

ANTENATAL CARE SERVICE DELIVERY IN RAJASTHAN: EVALUATING UTILIZATION AND COVERAGE USING PCTS DATA (2024- 2025)

Dissertation Submitted to



The IIHMR University, Jaipur

for the partial fulfillment for the award of the degree of

Master of Business Administration (MBA)

in

Hospital and Health Management

by

Nidhi Sharma

Under the Supervision and Guidance of

Dr. Sandesh Kumar Sharma

2025



Government of Rajasthan
National Health Mission, Rajasthan
Department of Medical, Health & FW, Swasthya Bhawan, Jaipur
Tel.No.0141-2229108, Email ID: spm_raj.nrhm@yahoo.com

No. F 2 (153) NHM/SPM/2025/ 616

Dated: 30/05/2025

CERTIFICATE

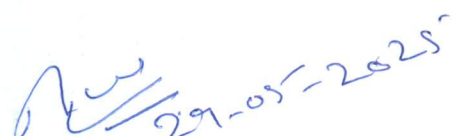
This is to certify that **Dr. Nidhi Sharma**, student of MBA, Indian Institute of Health Management Research (IIHMR University, Jaipur) has successfully completed her Dissertation & Internship at National Health Mission, Rajasthan from 10th March, 2025 to 31st May, 2025.

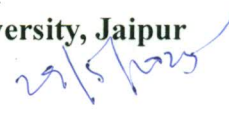
Her performance was found satisfactory. We extend her good wishes for a bright and successful career ahead.


(Dr. Bharti Dixit)
Mission Director, NHM
Joint Secretary
Medical Health & Family Welfare

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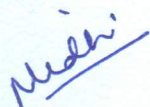
This is to certify that dissertation titled **ANTENATAL CARE SERVICE DELIVERY IN RAJASTHAN: EVALUATING UTILIZATION AND COVERAGE USING PCTS DATA (2024- 2025)** is a record of the research work undertaken by **Dr. Nidhi Sharma** in partial fulfillment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur under my guidance and supervision and her approach to the research study has been sincere, scientific, and analytical.


Faculty Guide
IIHMR University, Jaipur
Date: Date


School Dean
IIHMR University, Jaipur
Date: Date 

DECLARATION BY STUDENT

I hereby declare that this dissertation "ANTENATAL CARE SERVICE DELIVERY IN RAJASTHAN: EVALUATING UTILIZATION AND COVERAGE USING PCTS DATA (2024- 2025)" is the bonafide record of my original research work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.



(Signature)

Nidhi Sharma

Date: 29.05.2025

ABSTRACT

Antenatal Care Service Delivery in Rajasthan: Evaluating Utilization and coverage using PCTS Data (2024-2025)

Author Name: Dr.Nidhi Sharma,MBA Hospital & Health Management ,IIHMR University,

Advisor s Name: Dr. Sandesh Kumar Sharma, Associate Professor, IIHMR University, Jaipur

Keywords: Maternal health, ANC Services

Background: The care a woman receives during pregnancy is known as Prenatal therapy. Ensuring the health of expectant mothers and their unborn children is the primary objective of antenatal care (ANC), which aims to produce a healthy mother and baby at the end of the pregnancy.

Goals : to reduce the rates of death and morbidity among women and children; to improve the physical, mental, and social well-being of women, children, and their families.

Objective: This study evaluates Making use of ANC amenities by pregnant women in Rajasthan using data from PCTS 2024–2025. Key parameters such as minimum ANC visits, IFA and calcium supplementation, early registration, and Td booster coverage are evaluated. Finding gaps and zone differences in service delivery is the goal.

Methodology: This retrospective descriptive study used secondary data from the PCTS system to assess antenatal care (ANC) service coverage across seven zones in Rajasthan from April 2024 to March 2025. The study included pregnant women registered in PCTS who received at least one ANC service and had complete data for five selected indicators: early ANC registration, 4+ ANC visits, Td booster, full IFA, and calcium supplementation. Random sampling ensured geographic representation and data completeness. Data was extracted from the PCTS dashboard, cleaned in Excel, and analyzed using descriptive statistics to compare ANC coverage across districts and identify service gaps.

Findings: ANC Early Registration (During the First Trimester): Bharatpur (91%), Kota (89%) were the top performers, demonstrating effective community mobilization and early health

system participation. Despite its metropolitan advantage, Jaipur (77%) is a low performer, indicating deficiencies in awareness, outreach, or the system. Gaps between early registration and follow-up visits were found in a number of areas after four or more ANC check-ups were completed. Despite a high rate of early enrollment, some women do not complete the necessary number of ANC visits, which may be due to inadequate follow-up, counseling, or accessibility concerns.

The IFA Tablet Coverage (180 Tablets): Udaipur has the lowest percentage (56%), followed by Jodhpur (59%), and Bikaner (62%). This indicates issues with supply chain management, adherence, and awareness. Even the top-performing districts (Jaipur and Ajmer, at 77%) don't meet the ideal goal.

Coverage of Td Booster: The most seriously underperforming metric. Bikaner (28%) and Udaipur (26%) and Jaipur (26%) did not surpass 50% coverage. raises the possibility of missed ANC visit opportunities, inadequate integration with routine care, and systemic deficiencies in maternal immunization.

Taking 360 tablets of calcium supplements: Coverage in all zones is exceptionally high: 97% in Udaipur, 96% in Ajmer, Successful field-level implementation, availability at facilities, and an efficient supply chain are all demonstrated.

Comparison by Zone Standouts: Bharatpur and Kota were found to be consistently superior zones based on a variety of metrics.

In certain areas (such calcium) and others (like Td booster and IFA coverage), Jaipur and Udaipur performed poorly. Poor IFA adherence, low maternal immunization, lost chances during ANC visits, and delays between the start and finish of care are some of the systemic problems that have been observed.

Conclusion: Antenatal Care Service Delivery in Rajasthan: Using PCTS Data to Assess Coverage and Utilization (2024-2025). The results show both ongoing difficulties and advancements in the provision of Health care for mothers. It is encouraging to see that early ANC registration and calcium pill distribution have comparatively high coverage in several

districts, indicating that field-level execution, community engagement, and counseling are working in some regions.

Significant gaps still exist, nevertheless, in important areas including the supply of all 180 iron-folic acid (IFA) tablets and Td booster dosages. Even with these low-cost, high-impact interventions' well-established advantages, coverage is still below ideal in every zone. With no district achieving even 50% coverage, TD booster administration was found to be the most seriously underperforming area, posing a serious danger to the health of expectant mothers and newborns.

Enhancing digital tracking and follow-up systems, guaranteeing regular training and support for frontline workers like ASHAs, improving supply chain management, and removing sociocultural barriers that keep women from seeking timely and comprehensive care are all important components of a multifaceted strategy to address these problems. Last but not least, lowering mother and newborn morbidity and death in Rajasthan depends on the efficient provision of ANC services. Findings from this study emphasize the usefulness of leveraging real-time program data, such as PCTS, to lead improvements and the significance of focused, data-driven interventions. Future studies that use qualitative approaches can improve ways to bridge the remaining gaps in ANC utilization and provide a deeper understanding of the obstacles that exist locally.

