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* **Corresponding author.**

mamta@iihmr.edu.in

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Maternal Health Realities in Rajasthan

Mamta Chauhan^{1*}, Swati Gupta²

¹ Professor, IIHMR University, Jaipur, Rajasthan, India

² Senior Specialist, Obstetrics and gynaecology, Department of Medical and Health Services, Rajasthan, India

Abstract

Objectives: Maternal health indicators not only reflect women's well-being but also serve as critical indicators of overall societal health and socio-economic development. Therefore, improving maternal and child health has been a priority across countries. In India, particularly in the State of Rajasthan various programs and initiatives have been implemented to improve maternal health. The objective of this article is to understand the impact of these programs and initiatives on maternal mortality rates, maternal healthcare utilization, and the overall well-being of women. This evaluation is important to measure the effectiveness of these initiatives and also for guiding future policies and interventions aimed at further enhancing maternal health. **Methods:** A comprehensive descriptive analysis of maternal health in Rajasthan was conducted through a review of government program utilization and implementation data. Secondary data on literacy rates, ANC registrations, institutional deliveries, maternal deaths, and maternal death audits from various sources, including government reports and surveys was reviewed by study team. The analysis focused on trends and changes observed during the period from 2011 to 2021 and identifying the gaps for suggesting recommendations for further improvement in Maternal health. **Findings:** According to our analysis, Rajasthan has made significant progress in maternal healthcare. The maternal mortality ratio (MMR) decreased from 244 in 2011-13 to 141 in 2017-19, indicating improved healthcare accessibility. Over time, programs like Janani Suraksha Yojana (JSY) and Janani Shishu Suraksha Karyakaram (JSSK) have led to a reduction in maternal and child healthcare costs, benefiting a broader spectrum of individuals. The Kushal Mangal Karyakram and Safe Motherhood Day camps successfully identify and assist in high-risk pregnancy situations. However, to achieve sustainable development goals, it's crucial to address the gaps in maternal care. Maternal death audits are essential tools for this purpose, but the data revealed that less than 50% of maternal deaths are being reported, and among the reported cases, the reported data is incomplete. **Conclusion:** Hence accurate and routine information on causes of maternal deaths is very important for implementation of interventions and tracking and interpretation of the gaps in coverage for

improving maternal health in Rajasthan.

Keywords: Maternal Health; Rajasthan; Government Programs; Janani Suraksha Yojana; Maternal Mortality

1 Introduction

Maternal health is an important component of a country's development efforts, aligning with the Sustainable Development Goals (SDGs). Ensuring the survival and well-being of mothers is not only a fundamental human right but also a central pillar for addressing broader economic, social, and developmental challenges of any country. Maternal mortality serves as a critical indicator, reflecting not only the overall health of a population but also the status of women within a society and the socioeconomic development of a nation. It underscores the general well-being of women, their access to healthcare services, and the accountability of healthcare systems in meeting their needs. India has made commendable efforts to enhance maternal health, employing various interventions. As a result, India has witnessed a remarkable 77% reduction in its Maternal Mortality Ratio (MMR) – from 556 per 100,000 live births in 1990 to a noteworthy 103 per 100,000 live births in 2019^(1,2). This achievement places India below the Millennium Development Goal (MDG) target and sets the country on a promising trajectory to attain the Sustainable Development Goal (SDG) target of an MMR below 70 by 2030⁽³⁾.

While India's progress is evident, it's important to recognize that certain regions play a pivotal role in shaping the nation's maternal health outcomes. Rajasthan, one of India's largest states in terms of land area, significantly influences India's MMR. Rajasthan has made significant improvement in reducing maternal mortality ratio from 244 in 2011-13 to 141 in 2017-19, a 42% decrease^(2,4).

A comprehensive global analysis by Lale Say et al. (2014) reviewed data from 417 datasets encompassing 115 countries, comprising a substantial dataset of 60,799 maternal deaths between 2003 and 2009. They revealed that a significant proportion of maternal deaths during this period were attributed to direct obstetric causes (73%), with indirect causes accounting for 27.5% of all maternal deaths. The study highlighted specific causes of maternal mortality, such as hemorrhage, hypertensive disorders, sepsis, abortion, embolism, and other direct causes. Regional variations were observed in these findings, underscoring the importance of understanding the specific factors influencing maternal mortality in different contexts⁽⁵⁾.

