Dissertation Training at Piramal Swasthya Management & Research Institute (PSMRI), BIHAR

PIRAMAL FOUNDATION

(26TH February 2024 to 31st May 2024)

Family Planning Program Outcomes:

Patterns and Predictors in Bihar

Ms. Anmol Rai

PG/22/009

Under guidance from

Sukesh Bhardwaj

PGDM (Hospital and Health Management)

Health Stream

2022-2024

International Institute of Health Management Research,

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This certificate is awarded to

Name: ANMOL RAI

in recognition of having successfully completed his dissertation in the department of "RMLE" as "Research intern"

and has successfully completed his project on

"Family planning program outcomes: Patterns and Predictors in Bihar."

Date: 26th t Feb 2024 to 31st May 2024.

Organization: Piramal Swasthya Management and Research Institute

He comes across as a committed, sincere and diligent person who has a strong drive and zeal for learning.

Dr Tanmay Mahapatra
Director, Data and Learning
Piramal Swasthya Management and Research Institute

(Training and Development)

Dr Anup G Nair
Sr. Director, Hr & Admin
Piramal Swasthya Management and Research Institute

(Zonal Head-Human Resources)

Annexure D

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Ms. Anmol Rai student of PGDM (Hospital & Health Management) from International Institute of Health Management Research, New Delhi has undergone internship training at Piramal Swasthya from 26th Feb to 31st May.

The Candidate has successfully carried out the study designated to him during internship training and his/her approach to the study has been sincere, scientific and analytical.

The Internship is in fulfillment of the course requirements.

I wish him all success in all his/her future endeavors.

Dr. Sumesh Kumar
Associate Dean, Academic and Student Affairs
IIHMR, New Delhi

Mentor
IIHMR, New Delhi

Certificate of Approval

The following dissertation titled "Family Planning Program Outcomes: Patterns & Pe: in Bihar" at "Piramal Swasthya Bihar" 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 **PGDM (Hospital & Health 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 dissertation only for the purpose it is submitted.

Dissertation Examination Committee for evaluation of dissertation.

Name	Signature
NAVEEN VASHIST	
VINAY	
Dr. Piyush Kanti Khan.	

Certificate from Dissertation Advisory Committee

This is to certify that **Ms. ANMOL RAI,** a graduate student of the **PGDM (Hospital & Health Management)** has worked under our guidance and supervision. He is submitting this dissertation titled "**Family planning program outcomes: Patterns and Predictors in Bihar**" at "**PIRAMAL SWASTHYA MANAGEMENT AND RESEARCH INSTITUTE**" in partial fulfillment of the requirements for the award of the **PGDM (Hospital & Health Management).**

This dissertation has the requisite standard and to the best of our knowledge no part of it has been reproduced from any other dissertation, monograph, report or book.

DR. SUKESH BHARDWAJ
ASSISTANT PROFESSOR,

IIHMR, DELHI

DR. TANMAY MAHAPATRA
DIRECTOR DATA AND LEARNING,

PIRAMAL SWASTHYA
MANAGEMENT AND RESEARCH
INSTITUTE

Annexure E

INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT RESEARCH, NEW DELHI

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled Family Planning Program Outcomes: Patterns and Predictors in Bihar.

..... and submitted by (Name) ..Anmol Rai.....

..... Enrollment No. PGJ22/009

under the supervision of Sukesh Bhardwaj.

for award of PGDM (Hospital & Health Management) of the Institute carried out during the period from 26th Feb 2024 to 31st May 2024

embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other Institute or other similar institution of higher learning.

Signature Anmol

Annexure F

FEEDBACK FORM

Name of the Student: Anmol Rai

Name of the Organization in Which Dissertation Has Been Completed: Piramal Swasthya Management and Research Institute

Area of Dissertation: Family Planning ("Family planning program outcomes: Patterns and Predictors in Bihar.")

Attendance: The student's attendance was 100%, she was punctual, engaged and adsorbed in the tasks assigned and sessions offered.

Objectives achieved: Through this dissertation project engagement, Anmol could achieve the desired objectives of learning methodical literature review, preparation of synthesis collating findings from background literature, programmatic and contextual information, could learn basic and advanced analytics, acquire statistical analytical software skills and interpretation of findings into results and discussions to develop knowledge products.

Deliverables: Participating in analysis, interpretation and developing a synthesis on "Family planning program outcomes: Patterns and Predictors in Bihar"

Strengths: Exceptional diligence, sincerity, commendable learning spree, very good proactiveness, very good subject knowledge, excellent eye for detail, very good team-person, excellent interpersonal, oral and writing skills.

Suggestions for Improvement: Programmatic knowledge and advanced analytics

Suggestions for Institute (course curriculum, industry interaction, placement, alumni):

Putting more statistical analytical practical sessions in the curriculum and exposing the students more to public health system and functions of India may be great.

Date: 26.06.2024
Place: Patna, Bihar

Signature of the Officer-in-Charge/ Organization Mentor (Dissertation)

INTERNATIONAL INSTITUTE OF HEALTH MANAGEMENT RESEARCH (IIHMR)
Plot No. 3, Sector 18A, Phase- II, Dwarka, New Delhi- 110075
Ph. +91-11-30418900, www.iihmrdelhi.edu.in

CERTIFICATE ON PLAGIARISM CHECK

Name of Student (in block letter)	**Dr/Mr./Ms.:** ANMOL RAI		
Enrolment/Roll No.	PG/22/009	**Batch Year**	2022-2024
Course Specialization (Choose one)	Hospital Management	Health Management	Healthcare IT
Name of Guide/Supervisor	Dr/ Prof.: SUKESH BHARDWAJ		
Title of the Dissertation/Summer Assignment	Family Planning Program Outcomes : Patterns & Predictors in Bihar.		
Plagiarism detects software used	"**TURNITIN**"		
Similar contents acceptable (%)	Up to **15** Percent as per policy		
Total words and % of similar contents Identified	7 %.		
Date of validation (DD/MM/YYYY)	21st June 2024		

Guide/Supervisor

Name: Dr. Sukesh Bhardwaj

Signature:

Report checked by

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Student

Name: ANMOL RAI

Signature: ARai

Dean (Academics and Student Affairs)

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Date:
(Seal)

Abstract

Introduction

This study investigates the patterns and determinants of contraceptive utilization among married women of reproductive age (MWRA) in Bihar, India. The state's family planning programs are critical to public health, aiming to reduce maternal and infant mortality, alleviate poverty, and promote gender equality. Despite extensive nationwide efforts, Bihar faces significant challenges due to socio-cultural, economic, and infrastructural barriers, leading to varied contraceptive use across different demographic groups.

Methods

Data for this research were collected through multiple rounds of surveys conducted by CARE India's Concurrent Measurement and Learning Unit. The study utilized a multi-stage cluster sample survey covering all 38 districts of Bihar. The surveys gathered comprehensive information on socio-economic, demographic, and health-related factors influencing contraceptive use among MWRA.

Results

The findings reveal significant disparities in contraceptive use across socio-economic and demographic groups. Education level, healthcare accessibility, and cultural beliefs significantly impact family planning practices. Government initiatives like the Antara program and Mission Parivar Vikas, which focus on community outreach, healthcare provider training, and dedicated family planning services, have been instrumental in enhancing contraceptive prevalence rates. However, persistent gaps in service uptake and utilization remain, particularly among rural and marginalized communities.

Discussion

The results indicate that while government programs have made strides in improving family planning services, there are still considerable obstacles to achieving widespread contraceptive use. The study underscores the importance of integrated health and welfare programs that combine family planning with maternal and child healthcare, nutrition, and education. Addressing the unique challenges faced by rural and marginalized communities is essential for achieving sustainable development goals and improving overall well-being in Bihar.

Conclusion

Effective family planning programs are vital for public health and socio-economic development in Bihar. Despite progress, targeted interventions are needed to overcome socio-cultural, economic, and infrastructural barriers to contraceptive use. Enhanced focus on education, healthcare accessibility, and culturally sensitive approaches can significantly improve family planning outcomes in the state.

Acknowledgment

My internship with PSMRI in Bihar was a fantastic opportunity for learning and professional development. As a result, I consider myself fortunate to have been allowed to be a part of it. I'm also grateful for the opportunity to meet so many wonderful people and professionals who guided me through my internship term.

Keeping in mind the preceding, I would like to take this opportunity to express my heartfelt gratitude and special thanks to **Dr. Tanmay Mahapatra (Director, Data and Learning)**, who, despite being extremely busy with his duties, took the time to hear, guide, and keep me on the right track, allowing me to carry out my project at their esteemed organization and extending during the training. His meticulous attention to detail and constructive criticism have greatly enriched the content and methodology of this dissertation.

I am equally indebted to **Dr. Shuchi Shree Akhouri** for her expertise in Family Planning and her subject knowledge and her invaluable feedback, which has significantly enhanced the depth and clarity of my research findings. Her commitment to academic excellence has been a constant source of inspiration.I would like to express my heartfelt gratitude to her for participating in useful decisions, providing necessary advice and guidance, and arranging all facilities to make my project easier.

