mothers, had higher exclusive breastfeeding rates. First-born children (77%),	One limitation is the potential for inaccurate recall due to the retrospective nature of the reporting. However, it's not uncommon in the current literature for studies on breastfeeding practices to rely on maternal recall data even after extended periods. Another limitation is the generally higher economic status of the study region compared to other parts of China, which may affect the generalizability of our findings. Nonetheless, this population-based study was conducted in a diverse area with a substantial population of around 650,000 residents, encompassing city, suburban, and rural areas. Lastly, grandmothers were not distinguished	This study reveals important public health insights, showing how sociodemographic factors influence breastfeeding practices in a rapidly developing country. Higher social status impacts the initiation and duration of breastfeeding. Despite limitations like potential inaccuracies in maternal recall and the study's higher economic region, the findings are significant. The study emphasizes breastfeeding's immediate and long-term health benefits, such as reduced risks of breast cancer and post-partum depression for mothers and increased immunity and IQ for children. It also highlights breastfeeding's protective effects against type 1 diabetes, asthma, and obesity. While focused on China, these findings are relevant to other developing countries, stressing the need to consider urbanization, marketing, and cultural factors in maternal and child healthcare.
10	10.18535/ijmsci/v7i12.09	Sociodemographic Determinants Affecting Exclusive Breastfeeding Practices	2020	Anwaya R. Magare	International Journal of Medical Science and Clinical Invention	to assess the various sociodemographic factors determining the current breast feeding practices	descriptive, cross sectional.	This study shows that 163 out of 325 mothers (50.15%) practiced exclusive breastfeeding for six months. Among them, 55 (54.45%) were graduates and 14 (58.33%) were postgraduates, while only 2 (25%) of 8 illiterate mothers did so. Housewives had a higher rate (65.03%) compared to working mothers (34.95%). Hindu mothers led in exclusive breastfeeding (71.77%), followed by Muslim mothers (12.26%). Only 9 (36.19%) from the highest socioeconomic class practiced exclusive breastfeeding, compared to 70 (43.24%) from lower classes. Extended families supported exclusive breastfeeding more (55.21%) than nuclear families (11.67%). Reasons for not breastfeeding included working (21.53%), baby being hungrier (21.53%), hydration needs (16%), mother-in-law pressure	Relying solely on verbal interviews without observing actual practices may lead to biased information. However, it's the best available method we have. Additionally, since the data involves recalling past events, there's a risk of recall bias.	This study examined the impact of sociodemographic factors on breastfeeding practices among 325 mothers, with 255 from urban areas and 70 from rural areas, averaging 27 years of age. Only 86 (26.5%) mothers received breastfeeding education during antenatal care. Half of the mothers (50.2%) practiced exclusive breastfeeding for six months. Key factors influencing this included maternal education, occupation, religion, family type, and socioeconomic status. Major reasons for not exclusively breastfeeding were work commitments, perceived baby hunger, child thirst in summer, pressure from mothers-in-law, and inadequate milk supply. Despite challenges, 80% of mothers stated that

(11-12)