In the context of maternal death review in Odisha, India, Naik et al. (2020) conducted a study focusing on ten high-priority districts. Their research revealed several challenges in the assessment of maternal deaths, including under reporting, errors in diagnosis and recording, incomplete filling of maternal death review (MDR) formats, and under reporting due to the fear of punitive action. This highlights the importance of accurate data collection and reporting in maternal mortality studies, as well as addressing barriers that may hinder the reporting of maternal deaths⁽⁶⁾.

The association between the level of education and access to combined reproductive health services has been a subject of investigation in various studies across different regions. In Bangladesh, Ahmed et al. (2021) conducted an analysis of national representative MICS 2019 data and found a positive correlation between the level of education and increased access to reproductive health services among married women. This suggests that women with higher levels of education are more likely to utilize reproductive health services⁽⁷⁾.

These studies collectively contribute to the body of literature on maternal health, emphasizing the significance of factors such as education, accurate reporting, and regional variations in understanding and addressing maternal mortality. Understanding these factors is crucial for the development and implementation of effective maternal

health policies and interventions.

The objective of this article is to understand the impact of these programs and initiatives on maternal mortality rates, maternal healthcare utilization, and the overall well-being of women.

2 Methodology

To comprehensively understand the major efforts contributing to the reduction in maternal mortality in Rajasthan, we conducted an in-depth analysis. Our methodology involved a detailed review of secondary data related to the utilization of government programs and their implementation. Data on various parameters, including literacy rates, antenatal care (ANC) registrations, institutional deliveries, maternal deaths, and maternal death audits, from diverse sources such as government reports and surveys was reviewed.

Our analysis primarily focused on assessing the trends and changes over a specific period, emphasizing the years from 2011 to 2021. We examined the impact of government initiatives, literacy rates, and specific programs like Janani Suraksha Yojana (JSY) on maternal mortality, healthcare accessibility, and the management of high-risk pregnancies.

Through this comprehensive methodology, we aimed to gain insights into the key factors and strategies contributing to the reduction in the maternal mortality rate in Rajasthan. Our findings are intended to provide valuable insights for policymakers, healthcare professionals, and stakeholders working towards improving maternal health in the region.

3 Results and Discussion

Higher levels of education among women are closely linked to improved maternal health outcomes, as educated women tend to have better access to healthcare, make informed decisions about their pregnancies, and are more likely to seek timely medical interventions when needed. Literacy rate of Females in Rajasthan is continuously increasing, it was only 20.4% during census 1991, 43.9% in census 2001 and 52.12 % during census 2011⁽⁸⁾. It is still very low compared to national average of 63 % female literacy during census 2011⁽⁸⁾. The surge in female literacy rates in Rajasthan is a promising development as it signifies growing awareness among women regarding their health risks, available healthcare services, and government benefits. However, the persistently low literacy rate compared to the national average underscores the need for continuous efforts to enhance education and awareness among women.

It has been reported in other studies also that maternal education remains an important determinant of child health outcomes. The higher the maternal level of education, the greater the child health awareness, the better the child healthcare, and the greater the mother's access to healthcare systems⁽⁹⁾.

Birth rate of Rajasthan in year 2016 - 17 was 24.3 and in 2017-18 it was 24⁽¹⁰⁾ and as per this estimate, total no. of pregnant women must be more than 17 Lacs. Evidence says that out of the total pregnant women 15 % develop some complications during pregnancy and termed as high-risk pregnancy.

Antenatal Care (ANC) Registration during the first trimester of pregnancy is crucial for identifying and addressing complications early. While there has been a positive increase in ANC registration, it remains essential for this number to keep pace with the growing number of pregnancies. In year 2016-17 out of total 1655565 ANC only 626711 registered during the first trimester. Subsequently, the numbers have increased in subsequent years 2017-18 (Total ANC 1606351, First Trimester 760800), 2018 -19 (total ANC 1635100, FT 854395), 2019-20 (Total ANC 1560722, FT 918114) and in 2020-21 (Total ANC 1552646, FT 922113)⁽¹¹⁾ but concerns arise as the population projection suggests a corresponding increase in pregnant women.