It is my heartfelt pleasure to express my heartfelt appreciation to **Dr. Sutapa Bandyopadhyay Neogi (Director, IIHMR Delhi)**, **Dr. Sumesh Kumar (Associate Dean Academics and Students Affairs, IIHMR Delhi)**, and **my mentor Sukesh Bhardwaj (Assistant Professor, IIHMR Delhi)** for their careful and valuable guidance, which was extremely valuable for my study both theoretically and practically.

This opportunity strikes me as a turning point moment in my professional development. To achieve desired career objectives, I will attempt to apply acquired skills and knowledge as effectively as possible, and I will continue to work on their improvement. I want to continue working with you all in the future.

Sincerely,

Anmol Rai.

Table of Contents:

Acronyms/Abbreviations-

HSB- Health Seeking Behaviour

UN- United Nation

ASHA: Accredited Social Health Activist

ANM: Auxiliary Nurse Midwives

FP: Family Planning

LARC: Long-Acting Reversible Contraceptives

IUD: Intrauterine Device

CPR: Contraceptive Prevalence Rate

DHS: Demographic and Health Surveys

FP2020: Family Planning 2020 Initiative

RH: Reproductive Health

UNFPA: United Nations Population Fund

WHO: World Health Organization

MDG: Millennium Development Goals

SDG: Sustainable Development Goals

TFR: Total Fertility Rate

CPR: Contraceptive Prevalence Rate

EC: Emergency Contraception

Organization Profile

Introduction

Piramal Swasthya, a flagship initiative of the Piramal Foundation, is dedicated to providing accessible and affordable healthcare solutions to underserved communities in India. Established with a vision to transform healthcare delivery through innovation and sustainability, Piramal Swasthya focuses on improving health outcomes and reducing disparities across the country.

Mission and Objectives

- **Mission**: To ensure equitable healthcare access and quality for all, especially in remote and marginalized areas.
- **Objectives**:
    - Enhance maternal and child health services.
    - Combat communicable diseases through preventive measures.
    - Strengthen primary healthcare systems in underserved regions.

Organizational Structure

- **Leadership**: Led by [Name of Key Leaders], Piramal Swasthya operates under the guidance of experienced healthcare professionals and strategic leaders.
- **Operational Framework**: The organization employs a decentralized operational model to effectively manage healthcare initiatives across diverse geographies.

Healthcare Services and Initiatives

- **Service Offerings**:
    - **Telemedicine**: Providing remote consultation services through digital platforms.
    - **Mobile Health Units**: Delivering healthcare services directly to communities with limited access.
    - **Health Camps**: Organizing periodic health camps for screenings, vaccinations, and health education.
    - **Community Health Workers**: Training and deploying local health workers to promote health awareness and deliver basic healthcare services.

Technological Integration

- **Innovative Solutions**:
    - Utilization of mobile technology and apps for remote diagnostics and health monitoring.
    - Development of telehealth solutions to bridge the gap in specialist healthcare access.
    - Implementation of data analytics for evidence-based decision-making and resource allocation.

Partnerships and Collaborations

- **Strategic Alliances**:
  - Collaborations with state governments, NGOs, corporate sponsors, and international agencies.
  - Partnerships with academic institutions for research and capacity-building initiatives.

Impact and Success Stories

- **Healthcare Impact**:
  - Improved maternal and child health indicators.
  - Decreased prevalence of diseases through vaccination and health awareness campaigns.
  - Enhanced healthcare access and utilization among disadvantaged communities.

Challenges and Strategies

- **Operational Challenges**:
  - Addressing infrastructural limitations in remote areas.
  - Ensuring sustainability of healthcare interventions amidst funding fluctuations.
- **Strategies**:
  - Adaptation of technology to overcome geographical barriers.
  - Continuous engagement with local communities for sustainable healthcare practices.

Ethical Considerations

- **Ethical Framework**:
  - Upholding patient confidentiality and privacy in digital healthcare services.
  - Ensuring informed consent and cultural sensitivity in healthcare delivery.

Future Directions

- **Expansion Plans**:
  - Scaling existing programs to reach more underserved populations.
  - Introducing innovative healthcare models to address emerging health challenges.
  - Strengthening partnerships to leverage resources and expertise for sustainable growth.

Conclusion

Piramal Swasthya exemplifies a commitment to improving healthcare equity through innovative solutions, strategic partnerships, and community-centric approaches. By focusing on sustainable development goals and leveraging technology, the organization continues to make significant strides in transforming healthcare access and outcomes across India.

Family Planning Program Outcomes:

Patterns and Predictors in Bihar

Introduction-

Family planning programs serve as an essential component of public health initiatives worldwide, aiming to empower individuals and couples to make informed decisions about their reproductive health. These programs not only contribute to reducing maternal and infant mortality but also play a crucial role in promoting socioeconomic development by allowing families to plan for the size and spacing of their children. [i]

Family planning is a crucial part of public health strategies and governments throughout the world have prioritized efforts to enhance the accessibility and use of family planning techniques. These efforts are focused on reducing maternal and child mortality, fighting poverty, and promoting gender equality. Initiatives like the United Nations' Sustainable Development Goals (SDGs), especially Goal 3 (Good Health and Well-being) and Goal 5 (Gender Equality), highlight the significance of family planning in achieving broader development goals. In the pursuit of achieving sustainable development goals and improving maternal and child health outcomes, family planning programs stand as a milestone of public health interventions globally[ii]. These programs play a vital role in empowering individuals and couples to make informed decisions about their reproductive health, thus contributing to healthier families and communities. In the context of India, where population dynamics significantly influence socio-economic development and healthcare delivery, and there are still disparities in access to family planning services across regions, with marginalized communities often encountering barriers related to poverty, geography, and cultural norms in understanding the patterns and predictors of family planning program outcomes holds paramount importance[iii].

In recent years, there has been an increase in the awareness of the significance of comprehensive approaches to family planning. These approaches should not only prioritize access to contraception but should also address broader issues such as maternal health, gender equality, and youth empowerment. Integrated health and welfare programs that combine family planning services with maternal and child health care, nutrition interventions, and education have displayed potential in enhancing outcomes and promote holistic well-being.[iv]

This research focuses on the state of Bihar, situated in eastern India, to determine the factors that influence family planning practices and outcomes. Bihar ranks as one of the most populous states in India, with a population exceeding 120 million. Despite efforts to expand access to family planning services and raise awareness about contraceptive methods, Bihar faces challenges in achieving optimal reproductive health outcomes. High fertility rates, unmet contraceptive needs, and disparities in access to healthcare services underline the complexity of implementing effective family planning interventions in this resource-constrained setting. Family planning programs play a crucial role in addressing these challenges by offering a wide range of contraceptive methods and reproductive health services to individuals and couples. However, despite the availability of these services, Bihar continues to grapple with low contraceptive prevalence rates and high unmet needs for family planning, highlighting gaps in the uptake and utilization of family

planning services. Bihar faces numerous health and development challenges, including high maternal and infant mortality rates, limited access to quality healthcare services, and various socio-economic disparities. With a total fertility rate of 3·4%, Bihar has the highest fertility rate among Indian states. Under the direction of the Indian government, the state of Bihar also carried out the FP program concurrently with the national initiative. The family planning program has, however, performed on average; from 29% in 2005–06 to 23% in 2015–16, mCPR decreased. Compared to urban Bihar, the situation is worse in rural Bihar. Even though there have been continuous discussions about how FP programs could have been improved both inside and outside of Bihar, it's critical to understand the dynamics shaping family planning outcomes and informing policies and programs aimed at improving reproductive health and promoting sustainable development in the state.[v]

In Bihar, India, the government is actively involved in implementing various family planning (FP) programs. These programs aim to improve reproductive health outcomes, promote contraceptive use, and address population-related challenges. They are part of national efforts to enhance family planning services and ensure access to contraceptives for all segments of the population. The Antara program is a flagship initiative launched by the Government of Bihar in collaboration with the National Health Mission (NHM) to strengthen family planning services across the state. The program focuses on providing free and quality contraceptives through public health facilities such as community health centers, primary health centers, and sub-health centers. It offers a wide range of contraceptive methods including oral pills, condoms, intrauterine devices (IUDs), injectables, and sterilization services to eligible individuals. The primary goals of the Antara program are to increase contraceptive prevalence rates, reduce unmet needs for family planning, and improve maternal and child health outcomes. This is achieved through strategies such as community outreach, behavior change communication, healthcare provider training, and the establishment of dedicated family planning clinics to enhance service access. The program also places special emphasis on reaching marginalized and underserved populations, including rural communities and adolescent girls, through targeted interventions. Through the Antara program, the government of Bihar aims to empower individuals to make informed choices about their reproductive health and family planning needs, ultimately contributing to the overall well-being and development of the state's population Mission Parivar Vikas (MPV) is a national initiative launched by the Government of India to improve access to high-quality family planning services in certain states, including Bihar. The program aims to address the unmet need for contraception and promote spacing methods to achieve population stabilization goals. Under MPV, Bihar receives targeted support and resources to enhance its family planning program. This includes expanding the network of family planning service delivery points, improving the availability and accessibility of contraceptive products, and enhancing the quality of counselling and clinical services[vi]. The program also emphasizes the importance of male participation in family planning decision-making and encourages the adoption of male contraceptive methods such as condoms and vasectomy. Through partnerships with NGOs, CBOs, and civil society groups, MPV aims to mobilize community support and create an environment conducive to family planning acceptance and uptake. The Integrated Child Development Services (ICDS) program is a key initiative of the Government of India, aimed at promoting maternal and child health, nutrition, and family planning services. In Bihar, the ICDS program operates through a network of Anganwadi centers, which serve as frontline delivery points for a range of