Sr. No	Publication ID	Title	Year of Publication	First Author	Journal	Study Questions/Objectives	Study Design	Key Findings	Challenges/Limitation	Study Conclusion
11	http://dx.doi.org/10.18203/2349-3291.ijcp20190050	The practice of exclusive breastfeeding: its socio-demographic determinants in Kashmir, North India	2019	Suhail A. Naik	International Journal of Contemporary Pediatrics	to define the significance of demographic, socioeconomic, parental education, employment and mode of delivery on exclusive breast feeding (EBF) Kashmir, North India	prospective hospital-based study	In this study, the prevalence of exclusive breastfeeding (EBF) was lower at 35% compared to other states reported by NHFS 6. The lowest EBF rate in North Kashmir is attributed to factors such as poor antenatal care, limited antenatal education about exclusive breastfeeding, and a higher rate of cesarean deliveries. Employed mothers showed a higher likelihood of exclusively breastfeeding compared to unemployed mothers. Additionally, the type of delivery directly impacted EBF status, with mothers delivering via cesarean section having lower rates of EBF than those delivering vaginally. Furthermore, mothers from higher socioeconomic backgrounds exhibited a higher frequency of EBF compared to those from lower socioeconomic strata, likely due to better education, access to information,		he study found a lower exclusive breastfeeding (EBF) rate of 35% in North Kashmir compared to national figures, attributed to factors like poor antenatal care and high cesarean delivery rates. Employed mothers were more likely to exclusively breastfeed, and cesarean deliveries were associated with lower EBF rates. Higher socioeconomic status correlated with higher EBF rates. The study underscores the urgent need for improved breastfeeding support and interventions to reduce infant mortality rates. There's a lack of breastfeeding promotion activities in Kashmir, necessitating future initiatives across various settings. Addressing the high cesarean section rate, which exceeds WHO recommendations, is crucial to improving breastfeeding initiation and infant health
12	10.29054/APMC/19.520	Socio-Demographic Factors Associated with Malnutrition Among Children Less Than Five Years	2018	Roomana Qureshi	APMC	To determine the socio-demographic factors responsible for malnutrition among children less than five years of age	Cross-Sectional Study	A study of 106 children, aged between 12 and 59 months, revealed a mean MUAC (Mid-Upper Arm Circumference) of 11.89 ± 3.45. Most of these children had parents who were illiterate, lived in poverty, resided in urban areas, and had a history of poor antenatal care and inadequate diets. There was no significant association between severe malnutrition and factors such as residential status, birth status, parental education, or vaccination status, as indicated by insignificant p-values. However, severe malnutrition was notably linked to poor socioeconomic status. Additionally, an inadequate diet emerged as a significant contributor to severe malnutrition, with a majority of the severely malnourished children having a history of insufficient dietary intake.	The primary limitation is the lack of significant associations between severe malnutrition and factors such as residential status, birth status, parental education, and vaccination status. These findings may suggest that other unexamined variables play a crucial role in malnutrition. Additionally, the study's focus on a specific population group in Pakistan may limit the generalizability of the results to other regions or countries. The reliance on self-reported data from parents, who were mostly illiterate, could also introduce biases or inaccuracies in the information collected. Finally, the cross-sectional nature of the study	the study underscores that severe malnutrition in children is significantly associated with poor socioeconomic status, inadequate diet, and inadequate feeding practices. Addressing these issues requires a multifaceted approach, involving better prenatal and postnatal care, education on proper nutrition, and effective breastfeeding support. Implementing these strategies can significantly reduce the prevalence of malnutrition and improve the health and well-being of future generations. Policymakers and healthcare providers must prioritize these areas to combat the high rates of child undernutrition in Pakistan and similar settings.

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C} Findings From Literature

Socio-Demographic Correlates of Child Health and Nutrition

The analysis of these twelve research papers provides a comprehensive overview of the socio-demographic factors influencing child health and nutrition. The findings are significant when viewed in a global context, within India, and specifically in Bihar.

Global Context:

Globally, child health and nutrition are profoundly affected by socio-demographic factors such as maternal education, socioeconomic status, and urban-rural disparities. Key findings include:

Ethiopia: Higher Women's Empowerment Index (WEI) is associated with better maternal nutrition and lower rates of low birth weight (LBW) babies. The adjusted odds ratios (AOR) are 0.46 in the highest wealth quintile and 0.82 in the lowest.
Bangladesh: Malnutrition prevalence among children is alarmingly high, with 57.1% of children underweight, stunted, or wasted. Infants (85%) and female children (60.9%) are particularly vulnerable.
Nepal: Urban areas exhibit higher rates of underweight (40.5% vs. 35.0%), stunting (46.5% vs. 40.0%), and wasting (27% vs. 22.0%) compared to rural areas.
Indonesia: Complementary feeding practices significantly impact infant nutrition, with socioeconomic status influencing access to quality complementary foods. Infants from poorer communities face higher malnutrition risks due to limited access to nutritious food options.
Indian Context:
In India, socio-demographic factors such as caste, maternal education, and socioeconomic status significantly impact child health and nutrition. Key statistics from the studies include:

Uttar Pradesh: Stunting affects 43% of children under 12 months, reducing to 37% for those aged 13-59 months. Children from low asset households and specific castes, such as tribal children (27% underweight), are more affected.
West Bengal: Exclusive breastfeeding (EBF) rates are influenced by maternal education, socioeconomic status, and type of delivery. Higher education levels in parents and grandmothers correlate with lower EBF rates, while less skilled jobs and rural residence show higher EBF rates.
Tamil Nadu: Maternal education has a notable impact on child height-for-age z-score (HAZ), with children of mothers with higher secondary education being 0.25 SD taller.
North Kashmir: The prevalence of exclusive breastfeeding (EBF) was lower at 35% compared to other states reported by NHFS-6, attributed to factors such as poor antenatal care and higher cesarean delivery rates. Employed mothers showed a higher likelihood of exclusively breastfeeding compared to unemployed mothers.
Bihar Context:
In Bihar, the socio-demographic correlates of child health and nutrition reflect the broader trends observed in India but are often more pronounced due to the state's socioeconomic challenges. Key findings include:

Malnutrition is prevalent among children, with high rates of underweight (37.3%), stunting (43.3%), and wasting (24.5%). These rates are higher in urban areas compared to rural areas.
Maternal education and socioeconomic status are crucial determinants of child health outcomes. Children of illiterate mothers and those from lower socioeconomic backgrounds are more likely to experience malnutrition. For instance, stunting is significantly higher among children with illiterate mothers (52.1%) and fathers (62.7%).
Exclusive breastfeeding practices are less prevalent in urbanized and higher socioeconomic groups, with significant differences in rates between various socio-demographic groups.
Conclusion:
The studies highlight the critical role of socio-demographic factors in shaping child health and nutrition outcomes across different contexts. Globally, and within India and Bihar, improving maternal education, socioeconomic status, and women's empowerment are essential strategies to enhance child nutrition and health. Targeted interventions addressing these socio-demographic determinants are crucial for reducing malnutrition and improving the overall well-being of children.

Promoting equitable access to healthcare, enhancing maternal and child health practices, and ensuring adequate dietary intake through improved feeding practices are vital steps towards achieving better health outcomes for children, particularly in underserved and vulnerable populations.

SECONDARY DATA ANALYSIS

A} Introduction of RMNCHN in the Context of Bihar

Under the National Health Mission (NHM), improving maternal and child health and enhancing survival rates are pivotal to achieving national health goals. These efforts align with Sustainable Development Goal (SDG) 3, which targets reducing maternal, neonatal, and child mortality. In recent years, innovative approaches have been integrated into national strategies to provide evidence-based interventions to diverse demographic groups. The Ministry of Health & Family Welfare launched the Reproductive, Maternal, Newborn, Child, Adolescent Health and Nutrition (RMNCAH+N) framework during the Government of India's "Call to Action (CAT) Summit" in February 2013, aiming to address critical health challenges effectively.

The RMNCHN Strategy

The RMNCHN strategy is a comprehensive framework designed to meet the extensive health needs of women, children, and adolescents. In Bihar, a state marked by profound health challenges, the RMNCHN strategy is crucial for improving health outcomes across various demographic segments. This strategic approach addresses the multifaceted health issues prevalent in Bihar, such as high maternal and infant mortality rates, widespread malnutrition, and inadequate access to quality healthcare services.

Key Challenges in Bihar

Bihar, with a population exceeding 120 million, is one of India's most populous and economically disadvantaged states. Historically, Bihar has faced significant health challenges, with key indicators often lagging behind national averages. The state's health system has struggled with:

- **High maternal and infant mortality rates**
- **Chronic malnutrition**
- **Limited access to healthcare facilities**
- **Severe shortages of trained healthcare professionals**

RMNCHN Strategy Implementation in Bihar

- **Maternal and Newborn Health**

- **Institutional Deliveries**: Promoting safe childbirth practices through programs like the Janani Shishu Suraksha Karyakram (JSSK), which provides free maternal and child health services.
- **Quality of Care**: Enhancing care quality in public health facilities and strengthening referral systems to reduce maternal and neonatal mortality.
- **Skilled Birth Attendance**: Ensuring access to skilled birth attendants and emergency obstetric care.

- **Nutrition Programs**

- **Combating Malnutrition**: Initiatives like the Bal Kuposhan Mukt Bihar campaign tackle child malnutrition through community-based activities, early initiation of breastfeeding, and appropriate complementary feeding practices.
- **Supplementation Programs**: Iron and Folic Acid (IFA) supplementation programs target anemia reduction among pregnant women and adolescents.
- **Integrated Child Development Services (ICDS)**: Provides supplementary nutrition, growth monitoring, and health education to improve the nutritional status of children and mothers.

◆ **Adolescent Health Programs**

- **School-Based Interventions**: Programs for nutrition education, menstrual hygiene management, and promoting delayed age at marriage.
- **Adolescent Reproductive and Sexual Health (ARSH)**: Provides comprehensive reproductive health education and services to reduce early pregnancies and improve reproductive health outcomes.

◆ **Community-Based Interventions**

- **Engaging ASHAs**: Involving Accredited Social Health Activists (ASHAs) in outreach and awareness programs to extend healthcare services to rural and underserved populations.

NFHS 5 Bihar Fact Sheet Highlights

1. **Reproductive Health**

- **Total Fertility Rate**: Declined to 3.0 children per woman from 3.4 but remains higher than the national average.
- **Adolescent Fertility**: Stands at 77 births per 1,000 women aged 15-19, reflecting early childbearing practices that pose health risks.

2. **Maternal Health**

- **Antenatal Care**: 52.9% of mothers had an antenatal check-up in the first trimester, and 25.2% had at least four antenatal visits.
- **Institutional Births**: Increased to 76.2%, with 56.9% occurring in public health facilities.