ACKNOWLEDGEMENT

I would first want to express my sincere gratitude to IIHMR University and the National Health Mission, Jaipur, Rajasthan for giving me the chance to complete my internship. They put their faith and confidence in me, and I am appreciative since it allowed me to get useful real-world experience related to my subject of study.

I would like to thank President of IIHMR University Jaipur Dr. P.R. Sodani and Dean Dr. Sanjay Gupta for giving me this opportunity.

I want to sincerely thank my mentor, Dr. Sandesh Kumar Sharma for all of his help throughout my internship and for serving as a mentor to me. My comprehension of the field and the development of my talents have been greatly influenced by her knowledge, patience, and desire to impart it.

I also sincerely thank Dr. Surbhi Sarin Medical officer (Maternal Health) , National Health Mission ,Jaipur for her continuous support . Her encouragement created a learning environment filled with warmth, energy, and genuine care.

I also want to express my gratitude to the academic division at my institution for its assistance and support during the internship process. I was able to apply myself successfully during my internship because to the theoretical information and practical skills I gained during my education.

I'd want to close by expressing my sincere appreciation to my family and friends for their unflagging support, compassion, and inspiration. Their confidence in my skills and never-ending encouragement were key factors in my achievement throughout my internship.

I would want to conclude by saying how appreciative I am to everyone who helped me finish my internship report. Without a doubt, the knowledge I've received and the lessons I've learnt throughout my internship will influence my future endeavours.

Sincerely,

Nidhi

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ABBREVIATIONS

S.No.	Abbreviations	Full Form
1	ANC	Antenatal care
2	PCTS	Pregnancy, Child Tracking & Health Services Management System
3	IFA	Iron Folic Acid
4	Td	Teatanus Diptheria
5	JSY	JananiSurakshaYojana
6	JSSK	JananiShishuSurakshaKaryakaram
7	PMSMA	PradhanMantriSurakshitMatritvaAbhiyan
8	SUMAN	Surakshit Matritva Aashwasan
9	ANM	Midwife and Auxillary Nurse
10	ASHA	Social health activist with accreditation

INTRODUCTION

A population's total health is reflected in maternal health, which is a fundamental aspect of public health. For the sake of the mother's and the child's health, it is imperative that mothers' health be maintained throughout their pregnancies, deliveries, and recovery. prenatal care prenatal care, is an vital component of maternal health services. It includes routine health screenings, check-ups, and education to monitor and improve the health of expectant mothers and their unborn. Maternal health is the state of women's health during pregnancy, childbirth, and the postpartum phase.

Pregnancy's physiological state is characterized by the potential for adverse events and challenges that could harm the mother and the fetus [1]. Developing nations bear a heavy burden of maternal and newborn mortality, with lower-middle-income nations accounting for 94% of these deaths [2–4]. Prenatal care (ANC) is a component of the reproductive health care continuum that aims to monitor and safeguard the health of the mother and the fetus. It accomplishes this through screening for high-risk pregnancies and difficulties early, enhancing access to care, health education, immunization, and medical therapy as necessary, and encouraging favorable health outcomes for the mother and her fetus.

1, 5].

An important component of the Government of India's National Health Mission (NHM), which prioritizes prenatal care (ANC) services, is the promotion of the health of mothers and their kids. For the last mile, a group of Frontline Health Workers (FLHWs) and village-level health clinics have been established to ensure ongoing service delivery.

According to the WHO, ANC visits should be done at least four times before delivery in order to ensure the best possible health outcomes [1]. As per the World Health Organization (WHO), ANC should include four essential elements: risk assessment; Preterm delivery, abortion, perinatal mortality, and an increased risk of LBW are among the negative health outcomes associated with inadequate ANC visits [6, 7].

However, globally, across low-income regions, the dramatic increase in ANC coverage does not correspond with the drop in maternal and newborn mortality, indicating that chronically poor maternal and newborn health outcomes are caused by a high burden of inferior ANC quality [8]. Worldwide, 88% of expecting mothers currently receive at least one session of professional prenatal care (ANC) [1]. Despite notable decreases, India—the country with the largest maternity and birth cohort in the world—is not on track to fulfill the Sustainable Development Goals by 2030, with a projected mortality rate among mothers of 93 and an infant mortality rate of 30 per 1,000 live births. [9].

The Government of India's unveiled A fresh endeavor called -SurakshitMatritvaAashwasan, which aims to prevent all avoidable maternal and newborn deaths and morbidities while also promoting a happy birthing experience. The project aims to ensure that every woman and newborn who enters the public health facility receives high-quality, respectful, and dignified healthcare at no cost, with no room for service refusal. With this new initiative, the goal is "Zero Preventable Maternal and Newborn Deaths and high quality of maternity care delivered with dignity and respect."

Rajasthan is particularly concerned with ensuring that all people, especially those in rural and tribal areas, have fair access to high-quality ANC services. Regular prenatal care visits enable health care providers to monitor pregnancy progress, identify problems, and provide necessary treatments. Pregnant women can also learn about family planning, nursing, nutrition, and hygiene from ANC.

These contacts should include health education, preventive methods, and assessments of the health of the mother and fetus. In India, the Ministry of Health and Family Welfare (MoHFW) adopted these guidelines, emphasizing the importance of early registration and frequent ANC visits.

Once you have missed one (1) menstrual cycle, you should begin antenatal care. During your pregnancy, schedule eight (8) ANC visits with a qualified healthcare professional at a medical facility.

Antenatal Care Benefits

At prenatal care appointments, the expectant mother is examined and treated for any illnesses that could endanger her pregnancy, including HIV/AIDS, malaria, anemia, and sexually transmitted diseases. The expectant mother is given information that will help her have a healthy pregnancy and a healthy baby, including tips on what to eat, how to avoid HIV/AIDS and sexually transmitted diseases, how to prepare for a safe delivery, and how to take care of the newborn and nurse.

- A checkup is performed to ensure the unborn child is growing properly.
- To prevent tetanus in the fetus, the expectant mother receives two (2) tetanus vaccinations.

ANC Services

Before Enrolling

An ANC visit or registration should be the first time a pregnant woman is suspected of being pregnant. In the first trimester, the first visit should preferably take place before or at the 12th week of pregnancy.

Number and timing of visits

In addition to the first registration visit and any ANM home visits, all pregnant women should attend a minimum of four ANC visits. As soon as a pregnancy is found, the first visit should be scheduled, and the second visit should be scheduled for four to six months (about 26 weeks). The third should be scheduled for approximately 32 weeks in the eighth month, and the fourth for 36–40 weeks in the ninth month.

ANC Schedule

According to the following timetable, each expectant mother should have at least four prenatal exams:

First examination: Within 12 weeks, ideally as soon as a pregnancy is discovered, and for the

purpose of registering the pregnancy and attending the first prenatal examination.
Two to twenty-six weeks for the second check-up;

twenty-eight to thirty-four weeks for the third

Complete registration and follow-up of all HRPKeys

Fourth check-up: 36 weeks to term

Indicators of Antenatal Care

To assess the utilization and effectiveness of ANC services, several key indicators are commonly used:

1. **Early Registration:** The percentage of expectant mothers that sign up for ANC within the first trimester is known as early registration. Timely identification of high-risk pregnancies and the start of necessary care are made easier by early registration.

2. **Number of ANC Visits:** how many pregnant women have four or more prenatal care visits. Making multiple visits allows for continuous observation and timely action.