maternal and child health interventions, including family planning counselling and services. Through the ICDS program, pregnant and lactating women, as well as children under the age of six, receive comprehensive healthcare services, nutritional support, and early childhood education. Family planning education and counselling are integrated into the services offered at Anganwadi centers, providing women and their families with access to information about contraceptive methods, reproductive health, and birth spacing. The ICDS program also collaborates with other government departments, health providers, and community organizations to raise awareness about family planning, promote maternal health practices, and strengthen the continuum of care for mothers and children. In conclusion, the government of Bihar is actively involved in implementing various ongoing family planning programs, such as the Antara program, Mission Parivar Vikas, and Integrated Child Development Services. These initiatives are designed to improve access to quality family planning services, reduce unmet needs for contraception, and enhance maternal and child health outcomes across the state. By utilizing a range of strategies, including community outreach, behaviour change communication, and capacity building of healthcare providers, these programs aim to empower individuals and communities to make informed decisions about their reproductive health and contribute to the overall well-being and development of Bihar's population.[vii]

Family planning (FP) programs in Bihar have several important goals to improve the state's population and development. These goals include reducing maternal and infant mortality rates by improving maternal health and birth spacing, empowering women to make informed choices about their reproductive health, improving child health and nutrition, stabilizing population growth to promote socio-economic development, mitigating population pressures on natural resources for environmental sustainability, and saving healthcare costs through preventive measures. By addressing these goals, FP programs in Bihar contribute to overall improvements in health, well-being, and socio-economic development, aligning with national and international goals for sustainable development.[viii]

Rationale-

Family planning programs are very important in addressing population growth, maternal and child health, and socioeconomic development. Understanding the patterns and predictors of family planning utilization is essential for designing effective interventions, particularly in regions like Bihar, India, where demographic challenges persist. Bihar, one of India's most populous states, faces unique challenges in family planning due to socio-cultural factors, limited healthcare infrastructure, and economic disparities. Despite efforts to promote family planning, contraceptive prevalence remains relatively low compared to national averages.

Several factors contribute to the patterns and predictors of family planning in Bihar:

Socio-economic Status-Studies indicate a strong correlation between socioeconomic status and family planning utilization. Poverty, lack of education, and limited access to healthcare services often deter individuals from adopting family planning methods (ix), Cultural Beliefs and Norms- Traditional beliefs and societal norms influence family planning decisions in Bihar. Gender roles, patriarchal structures, and preferences for large families shape contraceptive practices and reproductive behaviour (x), Healthcare Accessibility-Accessibility and availability of family planning services significantly impact utilization rates. Limited infrastructure, inadequate staffing, and geographical barriers restrict access to contraceptives and family planning counselling, particularly in rural areas (xi), Quality of Care- perceptions of the quality of family planning services influence uptake. Barriers such as provider bias, misconceptions about contraceptive methods, and concerns about side effects affect individuals' willingness to adopt family planning (xii).

Addressing these factors requires a multi-faceted approach that integrates community engagement, capacity building, and targeted interventions. Strengthening healthcare infrastructure, enhancing educational opportunities, and promoting gender equity are essential strategies for improving family planning outcomes in Bihar. In conclusion, understanding the patterns and predictors of family planning utilization in Bihar is critical for tailoring interventions to address the region's unique challenges. By addressing socio-cultural barriers, enhancing healthcare accessibility, and improving the quality of care, family planning programs can effectively empower individuals and communities to make informed reproductive choices, ultimately contributing to healthier families and sustainable development.

Literature Review-

Family planning programs play a crucial role in addressing population growth, maternal and child health, and socio-economic development. In Bihar, India's third most populous state, family planning initiatives are particularly significant due to its large population and high fertility rates. This literature review explores the patterns and predictors of family planning program outcomes in Bihar, focusing on the factors influencing the success or failure of such programs. According to the reports of the State Health Society (SHS, Bihar), the government of Bihar has implemented various family planning initiatives over the years, aligning with national policies and programs (xiii). The National Family Planning Program, which provides access to contraceptive methods and reproductive health services, forms the cornerstone of these efforts. Despite the government's endeavours, challenges persist in achieving desired outcomes due to socio-cultural factors, limited resources, and healthcare infrastructure (xiv). Studies suggest that while family planning services are available in Bihar, their utilization remains suboptimal. Factors such as lack of awareness, misconceptions about contraceptive methods, and cultural barriers contribute to low uptake rates. Furthermore, disparities exist in access to services among different socio-economic groups and regions within the state (xv,xvi). Research indicates that women's education, socio-economic status, and empowerment play pivotal roles in shaping contraceptive behaviour and family planning decisions. Several factors influence the success or failure of family planning programs in Bihar. Moreover, the quality of healthcare services, including counselling and the provision of contraceptives, significantly impacts program outcomes (xvii).

Objectives-

1. To understand the patterns and trends of family planning programs in Bihar.

2. To identify key predictors influencing the success or failure of family planning initiatives in Bihar.

Methodology-

Concurrent data gathering for health programs is carried out by CARE India's Concurrent Measurement and Learning Unit. The CML unit conducted a multi-stage cluster sample survey between March and May 2021 in each of Bihar's 38 districts. To provide a comparison, this survey was created similarly to the ones from 2016 and 2018. Using a three-phase sampling technique, eligible women were chosen. The study utilized blocks, or sub-districts, as the major sample units. For rural and urban regions, Anganwadi facilities and municipal wards were the secondary sampling units. The Integrated Child Development Services program assigns Anganwadi centers (AWCs), village-level entities, the task of delivering nutrition and health services to mothers and children. Cluster random sampling was used to choose five blocks from each district, and "Probability Proportional to Size" sampling was used to select SSUs based on their reported populations. The necessary number of AWC areas and wards in blocks comprising both rural and urban settlements was established using the proportionate allocation of these blocks' urban-rural allocation as reported in the 2011 Census. To prevent sample population, overlap between rounds and ensure representativeness, new samples were picked for the second round, even if the sampling frame and procedure were the same as in the previous iteration.

To represent functional local units, this study used Anganwadi centers as its sampling frame as opposed to the census enumeration blocks used in the NFHS survey. To be consistent with health programming, the sample design was set up to resemble the last-mile delivery system of public health services. Based on estimating the district-level prevalence of modern contraceptive use (mCPR), the sample size was determined to be 600 women, for a total sample size of 22,800 women.

The population that was questioned consisted of married women between the ages of 15 and 49 who were currently residing in the household under investigation and who had been married (or had moved in with their spouse) for a minimum of three months. Women were not included in the poll if they were living in a hostel rather than a household, were widowed, divorced, or separated, or were visitors or guests of the surveyed household.

The survey instrument was created and pre-tested in Hindi. The Android platform's specially created Computer Assisted Personal Interviewing software was used on tablets to administer the digital instrument. About 150 female data collectors with at least a bachelor's degree who were proficient in the local tongue gathered the data. A group of instructors with graduate-level experience in quantitative data collection conducted a 17-day training session for data collectors covering standardization, methodology, software use, and field practice.

Monitoring visits by CARE's block monitoring learning and evaluation coordinators (minimum education requirement of bachelor's degree) served as quality control measures for data collectors. The Ashirwad Ethics Committee, Ashirwad Hospital and Research Centre, Ulhasnagar, India (ashirwadethicscommittee@gmail.com), approved the current study. Before the interview, each willing participant was asked for verbal informed consent after being briefed in Hindi about the study's specifics.