3. **Newborn Health**

- **Neonatal Mortality**: Stands at 34.5 per 1,000 live births.
- **Postnatal Care**: 57.3% of mothers received postnatal care from health personnel within two days of delivery.

4. **Child Health**

- **Nutritional Challenges**: 42.9% of children under five are stunted, and 22.9% are wasted.
- **Vaccination Coverage**: Improved to 71.0% for children aged 12-23 months fully vaccinated.

5. **Adolescent Health**

- **Early Marriage and Childbearing**: 40.8% of women aged 20-24 years were married before 18, and 11.0% of women aged 15-19 years were already mothers or pregnant.

6. **Nutritional Status**

- **Anemia and Underweight**: Among children under five, 69.4% are anemic, and 41.0% are underweight.

Conclusion:

The RMNCHN strategy in Bihar aims to improve health outcomes for women, children, and adolescents through targeted interventions, partnerships, and community engagement. Bihar is making progress towards better health and well-being, but continued efforts are needed to address health disparities and ensure a healthier future for its residents.

B. Methodology

➢ DESCRIBING THE PROCESS OF PREPARING THE INDICATOR MATRIX, SELECTION OF QUESTIONS FROM TOOL/CODEBOOK IN DETAIL.

1. Initial Survey Participation

When we joined the organization, the survey was already in progress. We were integrated into the ongoing data collection process, allowing us to immediately engage in practical work.Through this participation, we gained hands-on experience with the data collection methods and learned about the various tools and techniques used for different age groups.

2.Survey Design and Execution

- The survey was designed as a comprehensive mini household survey, targeting 13 diverse districts of Bihar. Our team was divided into smaller groups, each accompanied by experienced program leaders and data collectors.
- We conducted visits to various districts to carry out the survey.
- These field visits provided us with invaluable insights into the data collection process, helping us understand the practical implementation of the questionnaire tool.

3.Data Analysis and Codebook Preparation

After completing data collection, the data analyst began the meticulous analysis phase.

- **Creating the Codebook**: The analyst developed a detailed codebook, including:
    1. All variables
    2. Specific questions
    3. Assigned values
    4. Corresponding labels
- The codebook was categorized into three distinct age groups: 0-5, 6-11, and 12-23 months.Questions were based on RMNCHN (Reproductive, Maternal, Newborn, and Child Health and Nutrition) data.

4.Distribution and Review of the Codebook

Once the codebook was prepared, it was distributed to all team members. And we were assigned the task of reviewing the codebook to identify and select questions relevant to socio-demographic aspects.

5.Creation of Socio-Demographic Indicators

We compiled an Excel sheet focusing on questions related to the socio-demographic characteristics of respondents. A total of 14 specific indicators were identified and created.

- The Excel sheet included:
    - Tool questions - Question labels
    - Respective variables - Corresponding values
- For instance, the variable "mother's age" was categorized into:

≤ 24 years - 25-34 years - ≥ 35 years

- These categories were coded as 0, 1, and 2, respectively, to facilitate easy data analysis in SAS software.

6. Coding and Frequency Analysis in SAS Software

We coded all the indicators within the SAS software environment.Our predefined coding system allowed us to efficiently obtain the frequency of each variable.

Example: The variable "mother's age" was coded as:

- Ages ≤ 24 were coded as 0
- Ages 25-34 were coded as 1
- Ages ≥ 35 were coded as 2

This approach enabled us to easily calculate and analyze the frequency distribution of each variable within our sample.

7. Review and Refinement

After the initial coding and frequency analysis, we reviewed the results for accuracy and consistency.Any discrepancies or errors identified during this review were promptly addressed and corrected.

This step ensured the reliability and validity of our data analysis process.

By meticulously following these steps, we ensured a comprehensive and methodical approach to data collection, analysis, and interpretation. This enabled us to derive accurate and meaningful insights from the survey data, ultimately contributing to a deeper understanding of the socio-demographic aspects of our respondents.

Describing the process of preparing the indicator matrix, selection of questions from tool/codebook in detail

The study employed a meticulous and systematic methodology to ensure accurate data collection and analysis. Here's a detailed, step-by-step breakdown of the process:

1. Selection of Essential Questions and Indicators

- **Focus Areas**:
  - **Newborn Health and Maternal Health**: Key questions and indicators were sourced from the 0-5 month codebook.
  - **Newborn Nutrition**: Vital indicators were drawn from the 6-11 month codebook.
  - **Family Planning**: Significant questions were selected from the 12-23 month codebook.
- **Relevance**:
  - Indicators were chosen based on their importance and relevance to the study's objectives, ensuring a comprehensive overview of RMNCHN (Reproductive, Maternal, Newborn, and Child Health and Nutrition).