3. **IFA Supplementation:** The percentage of expectant mothers who take 180 IFA tablets during their pregnancy. Anemia, a prevalent illness that can adversely affect the outcome of pregnancy, although it is preventable with enough IFA supplementation.

4. **The proportion of expectant mothers who receive the tetanus-diphtheria (Td) booster injection.** With this immunization, the mother and the baby are protected against the potentially deadly disease tetanus.

5. **Calcium Supplementation:** The proportion of women who took all 360 calcium tablets.

The JananiSurakshaYjana is a safe motherhood program administered by the (NHM). Low-income pregnant women, including those from Scheduled Tribes, Scheduled Castes, and BPL households, are urged to give birth in an institution.

Approximately 1200 women in Rajasthan lose their lives to pregnancy-related ailments every year.

Pregnant women from low-income families, such as those from Scheduled Castes, Scheduled Tribes, and BPL households, should be encouraged to give birth in an institution .

JananiShishuSurakshaKaryakaram

On June 1, 2011, the Indian government announced the creation of JananiShishuSuraksha Karyakaram, or JSSSK. Pregnant women who give birth at government hospitals will also be eligible for program benefits. Additionally, the transition to institutional deliveries will be promoted for those who now give birth at home. Every State and Union Territory has started implementing the plan. In the case of an institutional delivery, pregnant women and their families must pay high out-of-pocket costs for medications, diagnostic testing, cesarean sections, user fees, and nutrition.

A noteworthy step has been taken by to get all States to agree to provide cashless, totally free services to pregnant women, including caesarean sections and normal deliveries, as well as to ill newborns (up to one year ago) in Public health facilities in both rural and urban areas. This is a result of the significant out-of-pocket costs that expectant mothers and parents of sick children incur during delivery and during the care of sick children.

Pregnant women can take use of the following free benefits:

- Free of user fees;
- Cashless and free; delivery;
- Free C-section;
- Free drugs and supplies;
- No-cost diagnostics
- Complimentary lunches during hospital stays;
- Free blood supply;
- Free transportation to and from medical facilities;
- Free transportation between facilities in the event of a referral;
- Free transportation home after a 48-hour stay during medical facilities

Sick newborns are entitled to the following free benefits until they turn one year old. This has been expanded to encompass sick infants:

- Absence of user fees

.Free diagnostics;

- Free treatment;
- Free prescription drugs and supplies;
- Free blood supply;

For up to three days following a typical delivery and up to seven days following a C-section, benefits include free diagnostics, free blood when necessary, free supplies and medications, and free food.

Additionally, this program offers free transportation from the home to the facility, between institutions, and back to the home in the event of a referral. All sick neonates who seek care at public health facilities within a year of birth are eligible for similar benefits. Now, sick babies are included in this.

PradhanmatriSurakshitMatritvaAbhiyan

An effort of the Indian government's is the PradhanMantriSurakshitMatritvaAbhiyan. Every month on the 18th and 27th, the initiative seeks to offer all expectant mothers free, thorough, and excellent prenatal care.

Surakshit Pradhan Mantri The goal of MatritvaAbhiyan, a part of the In order to raise the bar for reproductive maternal, neonatal, child, and adolescent health (RMNCH+A), and availability of prenatal care (ANC), including screening and treatment services. Every woman should see a doctor or specialist at least once throughout her second or third trimester of pregnancy.

Enhance the standard of care provided at prenatal appointments. As part of this, the following services must be provided:

All necessary diagnostic services

Examining the relevant clinical conditions

Proper treatment of any current medical conditions, including gestational diabetes, pregnancy-induced hypertension, anemia, etc.

Proper record of services provided and appropriate counseling services
Pregnant mothers who have skipped prenatal checkups can receive additional services.
Using obstetric/medical history and current clinical circumstances, high-risk pregnancies are identified and line-listed. Every pregnant woman should have proper birth preparation and be prepared for any complications, especially if she has any risk factors or comorbid conditions.

Particular attention to early detection and proper treatment of malnourished women;

(Aashwasan Surakshit Matritva)

Improving the health of expectant mothers, newborns, and kids is one of the Government of India's (GoI) top public health priorities. A nation is built on the backs of a strong, active, and forward-thinking woman. To give moms and kids the best results, safe pregnancy, delivery, and the postpartum period are crucial turning points in the continuum of care for women. These events have major implications for the long-term prospects of mothers, children, and families.

To achieve this, the Indian government implemented "SUMAN – SurakshitMatritvaAashwasan," a comprehensive and integrated policy strategy. It also highlights the government's resolve to eliminate unnecessary maternal and newborn mortality and address current disparities in maternity and newborn health care services.

On October 10, 2019, during the 13th Central Council of Ministers conclave, the honorable health minister presented a plan in which the Indian government and state governments pledged to provide service assurance for maternal and newborn care services .SUMAN turns rights into a service guarantee that encourages a safe birth, a good pregnancy, and delivering timely, dignified postpartum care that gives the beneficiaries a greater sense of purpose.

BENEFICIARIES OF THE INITIATIVE:

- All expectant mothers;
- All mothers for a maximum of six months after giving birth;
- All sick newborns

Antenatal Care in Rajasthan

The diverse topography and culture milieu of Rajasthan present unique challenges for the provision and consumption of ANC services. Rural or indigenous people make up a large portion of the state's population, and they occasionally reside in remote areas with limited access to healthcare facilities. ANC service utilization is influenced by socioeconomic factors, educational disparities, and cultural norms. The SRS (2019–21) reports that Rajasthan's MMR of 102 per 100,000 live births is higher than the national average of 93.

The Government of Rajasthan created the cutting-edge mobile application known as PCTS App (Pregnancy, Child Tracking & Health Services Management System). With its ability to digitize data for more than 16,700 government health facilities around the state, this software is a vital tool for efficient health care planning and management.

Auxiliary Nurse Midwives (ANMs) are the primary target audience for the PCTS App, which makes it easier to track pregnant women online and allows for case-specific monitoring, which has greatly decreased maternal and infant mortality rates. It increases health surveillance and immunization program monitoring, which leads to better health outcomes for children. For population management, the PCTS App can identify sterilization instances, track area-specific sex ratios at birth, and provide warnings for vaccine dropouts. It helps with framework planning, keeps an exhaustive list of medical facilities, and offers thorough data on vaccination supplies and institutional performance. Furthermore, it monitors the well-being of expectant mothers and their offspring, improving healthcare outcomes and delivery throughout Rajasthan.

OBJECTIVE

1. To assess, using PCTS data for 2024–2025, the usage of prenatal care (ANC) facilities by Rajasthani pregnant women.
2. To evaluate how well important ANC indicators are covered
3. To determine any discrepancies or gaps in the ANC services provided throughout the Zones

LITERATURE REVIEW

The Udaipur District's primary health facilities and subhealth centers' antenatal care services were evaluated for quality.

Authors Reshma Reja

Published in: Mar 08, 2025

There are still issues with Rajasthan's ANC service delivery, despite the improvements. Geographical and social hurdles in tribal or distant regions, inconsistent availability of supplements and immunizations at health clinics, insufficient follow-ups, and delayed or missed early registration due to lack of awareness are some of the challenges that have been brought to light by studies. Furthermore, the majority of Primary Health Centers and sub-centers have working equipment and infrastructure that satisfies standards, but Auxiliary Nurse Midwives' (ANMs') abilities are sometimes restricted to providing basic services, suggesting the need for more training and capacity building

Finding areas where The ambitious indigenous district of Sirohi, Rajasthan, needs to improve its maternity and early infant health care practices for pregnant tribal women.