Results-

Table 1:

Variable	Category	Round-1 (April-June 2016) N=22800		Round-2 (Sep-Dec2018) N=22800		Round-3 (Feb-April2021) N=22668	
		Frequency	% (95% CI)	Frequency	% (95% CI)	Frequency	% (95% CI)
Age of respondent	15-19 y	1519	6.7(6.3-7.0)	1849	8.1(7.8-8.4)	1156	5.1(4.8-5.4)
	20-24 y	4955	21.7(21.2-22.3)	5196	22.8(22.4-23.2)	4383	19.3(18.8-19.9)
	25-29 y	4929	21.6(21.1-22.2)	5063	22.2(21.8-22.6)	4966	21.9(21.4-22.4)
	30-34 y	4219	18.5(18.0-19.0)	4056	17.8(17.4-18.2)	4210	18.6(18.1-19.1)
	35-39 y	3496	15.3(14.9-15.8)	3348	14.7(14.3-15.0)	3783	16.7(16.2-17.2)
	40-44 y	2332	10.2(9.8-10.6)	2061	9.0(8.8-9.3)	2454	10.8(10.4-11.2)
	45-49 y	1350	5.9(5.6-6.2)	1227	5.4(5.2-5.6)	1716	7.6(7.2-7.9)
Religion	Others	3567	15.6(15.2-16.1)	3372	14.8(14.4-15.2)	2760	12.2(11.7-12.6)
	Hindu	19233	84.4(83.9-84.8)	19423	85.2(84.8-85.6)	19908	87.8(87.4-88.3)
Caste	SC/ST	6200	27.2(26.6-27.8)	5908	25.9(25.4-26.4)	4517	19.9(19.4-20.4)
	OBC	13596	59.6(59.0-60.3)	14169	62.1(61.6-62.7)	14439	63.7(63.1-64.3)
	Others	3004	13.2(12.7-13.6)	2723	11.9(11.6-12.3)	3712	16.4(15.9-16.9)
Respondent education	NO education	13758	60.3(59.7-61.0)	12493	54.8(54.3-55.3)	11148	49.2(48.5-49.8)
	UPTO 8 YEARS	4444	19.5(19.0-20.0)	4657	20.4(20-20.8)	4754	21.0(20.4-21.5)
	>8 YEARS	4598	20.2(19.7-20.7)	5650	24.8(24.3-25.2)	6765	29.8(29.3-30.4)
Wealth index	Low	7637	33.5(32.9-34.1)	7601	33.3(32.8-33.8)	7558	33.3(32.7-34)
	Middle	7573	33.2(32.6-33.8)	7597	33.3(32.8-33.8)	7555	33.3(32.7-33.9)
	High	7590	33.3(32.7-33.9)	7602	33.3(32.8-33.8)	7555	33.3(32.7-33.9)
Respondent occupation	Not working	-	-	-	-	18546	81.8(81.3-82.3)
	Skilled labour	-	-	-	-	309	1.4(1.2-1.5)
	Unskilled labour	-	-	-	-	2837	12.5(12.1-13)
	Salaried/Business	-	-	-	-	976	4.3(4.0-4.6)
Husband occupation	Not working	486	2.1(1.9-2.3)	563	2.5(2.3-2.6)	719	3.2(2.9-3.4)
	Skilled labour	3838	16.8(16.3-17.3)	3798	16.7(16.3-17.1)	3990	17.6(17.1-18.1)
	Unskilled labour	11381	49.9(49.3-50.6)	10251	45.0(44.4-45.5)	9971	44.0(43.3-44.6)
	Salaried/Business	7095	31.1(30.5-31.7)	8188	35.9(35.4-36.4)	7988	35.2(34.6-35.9)

Table 2:

Variable	Category	Round-1 (April-June 2016)			Round-2 (Sep-Dec2018)			Round-3 (Feb-April2021)		
		N	Frequency	% (95% CI)	N	Frequency	% (95% CI)	N	Frequency	% (95% CI)
Number of Living Children	0		1818	8.0(7.6-8.3)		1871	8.2(7.9-8.5)		1462	6.5(6.1-6.8)
	1		2907	12.8(12.3-13.2)		3120	13.7(13.3-14.0)		3070	13.5(13.1-14)
	2		4807	21.1(20.6-21.6)		5174	22.7(22.3-23.1)		5520	24.4(23.8-24.9)
	3 or more		13268	58.2(57.6-58.8)		12635	55.4(54.9-55.9)		12616	55.7(55.0-56.3)
History if any abortion	Yes		3989	17.5(17.1-17.9)		5065	22.2(21.8-22.6)		4243	18.7(18.2-19.2)
Migrant husband	Yes		4570	20.0(19.5-20.6)		5845	25.6(25.2-26.1)		4939	21.8(21.2-22.3)
Exposure to media	Yes		5358	23.5(23.0-24.1)		6799	29.8(29.3-30.3)		4009	17.7(17.2-18.2)
SHG membership	Yes	22800	3645	16.0(15.5-16.5)	22800	7600	33.3(32.8-33.8)	22668	8680	38.3(37.6-38.9)
FP related interaction with FLW (in last 12 months)	Yes	22800	2368	10.4(10.0-10.8)	22800	1754	7.7(7.4-8.0)	22668	1286	5.7(5.4-6.0)
Any discussion on FP took place during VHSND session	Yes	5343	1602	30.0(28.8-31.2)	6948	1788	25.7(24.7-26.8)	5612	1251	22.3(21.2-23.4)
Awareness about Nai Pahal Kit		-	-	-	22800	885	3.9(3.6-4.1)	22668	1036	4.6(4.3-4.8)
Modern Contraceptive Prevalence		22800	8720	38.2(37.6-38.9)	22800	8822	38.7(38.2-39.2)	22668	10055	44.4(43.7-45.0)
Unmet need for spacing		19208	1798	9.4(8.9-9.8)	19893	2322	11.7(11.2-12.1)	19292	2062	10.7(10.3-11.1)
Overall Unmet need		19208	6192	32.2(31.6-32.9)	19893	6908	34.7(34.1-35.4)	19292	6285	32.6(31.9-33.2)
Modern spacing method use		22800	1093	4.8(4.5-5.1)	22800	942	4.1(3.9-4.4)	22668	1266	5.6(5.3-5.9)
Traditional method use		22800	1514	6.6(6.3-7.0)	22800	1468	6.4(6.1-6.8)	22668	1706	7.5(7.2-7.9)

Participated in Saas-Bahu Sammelan in last 12 month	No	22413	98.9(98.7-99)
	Yes	255	1.1(1.0-1.3)
Exposure of SARATHI VAN campaign	No	19606	86.5(86.0-86.9)
	Yes	3062	13.5(13.1-14.0)

The study assessed the age distribution of respondents across three rounds of survey conducted in April-June 2016, September-December 2018, and February-April 2021, with a consistent sample size of 22,800 respondents in the first two rounds and 22668 respondents in the third round. In the first round, around 21.7% of the respondents were between the age group of 20-24 years, and for the age group 25-29 years, the proportion was 21.6%. The second round showed a similar distribution, with the age groups of 20-24 years 22.8% and 25-29 years 22.2% still constituting the largest proportion of respondents. The third round exhibited subtle variations, with the proportion of respondents in the age groups of 20-24 years 19.3% and 25-29 years 21.9% remaining prominent. However, there was a slight decline in the percentage of respondents within the 20-24 years category **(Table 1)**.

The distribution of respondents across religion remained relatively similar across the three survey rounds. Most respondents identified as Hindu, comprising 84.4% in 2016, 85.2% in 2018, and 87.8% in 2021. The caste distribution among respondents showed notable variations across the three survey rounds. In Round-1, SC/ST respondents accounted for 27.2% 2016 of the sample, declining to 25.9% in 2018 in Round-2, and further decreasing to 19.9% in 2021 in Round-3. On the other hand, the OBC category witnessed an increase from 59.6% in 2016 in Round 1 to 62.1% in 2018 in Round 2, stabilizing at 63.7% in 2021 in Round 3. The educational profile of respondents displayed noteworthy changes over the three survey rounds. Respondents with no formal education constituted 60.3% 2016 of the sample, which declined to 54.8% in 2018 and further decreased to 49.2% in 2021. Conversely, respondents with an education of up to 8 years increased from 19.5% in 2016 to 20.4% in 2018 and 21.0% in 2021. The proportion of respondents with more than 8 years of education rose from 20.2% in 2016to 24.8% in 2018, eventually reaching 29.8% in 2021. The wealth index was categorized into three main groups: low, middle, and high. The study showed a consistent distribution pattern across the rounds, with approximately one-third of respondents falling into each wealth category. The proportions of respondents categorized as low, middle, and high wealth remained stable, with values ranging from 33.2%2016 to 33.5%2021 for low wealth, 33.2%2016 to 33.3%2021 for middle wealth, and 33.3% for high wealth in each respective round. Among all the respondents interviewed regarding their occupation, most respondents were not engaged in work, constituting 81.8% in 2021 in the latest round. Skilled labourers comprised a small proportion, accounting for 1.4% of 2021 respondents, while unskilled labourers constituted 12.5% 2021, and those engaged in salaried positions or business activities represented 4.3% of 2021. The study found that there was a diverse range of occupations among husbands. The proportion of husbands who were not working increased slightly from 2.1% in 2016 to 3.2% in 2021 over the study period. The percentage of husbands working as skilled labourers remained relatively stable, ranging from 16.7% in 2016 to 17.6% in 2021. However, there was a noticeable decrease in the percentage of husbands in unskilled labor, dropping from 49.9% in 2016 to 44.0% in 2021. On the contrary, there was an increase

in the percentage of husbands with salaried positions or involved in business activities, rising from 31.1% in 2016 to 35.2% in 2021.