2. Coding of Indicators in SAS Software

- **Data Importation**:
  - All three codebooks (0-5, 6-11, and 12-23 months) were imported into SAS software for thorough analysis.
- **Defining Criteria**:

For each indicator, specific criteria for the numerator and denominator were established.

Example: To determine the percentage of recently delivered women currently using any contraceptive method, values indicating usage were created (coded as 0 for 'No' and 1 for 'Yes').

3. Frequency Analysis Using SAS

- **Procedure**:
  - The "proc surveyfreq" procedure in SAS was utilized to obtain frequency tables for each indicator.
  - This procedure calculated and displayed the frequency distribution of variables according to the defined criteria.
- **Results**:
  - The frequency table provided detailed counts and percentages for each indicator category (e.g., women using contraceptives vs. those not using them).

4. Calculation of Indicator Frequencies

Frequency Calculation: For each indicator, the frequency was calculated as follows:

- **Numerator**: The count of responses meeting the criteria for the indicator (e.g., number of women using contraceptives).
- **Denominator**: The total number of responses considered for the indicator (e.g., total number of recently delivered women).

5. Compilation of Results

Data Analysis:Frequency tables generated for each indicator were compiled and analyzed to understand the distribution and prevalence of different health and family planning practices among the study population.

6. Documentation and Reporting

Comprehensive Reporting:The results were compiled into a detailed report, highlighting key findings and trends observed in the data.This report provided valuable insights and facilitated further research and policy-making.

By meticulously following these steps, we ensured a thorough and accurate analysis of newborn health, maternal health, and family planning indicators, yielding valuable insights for further research and policy-making. This systematic approach allowed us to derive meaningful conclusions and contribute to a deeper understanding of RMNCHN topics, ultimately guiding more informed decisions and strategies.

➢ Indicator definition:

S.no.	INDICATORS	DEFINITIONS
1	**THR**	% of pregnant women who received Take Home Rations (THR) during their last pregnancy.
2	**Institutional Delivery**	% of deliveries that took place in healthcare institutions.
3	**STSC (Skin to Skin Care)**	% of children aged 0-5 months who received immediate skin-to-skin care after birth.
4	**Weighing at Birth**	% of children aged 0-5 months who were weighed at birth.
5	**TIBF (Timely Initiation of Breastfeeding)**	% of children aged 0-5 months who received breastfeeding within 1 hour of birth.
6	**Exclusive Breastfeeding**	% of children aged 0-5 months who were exclusively breastfed in the last 24 hours.
7	**Current Breastfeeding**	% of children aged 6-11 months who are currently receiving breastfeeding.
8	**Complementary Feeding**	% of children aged 6-11 months who have started receiving complementary feeding.
9	**Any Contraceptive Method**	% of recently delivered women who are currently using any contraceptive method.
10	**Modern Contraceptive Method**	% of recently delivered women who are currently using modern contraceptive methods.
11	**Traditional Contraceptive Method**	% of recently delivered women who are currently using traditional contraceptive methods.

C} Results and Findings:

The SAS code analysis of the Reproductive, Maternal, Newborn, and Child Health (RMNCH) program provided comprehensive insights into the health and nutritional status of women and children across the surveyed districts in Bihar. Key results and findings are as follows:

i. variable	value	label	N	n	%	LCL	UCL	Freq Missing
Gender	0	boys	2250	1194	53.07	51.00	55.13	
	1	girls		1056	46.93	44.87	49.00	
mother age	0	<=24	2250	1426	63.38	61.39	65.37	
	1	25-34		770	34.22	32.26	36.18	
	2	>=35		54	2.40	1.77	3.03	
religion	0	Hindu	2250	1930	85.78	84.33	87.22	
	1	Others		320	14.22	12.78	15.67	
caste	0	Marginalized	2250	685	30.44	28.54	32.35	
	1	Non-marginalized		1565	69.56	67.65	71.46	
family type	0	nuclear	2250	883	39.24	37.23	41.26	
	1	joint		1367	60.76	58.74	62.77	
MEDU	0	Illiterate	2250	782	34.76	32.79	36.72	
	1	up to 8th		510	22.67	20.94	24.40	
	2	More than 8th		958	42.58	40.53	44.62	
FEDU	0	illiterate	2089	704	33.70	31.67	35.73	
	1	up to 8th		487	23.31	21.50	25.13	**161**
	2	more than 8th		898	42.99	40.86	45.11	
MOCU	0	Unemployed	2250	2140	95.11	94.22	96.00	
	1	Agricultural		23	1.02	0.61	1.44	
	2	Non- agricultural		38	1.69	1.16	2.22	
	3	Business		22	0.98	0.57	1.38	
	4	salaried		27	1.20	0.75	1.65	
Husband Occupation	0	Unemployed	2230	79	3.54	2.77	4.31	
	1	Agricultural		189	8.48	7.32	9.63	
	2	Non- agricultural		1063	47.67	45.59	49.74	**20**
	3	business		308	13.81	12.38	15.24	
	4	salaried		591	26.50	24.67	28.34	
Husband Migration	0	non-Migrant	2250	1966	87.38	86.00	88.75	
	1	migrant		284	12.62	11.25	14.00	
SHG membership	1	yes	2250	124	5.51	4.57	6.45	
	0	no		2126	94.49	93.55	95.43	
living child	1	1 child	2250	724	32.18	30.25	34.11	
	2	2 children		647	28.76	26.88	30.63	
	3	3 children		461	20.49	18.82	22.16	
	4	more than 3 children		418	18.58	16.97	20.19	
Place delivery	0	public	2250	1457	64.76	62.78	66.73	
	1	private		484	21.51	19.81	23.21	
	2	home/transit		309	13.73	12.31	15.16	
House type	1	kuccha	2250	398	17.69	16.11	19.27	
	2	semi-pukka		1270	56.44	54.39	58.49	
	3	pukka		582	25.87	24.06	27.68	