Authors: Rakhi Dwivedi , Akhil D Goel ' Varuna Vyas

Published in: 2023 Dec 21

Only 29.9% of expectant mothers in the tribal district of Sirohi knew how important ANC checkups were. The study underlined how important it is to educate tribal pregnant women and their families about the value of early ANC. It also emphasized how low utilization was a result of inadequate health infrastructure and restricted access to ANC treatments.

Enhancing the Rajasthan State, India's Perspectives and Experiences on the caliber of This term and Immediate Postpartum Care in Public Facilities

Authors: Kumar et al.

Published in: BMJ Open Quality, 2022

The effectiveness of the Dakshata program in improving the standard of labor and postpartum care in Rajasthan's public health facilities is assessed in this study. It identifies difficulties in maintaining high-quality care while highlighting advancements in clinical procedures.

An evaluation of India's antenatal care system's determinants of adequate quality

Authors: Kumar et al.

Published in: BMC Pregnancy and Childbirth, 2024

By comparing data from 2015–16 to 2019–21, this study finds that the percentage of Indian women receiving adequate quality ANC increased from 24% to 32%. It highlights the necessity of comprehensive treatment and highlights ongoing deficiencies in ANC components.

Digital Supportive Supervision for Obstetric Medicine, Kid Medicine, and Planning for Families Services in India (DiSS)

Authors: Sharma et al.

Published in: BMJ Open, 2024

This study explores the use of digital tools for supervising maternal and child health services, utilizing PCTS data for quantitative assessments. It discusses the potential of digital interventions in improving service delivery.

The factors that contribute to India's underutilization of antenatal care

Authors: Singh et al.

Published in: PLOS ONE, 2023

The socioeconomic and demographic determinants that contribute to insufficient ANC consumption are identified in this study using NFHS-5 data, revealing differences across various populations and geographies.

In Rajsamand, Rajasthan, comprehending the obstacles to institutional delivery and antenatal care

Authors: Columbia Global Centers | South Asia

Published in: Columbia University, 2015

In this paper, qualitative findings from community surveys are used to explore the structural, logistical, and cultural challenges that impact ANC and institutional deliveries in Rajsamand area.

Utilization of prenatal and delivery care services and maternal and newborn mortality in rural India

Authors: Patel et al.

Published in: Scientific Reports, 2022

The significance of comprehensive care in rural areas is shown by this longitudinal study, which looks at the relationship between the use of ANC services and rates of mother and infant death.

India's Mother and Child Tracking System (MCTS): A Comprehensive Evaluation

Authors: Public Health Foundation of India

Published in: BMC Health Services Research, 2015

This report assesses the effectiveness of MCTS in Rajasthan and Uttar Pradesh, pointing out implementation issues and making recommendations for enhancements to improve the tracking of maternal and child health care.

Utilization in India and Factors Affecting Sufficient, High-Quality Prenatal Care

Authors: Kumar et al.

Published in: BMC Pregnancy and Childbirth, 2023

Although many women attend ANC visits, the study shows that only a small percentage receive high-quality treatment, highlighting the need to improve service delivery and content.

The extent, variation, and predictors of subpar antenatal care in India

Authors: Sharma et al.

Published in: SAGE Open Medicine, 2023

The incidence of subpar ANC is estimated, regional differences are examined, and important variables affecting the quality of care in various states are identified.

Health Sector Localization Technology: An Analysis of PCTS in Rajasthan

Authors: Sharma et al.

Published in: ResearchGate, 2018

The effectiveness of PCTS in Rajasthan in providing basic healthcare services to expectant mothers and their unborn children is evaluated in this study, which also identifies regions in need of infrastructure and technology upgrades.

(NHM)

Encompassing the National Rural Health Mission and the National Urban Health Mission, NHM was established in 2013. Among its goals are the improvement of health systems and the guarantee of fair access to high-quality medical care. Antenatal care essentials include:

- JananiSurakshaYojana A conditional cash transfer program that encourages institutional births among low-income expectant mothers, lowering maternal and newborn mortality.
- Reproductive-Maternal-Neonatal-Child and Adolescent Health (RMNCH+A): A holistic strategy that covers the range of care for pediatric, adolescent, newborn, maternal, and reproductive health services.

Referral Care for Pregnant Women at High Risk in Rajasthan

Published in: BMC Pregnancy and Childbirth, 2022

In rural Udaipur, the study found that inadequate transportation, low health knowledge, and financial limitations were among the obstacles to referral care for high-risk pregnancies. A major

help in getting past these obstacles was social support, especially when it came to going to health clinics.

Tribal Women in Selected States Utilize Antenatal Care Services

Published in: Indian Journal of Medical Research

Using data from Madhya Pradesh, Odisha, Chhattisgarh, and Rajasthan, the study discovered that Scheduled Tribe women used ANC infrequently, and that education level was a key factor. The results highlight the necessity of focused initiatives to enhance indigenous populations' adoption of ANC.

Out-of-Pocket Expenditure on Prenatal and Natal Care Post JananiSurakshaYojana in Rajasthan

Published in: Journal of Health, Population and Nutrition

The prenatal and newborn care costs for Rajasthani women remain high notwithstanding the Janani Suraksha Yojana's incentives. Financial pressures can be reduced by expanding financial assistance to cover extra procedures like sonography and difficult deliveries, according to the study.

Maternal health service use and related factors: a longitudinal studies of women in rural Uttar Pradesh, India

Singh et al. (2019)

emphasized that the main predictors of care consumption were education, exposure to health information, and socioeconomic variables.

Telangana's prenatal and postnatal care service use factors.

Singh et al. (2017)

shown that awareness, socioeconomic position, and education all had a major impact on the use of ANC and postnatal care.

nutrition, eating habits, and the use of antenatal care (ANC) in Delhi's urban slums for expectant and postpartum women

Ghosh-Jerath et al. (2015)

found deficiencies in nutritional advice and ANC use, underscoring the need for better health services and education in urban slums.

Rajasthan's PCTS Mobile App to Track Expectant Mothers' Health

Published in: The Statesman, 2023

To improve the tracking of mother and child health services in real time, the Rajasthani government released a mobile app version of the PCTS. In an effort to enhance health outcomes, the app gives ASHA employees the ability to effectively monitor and report health services.

The PCTS mobile app is being introduced by the Rajasthani government to improve maternal and newborn healthcare.

Published in: ET Government, 2023

This article addresses the PCTS mobile app's installation, emphasizing how it helps improve healthcare services for women and children by giving ASHA employees the ability to efficiently access and submit health information.

An integrated action agenda for lowering maternal, neonatal, and infant mortality worldwide

Bhutta et al. (2012)

measures to lower maternal and neonatal mortality worldwide. highlighted the value of integrated care packages that cover the entire spectrum of care, including skilled delivery

attendance, ANC, and postnatal care, in order to improve outcomes for both mothers and newborns

Maternal-Fetus Results in Referred Obstetric Cases at a Rajasthani Tertiary Care Facility

Published in: International Journal of Reproduction, Contraception, Obstetrics and Gynecology

This study examined the results of obstetric cases that were referred, emphasizing the necessity of prompt referrals and better emergency obstetric care in order to lower mother and newborn morbidity and mortality.