The study also assessed various indicators related to family planning practices and reproductive health awareness. Across all rounds, most respondents had three or more children (58.2% 2016, 55.4% 2018, 55.7% 2021). Those respondents with two children constituted the second-largest group (21.1% 2016, 22.7% 2018, 24.4% 2021). The proportion of history of abortion increased from 17.5% in 2016 to 22.2% in 2018, slightly declining to 18.7% in 2021. The proportion of respondents with a migrant husband showed an upward trend from 20.0% in 2016 to 25.6% in 2018, then slightly decreased to 21.8% in 2021. The percentage of respondents exposed to media increased steadily across the first two survey rounds from 23.5% in 2016 to 29.8% in 2018, with a slight decrease of 17.7% in 2021 in the third round. Membership in Self-Help Groups (SHGs) increased significantly over the survey rounds 16.0% 2016, 33.3% 2018, 38.3% 2021). Interaction with Frontline Workers (FLWs) decreased from 10.4% in 2016 to 5.7% in 2021. Discussions on FP during Village Health, Sanitation, and Nutrition Day (VHSND) sessions declined over the survey rounds (30.0% 2016, 25.7% 2018, 22.3% 2021). Awareness of the Nai Pahal Kit remained low throughout the survey rounds, with only 3.9% of 2016, 4.6% of 2018, and 4.6% of 2021 respondents being aware in Rounds 1, 2, and 3, respectively. The prevalence of modern contraceptive methods showed a steady trend across the survey rounds, with 38.2% in 2016, 38.7% in 2018, and 44.4% in 2021 of respondents utilizing modern methods in Rounds 1, 2, and 3, respectively. The unmet need for spacing and overall unmet need exhibited slight fluctuations over the survey rounds. Specifically, the unmet need for spacing was 9.4% in 2016, 11.7% in 2018, and 10.7% in 2021, while the overall unmet need was 32.2% in 2016, 34.7% 2018, and 32.6% in 2021 in Rounds 1, 2, and 3, respectively. The utilization of modern spacing methods slightly varied across the survey rounds, with 4.8% in 2016, 4.1% in 2018, and 5.6% in 2021 respondents opted for modern methods in all three survey rounds. Meanwhile, the usage of traditional methods ranged from 6.6% in 2016 to 7.5% in 2021 across the survey rounds. The percentage of respondents expressing intent to use family planning methods in the future fluctuated between rounds, with 49.0% in 2016 in Round 1, 67.2% in 2018 in Round 2, and 55.4% in 2021 in Round 3**.**

According to the survey conducted among 22668 respondents in the third round, in the past 12 months, a vast majority of respondents 98.9% 2021 did not participate in Saas-Bahu Sammelan, while a small proportion 1.1%, in 2021 confirmed their participation. Out of all the participants, only 13.5% of 2021 reported being exposed to the SARATHI VAN campaign, while the remaining 86.5% of 2021 had no exposure. Moreover, the survey revealed that 93.3% 2021 of respondents did not receive any Family Planning (FP) message from Self-Help Groups (SHG), while 6.7% of 2021 reported receiving such messages **(Table 2)**.

Results Stratified

In round 1 among Hindus 41.6% of respondents were using modern contraceptive whereas among non-Hindus only 20.1% of respondents were using modern contraceptive, this distribution was similar in round 2, Hindus (42.1%), non-Hindus (19.0%) while in Round 3 there was an increase in this distribution Hindus (47.2%), Non-Hindus (23.6%). In Round 1 and 2 General categories showed the Higher proportion of respondents using the modern contraceptive (~40.0% - 45.0%) while OBC and SC/ST showed a relatively lower proportion (~37.0%), whereas in Round 3 General category showed the lowest

proportion of respondents using modern contraceptive (41.3%), OBC and SC/ST showed relatively higher proportion (~44.0%). In age group of 30-49 years, the distribution of respondents using modern contraceptive was higher, ranging from 47.0% - 60.0%, whereas the proportion of respondents using MCPR decreased in younger age groups, 25-29 years (~38.0%), 20-24 years (16.0%), 15-19 years (~5.0%) and this distribution was similar in all three rounds. In all the 3 rounds respondents having no formal education showed relatively higher proportion of MCPR ranging from (~40.0% - 50.0%) while respondents having upto 8 years of education showed a lower proportion of MCPR ranging from (39.0% - 45.0%) whereas the proportion of MCPR among respondents with more than 8 years of education ranged from (30.0% – 36.0%). Respondents with high socioeconomic status showed a higher proportion of MCPR (~ 43.0%) whereas respondents with medium socioeconomic status ranged from (38.0% - 45.0%) while respondents with low socioeconomic status ranged from (34.0% - 43.0%), this pattern was similar in all the three rounds. In all the three rounds' respondents whose husband were unemployed showed a proportion of MCPR ranging from (25.0% - 35.0%), among respondents whose husbands were skilled labour this proportion ranged from (35.0% – 42.0%), respondents whose husbands were unskilled labour ranged from (40.0% - 47.0%) while respondents whose husbands were engaged in salaried, or business work showed the proportion of MCPR ranging from (38.0% - 43.0%). Respondents having no child, or 1 child showed very less proportion of MCPR (below 10.0%) while respondents having 2 children showed this proportion ranging from (34.0% - 43.0%) whereas respondents having 3 or more children this proportion was highest (more than 50.0%) in all the three rounds. The proportion of respondents with any history of abortion, using modern contraceptive was (~41.0%) while use of modern contraceptive among respondents having no history of abortion ranged from (38.0% - 45.0%), this distribution was highest in Round 3. More than 40% of respondents whose husband were non migrants were found to be using modern contraceptive while this proportion was low in respondents having migrant husbands ranging from (~29.0% - 35.0%). Respondents having any media exposure showed higher proportion of MCPR (~45.0%) whereas proportion of respondents having no exposure to media using modern contraceptive was (~40.0%) this pattern was similar in all the three rounds. Respondents who were the member of SHG showed higher proportion of use of modern contraceptive (~48.0% - 55.0%) while proportion of respondents who were not the members of SHG and using modern contraceptive ranged from (34.0% - 38.0%), this pattern was similar in all the rounds while Round 3 showed the highest proportion as compared to Round 1 and 2. In all the three rounds proportion of respondents having FLW interaction, using modern contraceptive was less than 35.0% while this proportion among respondents having no FLW interaction was relatively higher, ranging from (40.0% – 45.0%). MCPR among respondents who were part of discussion on FP in VHSND session ranged from (26.0% - 36.0%) whereas this proportion among respondents who did not have any discussion of FP during VHSND ranged from (24.0% - 30.0%). Respondents who were aware of Nai Pahel Kit showed (~45.0%) proportion using modern contraceptive while this proportion among the respondents who were not aware of the nai pahel kit was relatively low (~40.0%), this proportion was from Round 2 and 3 only. In Round 3 the proportion of respondents who were unemployed or was skilled labour was less than 50.0%, while respondents who were unskilled labour or engaged in salaried or business work showed this proportion more than 50.0%. In Round 3 respondents who participated in Saas-Bahu Sammelan in the last 12 months and using modern contraceptive was 47.0% while

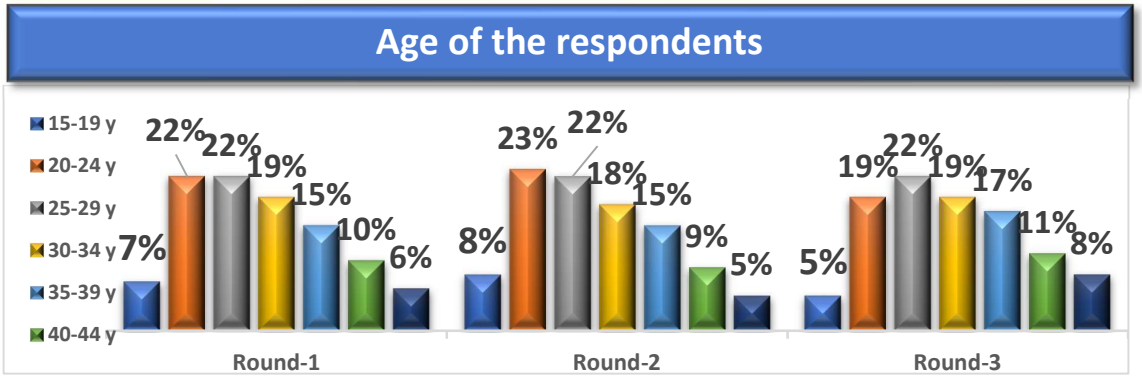
respondents who did not participated and using modern contraceptive was 44.0% In Round 3 proportion of MCPR among respondents who were exposed to Sarathi Van was 45.2% while this proportion was 44.0% among those who were not exposed to Sarathi Van. In all the three rounds' Hindus and Non-Hindus showed similar patterns in the proportion of use of traditional method ranging from (6.0%-9.0%). Among different caste categories the proportion of respondents who were using the traditional method ranged between (5.0%-10.0%) while it was highest in Round 1. In age group of 20 to 39 years the distribution of proportion of traditional method use was similar (~8.0%) across all the rounds, while in Round 2 this proportion was relatively lower. Respondents whose highest level of education was more than 8 years showed a relatively high proportion of use of traditional method (~11.0%) followed by respondents whose highest level of education was up to 8 years (~7.0%) while this proportion was lowest in respondents who were illiterate. Respondents with high socioeconomic status showed a higher proportion of use of traditional method (~ 9.0%) whereas this proportion among respondents with medium socioeconomic status was (~7.0%) while respondents with low socioeconomic were (~5.0%), this pattern was similar in all the three rounds. In all the three rounds' respondents whose husband were salaried, or businessperson showed a higher proportion (~8.0%) of use of traditional contraceptive method while this proportion was relatively lower (~6.0%) among other categories (Not working, skilled labour and unskilled labour) this was similar across all the rounds. Respondents having one or 2 living children showed a higher proportion of use of traditional contraceptive (~9.0%) followed by respondents who had 3 or more children (~6.0%) while respondents who had no living children showed this proportion (~2.0%).