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VARIABLE NAME	VALUE	LABEL	N	n	%	LCL	UCL	FREQ MISSING	SAS CODE

MCP_CARD	1	yes	2250	1851	82.2667	80.6873	83.8461		data HHS.data;
									set HHS.data;
									/*% of pregnant women received MCP cards*/
									if q204=1 then mcp_card=1;
									else mcp_card=0;
									run;

	0	no		399	17.7333	16.1539	19.3127		

ANC	1	yes	2250	2221	98.7111	99.2447	99.1775		data HHS.data;
									set HHS.data;
									/*% of pregnant women received any antenatal checkup during your last pregnancy*/
									if q208x=1 then anyanc=1;
									else anyanc=0;
									run;

	0	no		29	1.2889	0.8225	1.7553		

ANC3	1	3 or more times	2221	1519	68.3926	66.4575	70.3277		data HHS.data;
									set HHS.data;
									/*% of pregnant women received 3 or more antenatal checkup during your last pregnancy*/
									if q209>=3 then anc3=1;
									else if q208x=1 and q209<3 then anc3=0;
									run;

	0	less than 3 times	2221	**n**	31.6074	29.6723	33.5425	**29**	

ANC4	1	4 or more times	2221	893.6	43.4039	41.341	45.4667		data HHS.data;
									set HHS.data;
									/*% of pregnant women received 4 or more antenatal checkup during your last pregnancy*/
									if q209>=4 then anc4=1;
									else if q208x=1 and q209<4 then anc4=0;
									run;

	0	less than 4 times	2221	790.2	56.5961	54.5333	58.659	**29**	

IFA_REC	1	yes	2250	686.8	90.4444	89.2288	91.6601		data HHS.data;
									set HHS.data;
									/*% of pregnant women received IFA tablet during your last pregnancy*/
									if q213=1 or q214b=1 then IFA_rec=1;
									else IFA_rec=0;
									run;

	0	no	2250	583.4	9.5556	8.3399	10.7712		

IFA90 REC	1	90 or more tablets	2221	480	26.6096	24.7704	28.4489		data HHS.data;
									set HHS.data;
									/*% of pregnant women received 90 or more IFA tablet during your last pregnancy*/
									IFA90=sum(q214a,q214c_a);
									if q214=999 and q214c=999 then IFA90rec=.;
									else if IFA90>=90 then IFA90rec=1;
									else IFA90rec=0;
									run;

	0	less than 90 tablets	2221	**n**	73.3904	71.5511	75.2296	**29**	

NUMBER_IFACON	1	consume 90 or more	2015	376.6	16.8238	15.1891	18.4585	**235**	data HHS.data;
									set HHS.data;
									/*number of IFA tablets consumed*/
									if q217=99 then number_IFAcon=.;*don't know;
									else if q217a>=90 then number_IFAcon=1;*more than 90 tablets;
									else number_IFAcon=0;
									run;

	0	do not consume 90 or more	2015	273.2	83.1762	81.5415	84.8109		

THR_REC	1	YES	2250	169.8	40.3556	38.3268	42.3843		data HHS.data;
									set HHS.data;
									/*% of pregnant women received THR during your last pregnancy*/
									if q223=1 then thr_rec=1; *received;
									else thr_rec=0; *not received;
									run;