METHODOLOGY

Study design :

The research design used in this study is a descriptive retrospective study with secondary data collected across seven zones. In Rajasthan, pregnant women can evaluate and contrast the coverage of specific antenatal care (ANC) indicators in various zones.

Study Area and Population

The study is conducted across various health zones of Rajasthan, namely:

Ajmer zone(Ajmer, Bhilwara, Nagaur,Tonk)

Bharatpur zone(Bharatpur, karuli, Dholpur, Swai Madhopur)

Bikaner zone (Bikaner, Ganganagar, churu, hanumanghar)

Jaipur zone(Alwar, Jaipur1 ,Jaipur2, Jhunjhunu, Sikar)

Jodhpur zone (Barmer, jalore, Jaisalmer, Pali, Sirohi)

Kota zone (bundi, jhalawar , Baran,Kota)

Udaipur zone (Rajsamand, Chittorghar, Dungarpur, Pratapghar, Udaipur, Banswara)

The study population includes pregnant women who were registered and received antenatal care services during the reporting period (typically April 2024 – March 2025) as captured in the PCTS system.

Inclusion Criteria:

- Women who were registered in the PCTS system between April 2024 and March 2025 and who were pregnant were eligible to participate.
- Districts or zones where all five of the chosen ANC indicators' full data are available

- Pregnant women who underwent at least one ANC service during the study period

Exclusion Criteria:

- Records with partial or missing information on certain ANC markers are excluded.
- Women who were pregnant but not registered in the PCTS system during the research period
- Districts where crucial indicators are unavailable or have inconsistent data

. Data Source

Secondary data taken from Rajasthan's Pregnancy, Child Tracking & Health Services Management System (PCTS), a state-level real-time tracking system for maternal and child health, is used in this study.

Selected ANC Indicators

Five ANC service metrics were chosen for comparative study as outcome variables:

- Early ANC Registration: Pregnant women's registration rate during the first trimester.
- The proportion of expectant mothers who had four or more prenatal care visits is known as the minimum ANC visit rate.
- The percentage of expectant mothers who received the Td (tetanus-diphtheria) booster dose is known as Td Booster Coverage.
- The percentage of women who received 180 IFA pills in their entire course of iron and folic acid (IFA) supplementation.
- Supplementing with Calcium: The proportion of women who took all 360 calcium tablets.

Sampling Method and Selection Criteria

- Data availability and completeness in PCTS;

- Geographic and demographic diversity representation;
- Pertinence to regional ANC performance;
- Random sampling technique

Data Collection and Management

Data was tabulated and produced in Microsoft Excel after being taken from the PCTS dashboard. To guarantee consistency and get rid of duplicate or missing information, data cleaning and validation were done.

Data Analysis

For graphical representations and descriptive statistics, Microsoft Excel was used to examine the cleaned data.

DATA ANALYSIS

- **Out of the total New ANC registered, number registered within 1st trimester (within 12 weeks)**

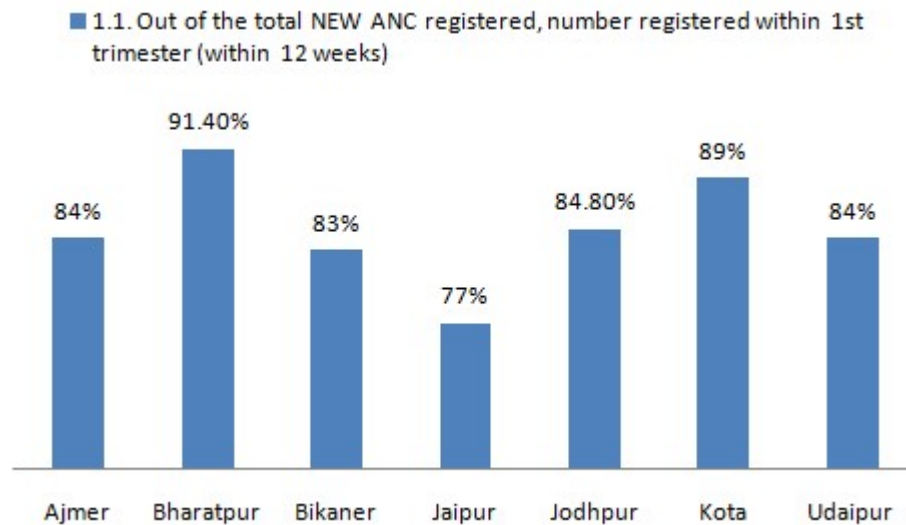


Fig 1.1

Top Performers

The greatest first-trimester registration rates are found in Bharatpur (91%) and Kota (89%). This suggests effective ASHA outreach, robust community mobilization, and maybe improved health system responsiveness in these areas.

Early problem discovery and prompt ANC service delivery are probably helping these areas.

Moderate Performers

The moderate range includes Ajmer (84%), Jodhpur (84.8%), Udaipur (84%), and Bikaner (83%). These numbers could be a result of marginal gaps in access and awareness, cultural reluctance to disclose early, or delays in pregnancy identification.

Low Performer:

Jaipur (77%) performs worse than every other zone, even though it is an urban area with abundant resources. This conclusion is important and raises the possibility of undercoverage of

urban slums. Poorer field-level outreach in crowded cities, difficulties with the migrant population