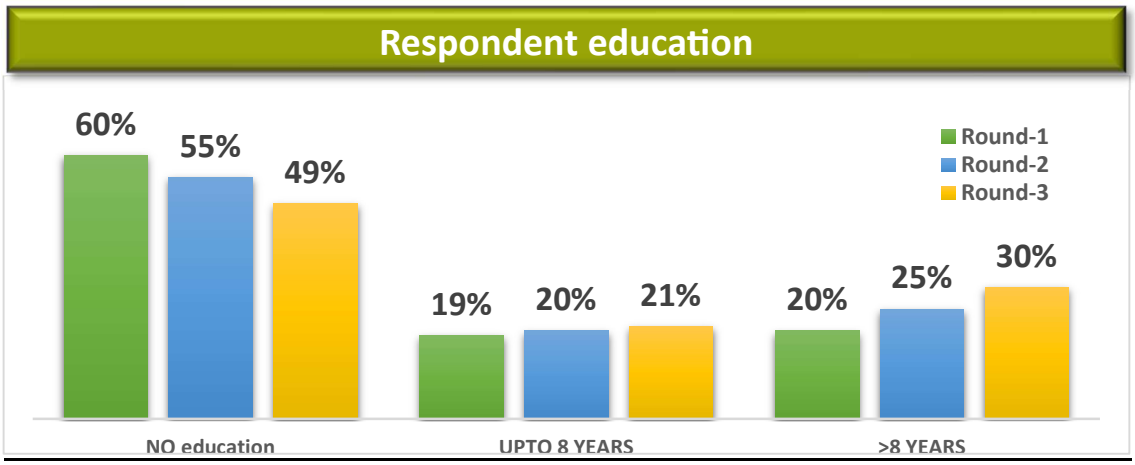
Respondents who had history or abortion showed a higher proportion of use of traditional method (~9.0%) while respondents who did not have any history of abortion showed this proportion as (~7.0%) this pattern was similar across all the rounds. Respondents who husband were non-migrant showed a relatively higher proportion (~8.0%) of use of traditional method as compared to respondents whose husbands were migrant (~5.0%) these proportions were highest in Round 1 as compared to Round2 and 3. Respondents having any media exposure showed a higher proportion of MCPR (~11.0%) whereas proportion of respondents having no exposure to media using modern contraceptive was (~5.0%) this pattern was similar in all the three rounds. In Round 1 proportion of respondents who were a member of or SHG and who were not showed similar pattern of use of traditional contraceptive (~8.0%), while in Round 2 and 3 this proportion was higher (~7.0%) in the respondents who were not the member of SHG, while respondents who were the member of SHG showed this proportion as (~5.0%). In all the three rounds proportion of respondents having FLW interaction, using traditional contraceptive was higher (~12.0%) while this proportion among respondents having no FLW interaction was relatively lower (~7.0%). Traditional method uses among respondents who were part of discussion on FP in VHSND session were higher (~11.0%) whereas this proportion among respondents who did not have any discussion of FP during VHSND (~8.0%). Respondents who were aware of Nai Pahel Kit showed (~7.0%) proportion using traditional contraceptive while this proportion among the respondents who were not aware of the Nai Pahel Kit was similar (~7.0%), this proportion was from Round 2 and 3 only. Respondents who were skilled or unskilled labour showed similar pattern in the proportion of use of traditional method (~6.0%) while respondents who were not working or who were salaried employee showed similar pattern (~8.0%). In Round 3 respondents who participated in Saas-Bahu Sammelan in the last 12 months and using traditional

contraceptive, and respondents who did not participated and using traditional contraceptive was (~7.0%). In Round 3 the proportion of use of traditional method among respondents who were exposed to Sarathi Van and those who were not exposed to Sarathi Van was (~8.0%). Non-Hindus showed a relatively higher proportion (~6.0%) of use of modern spacing method as compared to Hindus (~4.0%), this patter was similar across all the rounds. General category showed the Higher proportion of respondents using the modern spacing method (~7.0%) while OBC and SC/ST showed a relatively lower proportion (~4.0%), this was similar across all the rounds. In age group of 20-35 years, the distribution of respondents using modern contraceptive was higher, ranging from (~6.0%), whereas the proportion of respondents using modern spacing method decreased in younger age groups, 15-19 years (~3.0%). In all the 3 rounds respondents having more than 8 years of formal education showed relatively higher proportion of modern spacing method was (~8.0%) while respondents having up to 8 years of education showed a lower proportion of modern spacing method (~5.0%) whereas the proportion of this among respondents with no formal education (~2.0%). Respondents with high socioeconomic status showed a higher proportion of modern spacing method (~ 7.0%) whereas respondents with medium and low socioeconomic status (3.0%), this pattern was similar in all the three rounds. In all the three rounds' respondents whose husband were unemployed or not working showed a higher proportion of modern spacing method (~6.0%), among respondents whose husbands were skilled labour or unskilled labour this proportion was (4.0%) across all the three rounds. Respondents having one or more living children showed a relatively higher proportion (~7.0%) of use of traditional method while this proportion among respondents having no living children showed this proportion as (~1.0%). The proportion of respondents with any history of abortion, using modern spacing method was (~6.0%) while use of modern spacing method among respondents having no history of abortion was (4.0%), this distribution was highest in Round 2. Respondents whose husbands were non migrants were found to be using modern spacing method more (~5.0%) while this proportion was low in respondents having migrant husbands was (~3.0%). Respondents having any media exposure showed higher proportion of modern spacing method (~8.0%) whereas proportion of respondents having no exposure to media using modern spacing method was (~4.0%) this pattern was similar in all the three rounds. Respondents who were not the member of SHG showed higher proportion of use of modern spacing (~5.0%), while proportion of respondents who were the members of SHG and using modern spacing (~3.0%), this pattern was similar in all the rounds. In all the three rounds proportion of respondents having FLW interaction, using modern spacing method was higher (~11.0%) while this proportion among respondents having no FLW interaction was relatively lower (~4.0%). Modern spacing method use among respondents who were part of discussion on FP in VHSND session was higher 7.0% in R1, 11.0% in R2 and 20.0% in R3 as compared to respondents who did not have any discussion of FP during VHSND ranged from (5.0% - 19.0%). Respondents who were aware of Nai Pahel Kit showed (~6.0%) proportion using modern spacing while this proportion among the respondents who were not aware of the Nai Pahel Kit was relatively low (~4.0%), this proportion was from Round 2 and 3 only. In Round 3 the proportion of respondents who were unemployed or was skilled labor was higher 6.0%, while respondents who were unskilled labor or engaged in salaried or business work showed this proportion (~5.0%). In Round 3 respondents who participated in Saas-Bahu Sammelan in the last 12 months and using modern spacing method and respondents who did not participated and using modern contraceptive was 5.0%. In Round 3