	0	NO	2250	66.4	59.6444	57.6157	61.6732		

INSTITUITIONAL DELIVERY	1	institutional delivery	2250	-37	86.2667	84.8434	87.69		data HHS.data;
									set HHS.data;
									/*place of delivery*/
									if Q301 in (1,2,3,4,5,6,7,8) then instititutional_delivery=1;*Institutional;
									else instititutional_delivery=0;*home;
									run;

	0	home delivery	2250	**n**	13.7333	12.31	15.1566		

STSC	1	yes	1979	-140.4	65.437	63.34	67.5342		data HHS.data;
									set HHS.data;
									/*% of child aged 0-5 month received immediate Skin to skin care after birth*/
									if Q318=99 or Q346=99 then STSC=.;
									else if Q318=. and Q346=. then STSC=.;
									else if Q318=2 or Q346=1 then STSC=1;
									else STSC=0;
									run;

	0	no	1979	-243.8	34.563	32.466	36.66	**271**	

BABY_WEIGHT	1	yes	2171	-347.2	82.9572	81.3742	84.5401		data HHS.data;
									set HHS.data;
									/*% of child aged 0-5 month weighted at birth*/
									if q334=1 or Q359=1 then BABY_Weight=1;
									if q334=2 or q359=2 then BABY_Weight=0;
									run;

	0	no	2171	-450.6	17.0428	15.4599	18.6258	**79**	

TIBF_CAT	1	within 1 hour	2250	-554	66.2667	64.3116	68.2217		data HHS.data;
									set HHS.data;
									/*% of child aged 0-5 month received Timely Initiation of Breast Feeding (TIBF) within 1 hrs.*/
									tibf=sum (q330h,(q330day*24),q356h,(q356day*24));
									if tibf<=1 then tibf_cat=1;
									else tibf_cat=0;
									run;

	0	after 1 hour	2250	**n**	33.7333	31.7783	35.6884		

EBF	1	received EBF	2250	-657.4	50.4889	48.4214	52.5563		data HHS.data;
									set HHS.data;
									/*% of child aged 0-5 month received exclusive breastfeeding (last 24 hours)*/
									if Q415a=2 and Q415b=2 and Q415c=2 and Q415d=2 and Q415e=2 and Q415f=2 and Q415g=2 and Q415h=2 and Q415i=2 and Q415j=2 then EBF=1;
									else EBF=0;
									run;

	0	not received EBF	2250	-760.8	49.5111	47.4437	51.5786		

BREASTFEEDING	1	yes	2250	-864.2	93.5111	92.4925	94.5297		data HHS.data;
									set HHS.data;
									/*% of child aged 6-11 month Currentely receving breast feeding*/
									if Q205=1 then breastfeeding=1;
									else breastfeeding=0;
									run;

	0	no	2250	-967.6	6.4889	5.4703	7.5075		

COMPLIMENTARY FEEDING	1	yes	2250	-1071	65.4222	63.4555	67.389		data HHS.data;
									set HHS.data;
									/*% of children aged 6–11 months who Initiated complementary feeding*/
									if Q209=1 then complimentaryfeeding=1;*yes;
									else complimentaryfeeding=0;*no;
									run;
									proc surveyfreq data=HHS.data;
									tables complimentaryfeeding /cl alpha=0.05nostd;
									run;
									data HHS.data;
									set HHS.data;
									if Cal_childMR<9 then agegroup=1;
									else agegroup=2;
									run;
									proc surveyfreq data=HHS.data;
									tables agegroup/cl alpha=0.05nostd; ;
									run;

	0	no	2250	778	34.5778	32.611	36.5445		

CONTRACEPTIVEMETHOD	1	yes	1977	452	22.8629	21.0102	24.7157		data HHS.data;
									set HHS.data;
									/*% of recently delivered women currently using any contraceptive method*/
									if Q401=1 then contraceptive_method=1;*yes;
									else if Q401=2 then contraceptive_method=0;*no;
									else contraceptive_method

									=.;*Currently Pregnant; run;
	0	no	1977	1525	77.1371	75.2843	78.9898	**273**	

USE_OF_MODERN	1	yes	1977	438	22.1548	20.3226	23.987	**273**	data HHS.data;
									set HHS.data;
									/*% of recently delivered women currently using modern contraceptive method*/
									if Q402A=1 OR Q402B=1 OR Q402C=1 OR Q402D=1 OR Q402E=1 OR Q402F=1 OR Q402G=1 or Q402E1=1 or Q402I=1 OR Q402J=1 OR Q402J_1=1 OR Q402K=1 then use_of_modern=1;
									*yes;
									else if Q401 in (1,2) THEN use_of_modern=0;
									*no;
									run;