Number of PW received 4 more ANC check ups

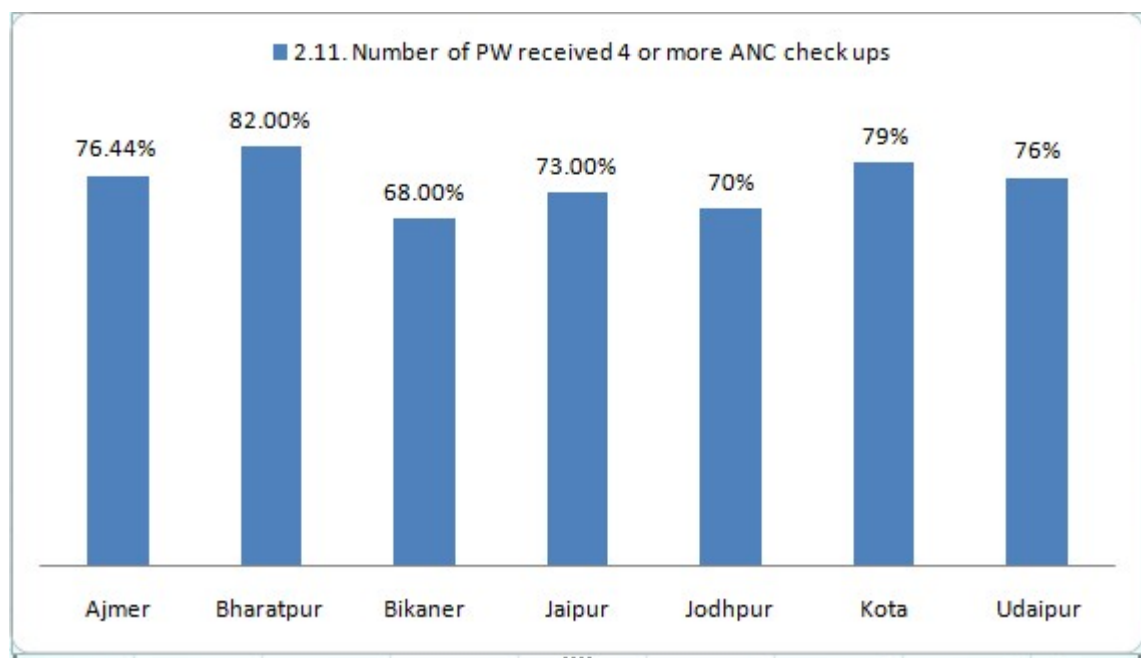


Fig 1.2

District	Early ANC Registration (%)	4 more ANC Checkups(%)	Gap (%)
Ajmer	84.00%	76.44%	7.56%
Bharatpur	91.40%	82.00%	9.4%
Bikaner	83.00%	68.00%	15%
Jaipur	77.00%	73.00%	4%
Jodhpur	84.80%	70.00%	14.8%
Kota	89.00%	79.00%	10%
Udaipur	84.00%	76.00%	8%

Bikaner (15%) and Jodhpur (14.8%) had the largest ANC service gaps, according to the data, suggesting a substantial decline between early ANC registration and the completion of four or

more

ANC

check-ups.

These disparities could be caused by sociocultural factors influencing health-seeking behavior, geographic hurdles, restricted access to healthcare facilities, and insufficient follow-up by frontline health workers. Ajmer (7.56%), Udaipur (8%), and Jaipur (4%), on the other hand, had the smallest gaps, indicating improved follow-up procedures and continuity of care in these districts.

Stronger ASHA-led follow-up systems, mobile ANC clinics in rural locations, targeted IEC programs to highlight the value of ANC, and block-level microplanning are some of the suggested interventions to address high-gap regions. To guarantee equitable ANC service delivery throughout Rajasthan, low-gap districts should keep up best practices, carry out frequent performance evaluations, and offer mentorship help to lagging areas.

Number of PW provided course 180 iron folic Acid (IFA) tablets

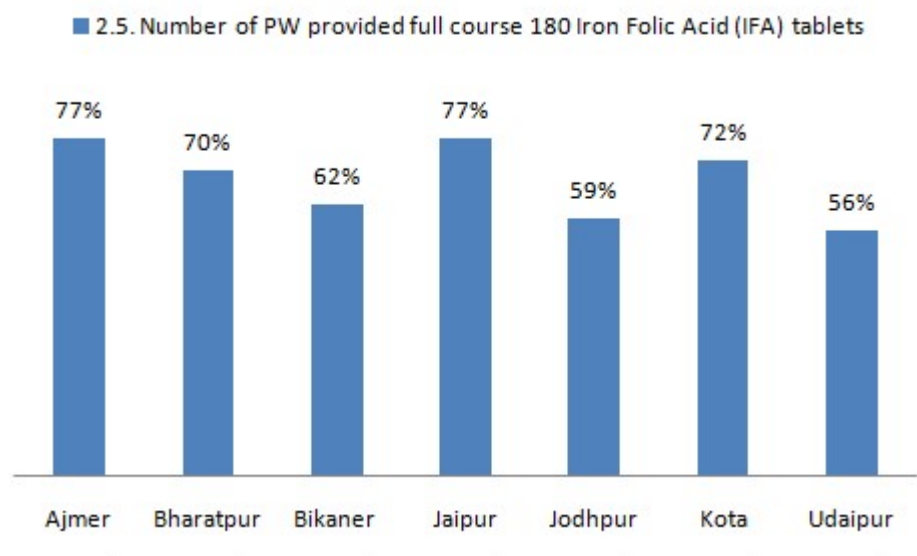


Fig 1.3

Top Performers:

Ajmer and Jaipur rank first with 77% and 77%, respectively, showing efficient supply chain for IFA, strong compliance and guidance, Improved ANC client tracking and follow-up

Moderate Performers:

Bharatpur (70%) and Kota (72%) are marginally worse but still doing rather well. Additionally, they demonstrate strong first-trimester registration and 4+ ANC check-up rates, indicating systemic effectiveness, while there may be some field-level distribution or stock problems.

Low Performers:

Udaipur (56%) Jodhpur (59%), Bikaner (62%), and Bikaner are all much behind. The discrepancy in IFA tablet distribution suggests problems like inadequate logistics or stock-outs, even with moderate to high ANC registration and check-up rates. low adherence counseling. non-adherence because of adverse consequences, Inadequate follow-up systems

Number of PW given Td Booster (Tetanus Diptheria dose booster)

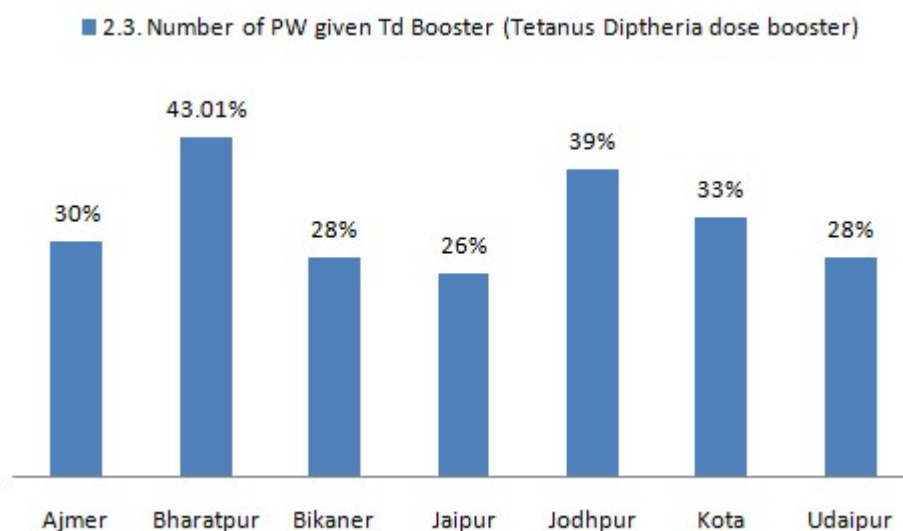


Fig 1.4

The tetanus and diphtheria booster is an integral element of the important ANC package and is vital for protecting mothers and newborns against these diseases. In contrast to first-time mothers or those without a history of Td, women who have previously had a booster dosage (during a previous pregnancy or childhood) typically only receive one dose.

Limited Coverage in Every Zone

Each of the seven zones is reporting less than ideal Td booster delivery, and none of them has even reached 50% coverage. This consistently poor Td booster coverage throughout Rajasthan points to a structural problem with the ANC's maternal vaccination component. Since Td immunization is a low-cost, high-impact intervention, it urgently needs programmatic attention.