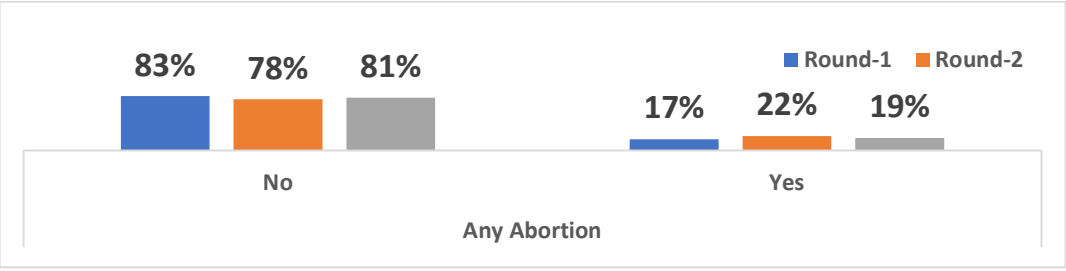
proportion of modern spacing method among respondents who were exposed to Sarathi Van was 6.0% while this proportion was 4.0% among those who were not exposed to Sarathi Van. Among different religions, non-Hindus showed a higher proportion of unmet need (~47.0%), while this proportion among Hindus was (31.0%) SC, ST, OBC showed similar pattern in the proportion of unmet need (~35.0%) across all the rounds, while this proportion in General category was (~32.0%), this proportion was higher among Round 3. In age group of 20-30 years the proportion of respondents with unmet need was higher (~40.0%) as compared to other age category respondents (<30.0%). In Round 1 proportion of respondents who had no years of formal education showed higher proportion of unmet need (~33.0%) while in round 2 and 3 the proportion for the same was higher among respondents who had more than 8 years of formal education (~35.0%). Respondents belonging to low socio-economic status show a higher proportion of unmet need (~35.0%) followed by medium socio-economic status group (33.0%) while this proportion was lower in High socio-economic respondents (~30.0%). Respondents whose husbands were involved in different kinds of occupation showed similar patterns in the proportion of unmet need (~35.0%) this was similar across all the rounds. Respondents who had 1 or more living children showed a higher proportion of unmet need for spacing (~40.0%) while respondents who had no living children showed this proportion as (~6.0%). Respondents who had any case or abortion or who did not have any case of abortion showed similar patterns in the proportion of unmet need (~33.0%). Respondents whose husbands were migrants showed a higher proportion of unmet need (~41.0%) as compared to those whose husbands were non-migrant (30.0%). Respondents who did not have any media exposure showed a higher proportion of unmet need (~35.0%), while this proportion among those who had media exposure was (~28.0%). Respondents who were not the member of SHG showed a higher proportion of unmet need (35.0%) as compared to those who were the member of SHG (~30.0%). Respondents who interacted with FLW showed a higher proportion of unmet need (~45.0%) as compared to those who did not have any FLW interaction (~32.0%) this was similar across all the rounds. Respondents who were not the part of FP discussion on VHSND showed higher proportion of unmet need (~40.0%) in R1 and R3 while in R2 this proportion was (~47.0%). There was no significant difference in the proportion of respondents who were aware and who were not aware about the Nai Pahel Kit in the proportion of unmet need (33.0%). In round 3 respondents who were unemployed showed a higher proportion of unmet need (~34.0%). There was no major difference in the proportion of unmet need among the respondents who participated in Sas Bahu Sammelan and who did not (~31.0%), similar pattern was observed among the respondents who were exposed to Sarthi Van and who were not exposed. Among different religions, non-Hindus showed a higher proportion of unmet need for spacing (~15.0%), while this proportion among Hindus was (10.0%) SC, ST, OBC showed similar pattern in the proportion of unmet need for spacing (~11.0%) across all the rounds, while this proportion in General category was (~7.0%), this proportion was higher among Round 2. In age group of 15-25 years the proportion of respondents with unmet need for spacing was higher (~25.0%) as compared to other age category respondents (<10.0%). In Round 1 proportion of respondents who had more than 8 years of formal education showed higher proportion of unmet need for spacing (~14.0%) as compared to other categories. Respondents belonging to different socio-economic status showed similar proportion of unmet need for spacing (~11.0%) across all rounds. Respondents whose husbands were involved in different kinds of occupation showed similar patterns in the proportion of unmet need for spacing (~12.0%) this was similar

across all the rounds. Respondents who had 1 living child showed a higher proportion of unmet need for spacing for spacing (~40.0%) while respondents who had no living or more than 1living children showed this proportion as (<20.0%). Respondents who had any case or abortion or who did not have any case of abortion showed similar patterns in the proportion of unmet need for spacing (~10.0%). Respondents whose husbands were migrants showed a higher proportion of unmet need for spacing (~15.0%) as compared to those whose husbands were non-migrant (10.0%). Respondents who did not have any media exposure showed a higher proportion of unmet need for spacing (~12.0%), while this proportion among those who had media exposure was (~9.0%). Respondents who were not the member of SHG showed a higher proportion of unmet need for spacing (11.0%) as compared to those who were the member of SHG (~7.0%). Respondents who interacted with FLW showed a higher proportion of unmet need for spacing (~14.0%) as compared to those who did not have any FLW interaction (~10.0%) this was similar across all the rounds. Respondents who were not the part of FP discussion on VHSND showed higher proportion of unmet need for spacing (~21.0%) while who were not the part of discussion showed this proportion (15.0%). There was no significant difference in the proportion of respondents who were aware and who were not aware about the Nai Pahel Kit in the proportion of unmet need for spacing (12.0%). In round 3 respondents who were unemployed showed a higher proportion of unmet need for spacing (~12.0%). There was no major difference in the proportion of unmet need for spacing among the respondents who participated in Sas Bahu Sammelan and who did not (~11.0%), similar pattern was observed among the respondents who were exposed to Sarthi Van and who were not exposed.