The high number of pregnancies in Rajasthan, particularly the significant proportion categorized as high-risk, emphasizes the necessity for a robust healthcare system equipped to address the diverse health needs of pregnant women. While the increase in ANC registration, especially during the first trimester, is a positive sign, efforts must be made to ensure that this number aligns with the growing pregnancies, facilitating early intervention for complications.

A study focused on Maternal Health in west Bengal found that there is a significant improvement in attendance at four ANC visits and institutional delivery, however there was a glaring gap in the overall coverage during the study period in West Bengal⁽¹²⁾.

The rate of institutional deliveries in Rajasthan has experienced a significant surge, soaring from 21.05% to an impressive 94.9% by 2019-21⁽¹³⁻¹⁶⁾. The scheme which can be given the credit of increasing number of Institutional delivery is Janani Suraksha Yojana, which was launched in year 2005⁽¹⁷⁾. The main aim of this Yojana is to reduce maternal mortality Ratio and Infant mortality rate by promoting Institutional Deliveries. This Yojana targets pregnant women of all section of the society in both rural and urban areas without any age bar and restrictions on number of children, in availing benefits of this scheme. The only condition applicable is delivery of pregnant women in public health care facility or accredited private hospital. JSY strategy promote early registration of pregnant women, which help in identification of complications during pregnancy and labour, 4C

ANC visit and organizing referral transport and services.

Out of the total Institutional deliveries approximately 90 % women are availing benefit of Janani suraksha yojana.

Despite the impressive increase in institutional deliveries, with approximately 90% of women benefiting from the Janani Suraksha Yojana, it is disheartening to note that maternal deaths have not reduced proportionately. This underscores the need for the government to take proactive measures to harness the full potential of these institutional deliveries in improving maternal health outcomes. While institutional deliveries are a crucial step toward safer childbirth, there is a pressing need for comprehensive and quality healthcare services within these institutions, including effective antenatal and postnatal care, skilled birth attendants, and timely interventions to address complications. Ensuring that the benefits of institutional deliveries translate into a significant reduction in maternal mortality remains a critical challenge that demands focused efforts and investments in maternal healthcare infrastructure and services.

A recent study also emphasized that the Government should make efforts to increase the quality of services to gain the trust of community and to improve the level of awareness, knowledge among women about the utilization of antenatal care services.⁽¹⁸⁾

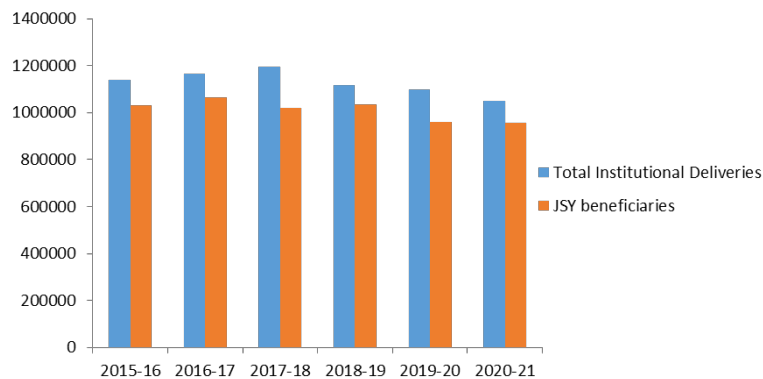


Fig 1. Institutional Deliveries vs JSY Payment

In view of the difficulty being faced by the pregnant women and parents of sick new-born along-with high expenditure on delivery and treatment of sick- new-born, Ministry of health and Family Welfare (MoHFW) introduced Janani Shishu Suraksha Karyakaram (JSSK)⁽¹⁹⁾ on 1st June 2011 to ensure better facilities for women and child health services. JSSK aims to achieve 100% institutional delivery and elimination of out-of-pocket expenditure for both pregnant women and sick neonates. Entitlements for pregnant women include free and cashless delivery, free cesarean section, free drugs and consumables, free diagnostics, free diet during stay, free provision of blood, exemption from user charges, free transport. Every Year number of women and children getting benefit of Janani Shishu Suraksha Karyakaram (JSSK) is increasing⁽²⁰⁾.