Number of PW provided full course 360 calcium tablets

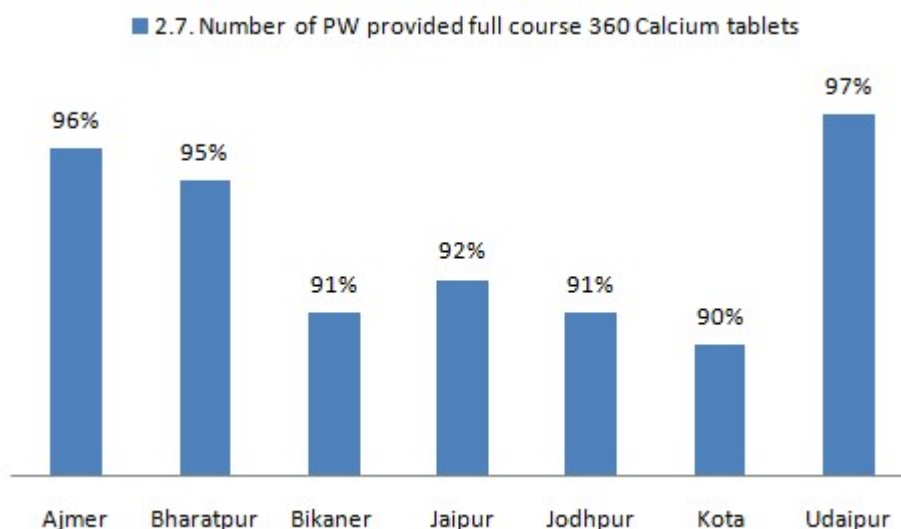


Fig 1.5

Performance in Every Zone

- Consistent availability at health facilities, strong supply chain logistics, good field-level execution by ANMs and ASHAs Top Performers, and effective procurement and distribution methods are all indicators of the extremely high coverage (90% and above) reported by all zones.
- Udaipur (97%), Ajmer (96%), and Bharatpur (95%) are the state's top three cities, indicating: High priority for ANC quality, Potentially improved counseling and compliance monitoring, Comparatively reduced IFA pill coverage contrasts with this achievement, indicating programmatic strengths in calcium administration but difficulties with IFA adherence.

GAP

Provision of Full IFA (180 Tablets)

The most significant and pervasive disparity is seen in this indication, as every zone is below the 100% objective. • With a 44% deficit, Udaipur has the lowest coverage (56%). Additionally, Jodhpur (59%) and Bikaner (62%) show shockingly low coverage. The discrepancy could be brought on by inadequate counseling, supply chain problems, or poor compliance.

Td Booster Administration

This is where ANC service delivery is most severely lacking. • All zones fall well short of the 90% target, with Jaipur having the lowest coverage at 26% (64% gap).

Bikaner and Udaipur also do poorly, with a 28%–62% disparity. These disparities point to serious operational and programmatic flaws, which probably include lost chances during ANC visits, insufficient tracking systems, poor inter-program integration, low maternal immunization coverage, and lost health education opportunities.

Gap Between Early ANC Registration and Completion of 4+ ANC Check-ups

Despite the relatively high rate of early antenatal care (ANC) registration in Rajasthan's districts, there is still a sizable disparity in the continuation of care, particularly with regard to completing four or more ANC check-ups. Although pregnant women are making early contact with the health system, many do not receive the recommended number of follow-up visits, as evidenced by this decline. This gap is caused by a number of factors, such as low knowledge, insufficient counseling, difficult access to medical facilities, and ineffective follow-up procedures.

In addition to representing lost chances for prompt identification and management of pregnancy-related concerns, this discrepancy between the start and continuation of ANC undermines the efficacy of maternal health measures.

Overall Implications of Gaps

Several ANC indicators revealed the following gaps:

- Infrastructure and logistics of the health system: Unreliable delivery of necessary medications and vaccines lowers service quality. Community-level hurdles include understanding, gender roles, and sociocultural norms that impact prompt care-seeking and compliance.
- Human resources: Service delivery and beneficiary engagement are impacted by frontline staff supervision, incentive, and training. The efficacy of comprehensive care is diminished when maternal health and immunization programs are not well coordinated.
- Management of data: Inadequate monitoring and follow-up make it more difficult to guarantee the continuation and fulfillment of suggested interventions. According to these results, there are still significant gaps in vaccination and supplementing, even though some ANC services have improved in Rajasthan and other comparable settings. Reaching maternal health goals at the national and international levels requires addressing these problems.

DISCUSSION

Antenatal care (ANC), which aims to protect the health and wellbeing of expectant mothers and their unborn infants, is an essential part of maternal health initiatives. Early enrollment, routine physicals, dietary supplements, and vaccinations such as the tetanus-diphtheria (Td) booster are all included. In order to assess the use and coverage of important ANC services, this study examined PCTS (Pregnancy, Child Tracking & Health Services Management System) data from seven zones in Rajasthan: Ajmer, Bharatpur, Bikaner, Jaipur, Jodhpur, Kota, and Udaipur. In order to enhance maternal and newborn outcomes in the area, the findings point to a number of critical insights and gaps that need to be filled.

Early ANC Registration

Because early registration during the first trimester allows for timely risk factor identification, counseling, and the initiation of necessary interventions, it is essential. Only the Bharatpur zone, out of the six zones, met the recommended early registration threshold of 90%, according to the data. At 77%, Jaipur had the least amount of coverage. This 13% gap shows that many pregnant women have had severe delays in accessing ANC services.

The noted delays in early registration could have additional causes. In rural Rajasthan, socioeconomic barriers such as cultural norms, ignorance, poverty, and female autonomy often impede prompt access to medical care. Furthermore, geographical challenges may limit physical access to medical facilities in some places. are essential in identifying and registering pregnant women at an early stage. Reduced coverage in places like Jaipur and Bikaner may suggest that community-level outreach, awareness campaigns, and frontline worker motivation and training need to be strengthened.

Early registration gaps also have systemic impacts. In the absence of prompt intervention, expectant moms miss out on crucial chances for treatments such as folic acid supplements and pregnancy problem detection, which can be detrimental to the health of the mother and the fetus. Faster registrations might be made possible by enhancing referral relationships and tracking pregnancies with mobile health (mHealth) technologies.

Four or More ANC Check-ups

One important measure of maternal health service usage is the completion of four or more antenatal care (ANC) appointments, which guarantees prompt risk assessment and management during pregnancy. Although early ANC registration rates in Rajasthan are satisfactory, the percentage of pregnant women who complete four or more ANC visits is still below ideal in all districts. Districts like Bharatpur (82%) and Kota (79%) score comparatively better than others like Bikaner (68%) and Jodhpur (70%) in terms of 4+ ANC coverage, according to our data, which shows considerable heterogeneity in this area. This discrepancy emphasizes how difficult it is to maintain continuity of care following first registration.

This deficiency may be caused by a number of circumstances, including socioeconomic limitations, logistical obstacles like the distance to medical facilities, ignorance about the value of repeated visits, and potential shortcomings in the health system's follow-up procedures. Additionally, dropouts may result from inadequate frontline worker support and little counseling during the initial session. To increase 4+ ANC coverage, community outreach must be strengthened, services must be consistently available, and counseling efforts must be improved to encourage pregnant women to attend all of the scheduled visits. In order to meet Rajasthan's health objectives and enhance maternal and newborn outcomes, these gaps must be filled.

Iron-Folic Acid Supplementation

In India, iron deficiency anemia is still a serious public health issue that has a big influence on the health of mothers and newborns. For the prevention and treatment of anemia during pregnancy, a complete course of 180 iron-folic acid (IFA) tablets is essential. All zones have

concerningly low coverage, according to the report, with Udaipur (56%), Jodhpur (59%), and Bikaner (62%), having the lowest coverage. There is a significant 23% disparity even in the higher-performing zones, such as Ajmer and Jaipur.