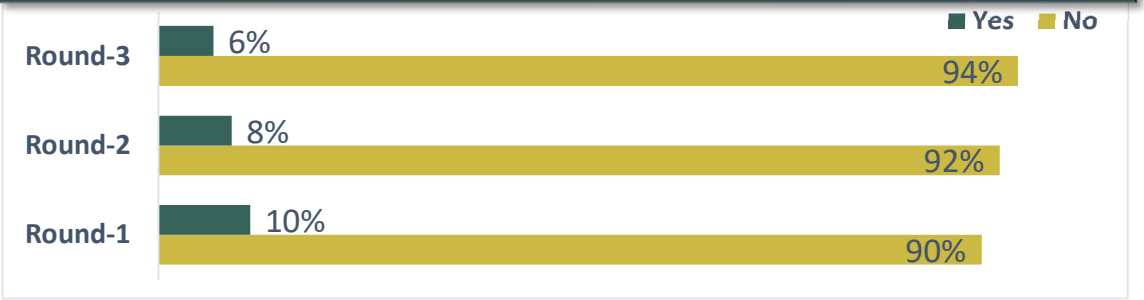


History of abortion

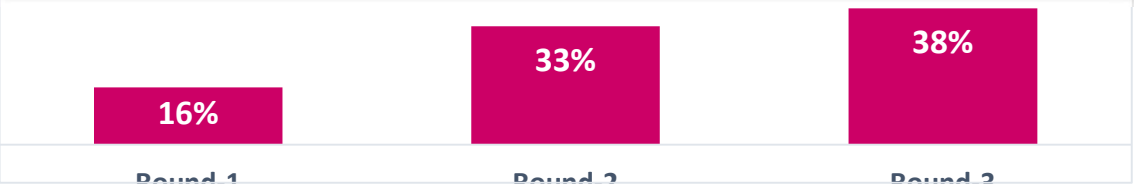


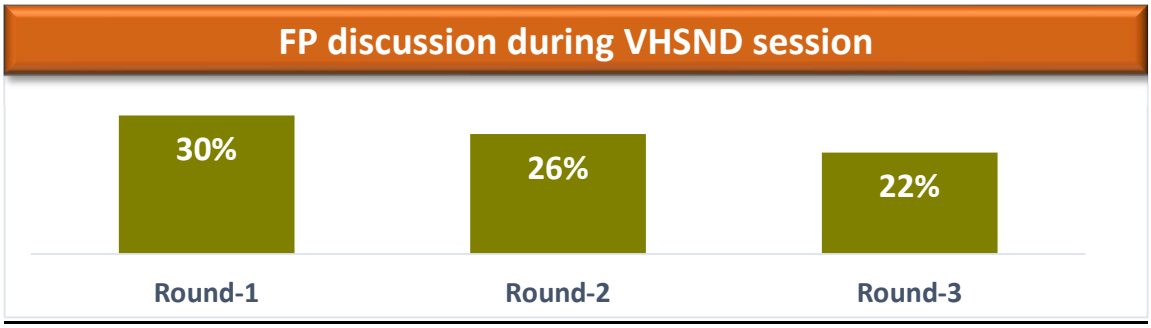
Media Exposure

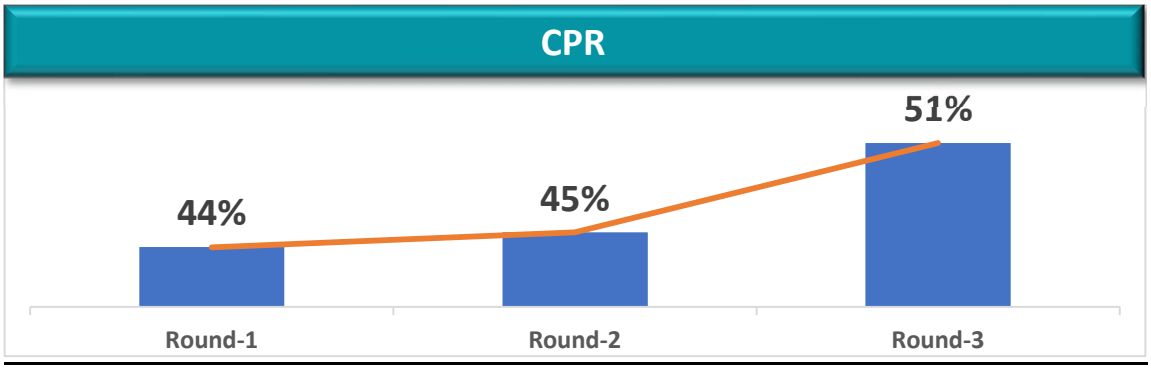
FLW Interaction on FP in last 12 months

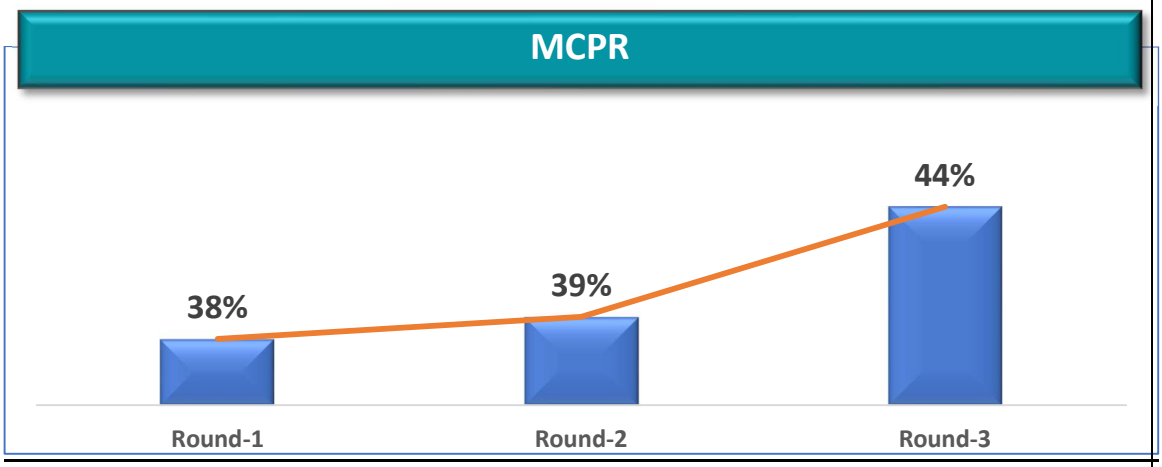


SHG Membership




FP discussion during VHSND session
30%
26%
22%
Round-1
Round-2
Round-3


CPR
44%
45%
51%
Round-1
Round-2
Round-3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Limitations-

It is important to acknowledge that our sample, which consists of currently married women of reproductive age group (15-49 years), self-reported the data which may introduce recall bias.

Discussion-

Family planning programs are critical in managing population growth and improving maternal and child health outcomes. The outcomes of family planning programs in Bihar exhibit complex patterns influenced by a multitude of socio-economic, cultural, and demographic factors. This study aimed to identify and analyze these patterns and their predictors to provide a comprehensive understanding of the efficacy and challenges of family planning initiatives in Bihar, which is one of the most populous and socio-economically challenged states in India and presents unique challenges and opportunities for family planning initiatives. Our findings unveiled a complex landscape influenced by socio-economic, demographic, and cultural factors. The main outcomes of interest included contraceptive prevalence, the use of modern spacing methods, and the unmet need for family planning. Our analysis identified significant predictors of these outcomes, such as education level, economic status, urban versus rural residence, and access to health services. This discussion explores the patterns and predictors of family planning program outcomes in Bihar. The overall contraceptive prevalence rate (CPR) in Bihar has been traditionally lower compared to the national average. According to the National Family Health Survey (NFHS-5) 2019-21, the CPR in Bihar stood at around 51.7%, an improvement from previous years but still indicative of gaps in access and acceptance while the national average for the modern contraceptive prevalence rate (mCPR) is 56.5% (NFHS-5). There is a significant reliance on sterilization, particularly female sterilization, which accounts for most of the contraceptive use. Temporary methods like condoms and oral contraceptive pills are less prevalent. This pattern underscores the need for a more diverse method mix to meet varying reproductive needs and preferences. The unmet need for family planning in Bihar remains high. NFHS-5 data shows that approximately 18.4% of married women of reproductive age have an unmet need for contraception. This suggests that a considerable proportion of women want to avoid pregnancy but are not using any method of contraception. The Total Fertility Rate (TFR) in Bihar is one of the highest in India, though it has been declining. NFHS-5 reports a TFR of 3.0, indicating progress but highlighting the need for sustained efforts to reach the replacement level of fertility (2.1). Our research shows that in Bihar, family planning outcomes are greatly affected by factors such as education, socio-economic status, and access to healthcare services. Women with higher levels of education tend to use family planning methods more. This is consistent with previous studies, which revealed that educated women are more likely to have a good understanding of family planning and to make their own decisions about it, it also showed a strong link between higher levels of education and economic status and increased contraceptive use while reducing the unmet need for family planning. Like other studies, we discovered that people living in urban areas of Bihar are more likely to use contraceptives compared to those in rural areas. This difference between urban and rural areas is often attributed to better access to healthcare, higher education levels, and greater exposure to family planning messages in urban areas[xviii]. Socio-economic status also plays a crucial role. Women from wealthier

households are more likely to use modern contraceptives compared to those from poorer backgrounds. This disparity can be attributed to better access to healthcare facilities, higher levels of education, and greater autonomy in reproductive health decisions among wealthier women **(Singh et al., 2014).** Access to healthcare services, particularly in rural areas, remains a critical determinant of family planning outcomes. Despite efforts to improve healthcare infrastructure, many rural areas in Bihar still face challenges such as insufficient healthcare providers, lack of contraceptive supplies, and inadequate health education **(Stephenson et al., 2007).** These findings underscore the importance of strengthening healthcare delivery systems to ensure consistent and reliable access to family planning services across the state. Apart from that the prevailing method mix in Bihar indicates a preference for permanent contraceptive methods, such as female sterilization, over short-term and reversible methods like oral contraceptive pills and condoms. This trend aligns with national data, indicating a requirement for initiatives that encourage a broader range of contraceptive options. The reliance on permanent methods could be due to limited availability or knowledge of alternative methods, indicating a need for programmatic intervention. The ongoing unmet need for family planning in Bihar, especially among younger women and those with lower levels of education, highlights the importance of targeted educational and service delivery initiatives. Our study affirms that improving women's education and socio-economic status can result in better family planning outcomes. Furthermore, involving men in family planning discussions and decisions could help overcome cultural barriers and misconceptions. The study identified several key predictors of family planning utilization. Age, education level, number of living children, and urban-rural residence emerged as significant determinants. Younger women, particularly those in their early reproductive years, show higher family planning utilization rates. This trend is consistent with other studies indicating that younger women are more likely to seek family planning services to space or limit births **(Rossier et al., 2013).** Education Level-As previously mentioned, higher education levels are positively correlated with family planning use. Women with secondary or higher education are more likely to be aware of and use contraceptive methods **(Bongaarts, 2017).** Women with more children are more likely to use contraceptives to limit further births. This predictor aligns with the rational choice theory, where the desire to control family size becomes more pronounced with an increasing number of children **(Cleland et al., 2012).** Urban women are more likely to use modern contraceptives compared to their rural counterparts. This disparity highlights the urban-rural divide in access to healthcare services and the availability of family planning options **(Stephenson et al., 2007).** While education has been identified as the most significant factor affecting family planning outcomes. Women with higher levels of education are more likely to use contraceptives and have a lower unmet need for family planning. This finding is supported by global literature, which consistently demonstrates that education empowers women to make informed decisions about their reproductive health. Economic status is also a critical factor, with wealthier women showing higher rates of contraceptive use. This is likely due to their better access to health services and information compared to households with lower wealth. The findings of this study have several implications for family planning policies and programs in Bihar. Firstly, there is a need for targeted educational campaigns to raise awareness about family planning not only for women but also to engage men and the broader community to foster supportive environments for family planning. Such initiatives should focus on the benefits of family planning and address common misconceptions. Secondly, expanding access to a variety of

contraceptive methods, particularly in rural areas, could help address the high reliance on permanent methods and the unmet need for family planning. Strengthening the supply chain for contraceptives, increasing the number of trained healthcare providers, and enhancing health education can significantly improve family planning services in these regions. Lastly, integrating family planning services with other health and development programs may improve overall uptake and effectiveness. One of the strengths of this study is the use of comprehensive data from three rounds conducted in the years 2016,2018 and 2021, which allows for a robust analysis of family planning outcomes in Bihar. However, there are limitations, including potential biases in self-reported data and the cross-sectional nature of the study, which limits the ability to establish causal relationships. Future research should consider longitudinal designs to better understand the dynamics of family planning behaviors over time. The outcomes of family planning programs in Bihar reflect a complex interplay of socio-economic, cultural, and infrastructural factors. While there have been improvements in contraceptive prevalence and fertility rates, significant challenges remain, particularly concerning unmet needs and method mix. This study emphasizes key areas for improving family planning outcomes in Bihar. It is essential to address socio-economic disparities, enhance educational efforts, and expand access to various contraceptive methods to meet the family planning needs of the population through a multi-faceted approach that includes enhancing healthcare access, promoting women's empowerment, and engaging communities to shift cultural norms. By focusing on these areas, family planning programs can significantly contribute to the health and well-being of families in Bihar. In conclusion, the outcomes of family planning programs in Bihar are influenced by educational, socio-economic, and healthcare access factors. Addressing these factors through specific policies and interventions and a continued focus on these areas, supported by robust policy measures and effective program implementation, can greatly improve the effectiveness of family planning programs in Bihar. Future research should further investigate these dynamics, using longitudinal data to understand the long-term impacts of current family planning initiatives.

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