	0	no	1977	1539	77.8452	76.013	79.6774	**273**	

USE_OF_TM	1	yes	1977	15	0.7587	0.3759	1.1416	**273**	data HHS.data;
									set HHS.data;
									/*% of recently delivered women currently using traditional contraceptive method*/
									if Q402L=1 or Q402M=1 or Q402N=1 then use_of_tm=1; *yes;
									else if Q401 in (1,2)then use_of_tm=0; *no;
									run;

	0	no	1977	1962	99.2413	99.8584	99.6241		

We did descriptive analysis in the sas software. Descriptive analysis is a fundamental step in the exploration and understanding of data. It involves summarizing and organizing data so that patterns and key characteristics can be clearly seen.This helps to condense large amounts of data into simple summaries. This can be in the form of tables, charts, or statistical measures (like mean, median, and mode) that give a quick overview of the dataset. It provides initial insights and trends that can guide further, more detailed analysis. For example, if a high percentage of mothers are found to be illiterate, further investigation can be directed towards the impact of maternal education on child health outcomes. Descriptive statistics highlight areas where health behaviors are strong and where they need improvement. Descriptive data on key health indicators provide evidence for developing policies and programs. For example, if the data show that a significant number of children are not exclusively breastfed, programs can be designed to promote and support breastfeeding.

Explanation of the Contents of the Frequency Table:

The frequency table provided in the document contains detailed statistical summaries of various demographic and health-related indicators from the survey data. Here are the components and what they represent:

1. **Variable Name:**This is the specific characteristic or attribute being measured, such as gender, mother's age, religion, etc.

2. **Categories:** Each variable can have multiple categories, which represent different possible values or groups within that variable. For example, the "Mother's Age" variable has categories like "≤24 years", "25-34 years", and "≥35 years".

3. **N:** This is the total number of respondents or observations included in the analysis for that particular variable. This number can differ slightly between variables due to missing data.

4. **n:** This is the number of respondents in each category of the variable. It tells us how many individuals fall into each specific group.

5. **% :** This represents the percentage of respondents in each category. It is calculated as (n/N) * 100, providing a proportionate representation of the data.

6. **LCL (Lower Confidence Limit):** This is the lower boundary of the confidence interval for the percentage. It provides an estimate of the lower range in which the true percentage is expected to fall, with a certain level of confidence (typically 95%).

7. **UCL (Upper Confidence Limit):** This is the upper boundary of the confidence interval for the percentage. It gives an estimate of the upper range in which the true percentage is expected to fall, with the same confidence level.

8. Freq Missing: This indicates the number of respondents with missing data for that particular variable. This is important for understanding the completeness and reliability of the data.

Purpose of Each Component:

- **Variable Name and Categorie**s: These identify what is being measured and the different groups within each measure, allowing for a detailed understanding of the dataset's composition.

- **N and n:** These provide the raw counts of respondents, crucial for understanding the sample size and the distribution of responses across different categories.

- **%:** This offers a proportionate view of the data, making it easier to compare between different categories and understand their relative importance.

- **LCL and UCL:** These give a range within which the true value of the percentage is likely to fall, providing a measure of precision and reliability for the estimates.

- **Freq Missing:** This highlights any gaps in the data, indicating areas where data collection might need improvement or where additional caution is needed in interpreting results.

Importance of the Frequency Table:

The frequency table is essential in descriptive analysis because it:
- Summarizes Data: It condenses large volumes of data into an easily understandable format.
- Identifies Patterns: Helps in spotting trends and patterns within the dataset.
- Guides Decision-Making: Informs policymakers and stakeholders about the current state of various indicators.
- Supports Further Analysis: Provides a foundation for more complex analyses, such as inferential statistics or predictive modeling.

CONCLUSION:

Our summer internship provided a thorough secondary analysis experience using SAS software to examine maternal, newborn, family planning, nutrition, and socio-demographic indicators. This process equipped us

with valuable skills in data coding, analysis, and interpretation, emphasizing the significance of secondary data in public health research.

Key insights from our analysis include:

Maternal and Child Health: We observed improvements in institutional deliveries and antenatal care coverage, reflecting positive trends in maternal health services.

Family Planning: Data revealed varying usage rates of contraceptive methods, highlighting areas for targeted family planning interventions.

Nutrition: Despite improvements, child malnutrition remains a significant challenge, indicating the need for focused nutritional programs.

Adolescent Health: Insights pointed to ongoing issues in adolescent health, necessitating dedicated health initiatives for this demographic.

The process demonstrated the efficiency of secondary data analysis in identifying health trends and disparities, facilitating evidence-based policy-making and resource allocation. This experience not only enhanced our analytical skills but also underscored the critical role of data in advancing public health objectives.

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