This serious deficiency could be explained by a number of variables. Access may be restricted by supply chain problems like inconsistent medication availability at medical facilities. Low adherence may be caused by compliance problems, such as IFA pill adverse effects and inadequate counseling. Cultural norms and ignorance of the significance of IFA may also lower demand.

Lack of IFA coverage has serious repercussions, including a high prevalence of anemia in pregnant women, which raises the risk of low birth weight, maternal death, and preterm delivery. Strengthening supply chain procedures, offering frequent counseling to address side effects and misconceptions, and encouraging community-based activities to increase awareness are all essential to closing this gap.

Calcium Supplementation

Preventing hypertension conditions like pre-eclampsia, a major cause of maternal death, is possible with calcium supplementation throughout pregnancy. With coverage in every zone approaching 90% or higher and Udaipur reaching 97%, the study's conclusions are largely encouraging. Even so, there is still space for improvement as none of the zones received complete coverage.

The greater coverage of calcium pills in comparison to IFA implies that supply and compliance are either comparatively well controlled or that health systems are giving this intervention priority. Gaps, however, show uneven delivery or uptake, ranging from 3% in Udaipur to 10% in Kota.

It will be necessary to keep enough supplies on hand, train health workers continuously, and provide pregnant women with more counseling to help them understand the advantages of calcium supplementation in order to sustain and improve coverage.

Tetanus-Diphtheria (Td) Booster Coverage

All zones have extremely poor Td booster coverage; Jaipur reports only 26% coverage, a 64% disparity. The low rates (28%), which are comparable in Udaipur and Bikaner, suggest a systemic breakdown in the ANC services' vaccination delivery. Pregnancy-related tetanus vaccine shields the mother and unborn child from the potentially deadly disease. Given its significance and relative ease of administration, low Td coverage is concerning.

Missed chances during ANC visits, a lack of knowledge among beneficiaries and healthcare professionals, a poor integration of vaccination with ANC services, and problems with the vaccine supply or cold chain could all contribute to this disparity. Furthermore, immunization status tracking and follow-up mechanisms might not be sufficient.

Systemic adjustments are required to close this gap, such as bettering health worker training, enhancing vaccine logistics, increasing public knowledge, and fortifying monitoring and evaluation. Coverage could also be improved by using digital methods for tracking and incorporating vaccine reminders into ANC check-ups. These results are consistent with earlier research conducted in Rajasthan and other settings, which indicate that although certain ANC services have improved, there are still significant gaps in immunization and supplementing. Reaching national and international maternal health goals requires addressing these problems.

CONCLUSION

Utilizing PCTS data from seven zones—Ajmer, Bharatpur, Bikaner, Jaipur, Jodhpur, Kota, and Udaipur—this study investigated the coverage and use of important antenatal care (ANC) services in Rajasthan. Enhancing mother and newborn health outcomes in the state may be possible as a result of the analysis's significant insights on the gaps and strengths in service delivery.

In the first trimester, Bharatpur had the highest incidence of early ANC registration (91%), while other zones trailed behind, with Jaipur having the lowest rate (77%). Timely interventions and risk identification depend on early registration, and these delays highlight the need for more community outreach, education, and accessibility to medical institutions.

There were notable deficiencies in the supply of necessary vitamins. All zones had low coverage of the entire course of iron-folic acid (IFA) pills; Ajmer and Jaipur had 77% coverage, while Udaipur had 56%. This deficiency is worrisome because anemia is very common in pregnant women. It raises concerns about supply chain, awareness, counseling, and adherence. The coverage of calcium supplementation was higher, with the majority of zones surpassing 90%, indicating a comparatively successful program execution in this region.

With coverage as low as 26% in Jaipur and often less than 45% across zones, with the exception of Udaipur (28%), the most significant gap was in the tetanus-diphtheria (Td) booster vaccine. These results show how the health system, the community, and individual factors interact in a complicated way to affect the provision of ANC services in Rajasthan. Although regular ANC visits and calcium supplements indicate positive developments, the gaps in Td immunization, IFA supplementation, and early registration reflect lost chances to enhance maternal health. Closing these gaps requires a diverse strategy.

Supply chains should be strengthened, frontline worker training should be improved, community education should be encouraged, and digital tracking tools should be used. Enhancing accessibility to health facilities and removing sociocultural obstacles may also aid in boosting adoption and adherence to advised ANC therapies.

Using real-time program data, such as PCTS, to inform targeted interventions and policy changes, the study emphasizes the value of ongoing monitoring. Future study should use qualitative techniques to examine barriers from the viewpoints of providers and beneficiaries, even though this analysis offers insightful information that will allow for more specialized solutions.

The less of maternal and newborn morbidity and mortality in Rajasthan depends on increasing the coverage and use of prenatal care. Targeted initiatives to improve early registration, guarantee full supplementation, and boost vaccination coverage will significantly help the state meet its maternal health objectives and better the general health of mother and kids.

RECOMMENDATIONS

Provision of Full IFA (180 Tablets)

The gaps that have been found highlight the pressing need for focused supply-side and demand-side solutions. Increasing early registration through community awareness and ASHA outreach is one of the main goals. Maintaining regular ANC follow-up, particularly in Bikaner and Jodhpur; bolstering counseling and logistics to enhance IFA.

Td Booster Administration

- The Administration of Td Boosters

The gaps that have been found highlight how urgently focused supply-side and demand-side initiatives are needed. Among the focus areas are:

- Connection to Institutional Delivery

JSY and JSSK program benefits can be integrated with Td booster administration.

Verify that the ANC package, including Td, is required prior to the incentive's payment.

Educate Frontline Health Workers

- Provide ANMs, ASHAs, and LHVs with refresher training on the following topics:

- TD vaccine schedule.

Counseling methods.

Record-keeping and reporting.

Monitor and Assess: Utilize PCTS data to pinpoint regions with poor performance and carry out micro-planning.

Enhance Prenatal Care (ANC) Services and Raising Community Awareness

Strengthen Follow-Up for ANC Services

- To promote four or more ANC visits, make sure ASHAs and ANMs promptly follow up with early registration. When it comes to scheduled ANC check-ups, use mHealth apps or SMS reminders. Enhance Awareness and Guidance. Discuss the significance of finishing all four check-ups in detail during the initial ANC appointment. Especially in underperforming areas, conduct community-level awareness efforts through women's organizations and VHNDs. Improve Accessibility in Tribal and Rural Communities. Expand the number of outreach ANC camps held in outlying locations. Offer pregnant women transportation assistance through Janani Express or neighborhood mobility programs.
- Use PCTS to bolster data monitoring, To monitor service gaps in real time, make sure field personnel enter data accurately and promptly. To pinpoint low-coverage districts and implement focused measures, use PCTS dashboards. Fill up the Gaps on the Supply Side. Ensure that all facilities have a sufficient supply of Td vaccinations, calcium, and IFA tablets. Ongoing ANC protocol training and capacity building for frontline health workers (ASHA/ANMs). Encourage institutional deliveries by means of ANC connections. To promote facility-based births, combine ANC services with programs like Janani Suraksha Yojana (JSY).

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