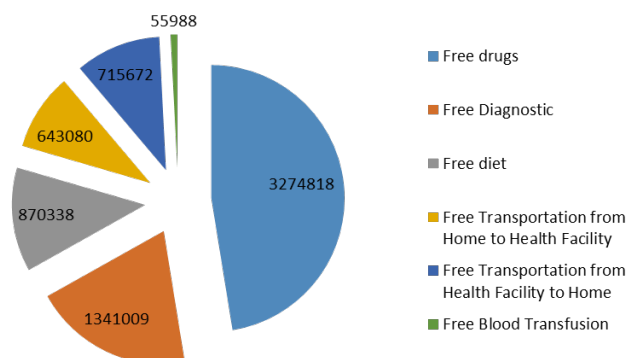


Fig 2. JSSK Scheme in Rajasthan 2020-21

Annually, Rajasthan witnesses approximately 17 lakh pregnancies, with 15% of these expectant mothers encountering various complications during their pregnancy journey. In response to these high-risk pregnancies, the Government of Rajasthan introduced the "Kushal Mangal Karyakram"⁽²¹⁾. This program is dedicated to timely screening, management, follow-up care, planned institutional deliveries, and comprehensive postpartum support.

One of the program's notable initiatives is the organization of "Safe Motherhood Day" camps⁽²²⁾ held every Friday at designated Community Health Centers (CHCs) on a monthly basis. Skilled gynecologists provide essential antenatal care (ANC) services during these camps. Remarkably, between the years 2015-16 and 2020-21, a total of 13,320 Safe Motherhood Day camps have been conducted, benefitting 3.10985 lakh expectant mothers and identifying 29,926 high-risk pregnancies.

Additionally, "Prasuti Niyojan Diwas" is observed on every fourth Thursday of each month, focusing on assessing birth preparedness, providing counseling on nutrition, institutional deliveries, recognizing danger signs, and reinforcing the referral system during the 8th and 9th months of pregnancy. Impressively, from 2015-16 to 2020-21, a grand total of 6,10,449 Prasuti Niyojan Divas have been organized, benefitting 3,426,405 pregnant women⁽²³⁾.

To ensure assured, comprehensive, and high-quality antenatal care for all expectant mothers, the "Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA)"⁽²⁴⁾ was launched in 2016. This pioneering program offers free and universally accessible antenatal care on the 9th day of every month, across the country.

To identify gaps and implement measures to prevent maternal deaths, both the Ministry of Health and Family Welfare, Government of India, and the state of Rajasthan have issued guidelines for conducting maternal death audits within healthcare facilities and communities. These audits aim to uncover critical issues and pave the way for corrective actions. However, it is concerning that the available data indicates an under reporting of maternal deaths.⁽²⁵⁾

Table 1. No. of Maternal Death Reported and Maternal Death Audit

Year	Information of Maternal Death	Maternal Death Audit
2016-17	1438	1074
2017-18	1119	933
2018-19	1098	978
2019-20	1282	1217
2020-21	1356	837

The results obtained from maternal death audits conducted between 2016-17 and 2020-21 reveal that the primary causes of maternal mortality include hemorrhage, sepsis, hypertensive disorders, and obstructed labor⁽²⁵⁾.

Table 2. Causes of Maternal Deaths as per Maternal Death Audit

Year/Causes	Hemorrhage	Sepsis	Abortion	Obstructed Labour	Hypertensive Disorder	Anemia	Pulmonary Embolism	Other
2016-17	30%	8 %	1 %	3 %	10%	2 %	1%	43%
2017-18	23%	6%		1%	9%	2%	1%	58%
2018-19	31%	11%	1%	3%	14%	3%	4%	31%
2019-20	27%	9%	1%	2%	12%	2%	2%	42%
2020-21	24%	9.43%	.95%	2.27%	12.30%			51%

The data presented indicates that abortion-related deaths account for only 1%, which stands in contrast to global evidence suggesting that each year, between 4.7% and 13.2% of maternal deaths can be attributed to unsafe abortion⁽²⁶⁾. Furthermore, it is noteworthy that anemia, though an indirect cause of maternal mortality, is not highlighted in the maternal death audits conducted in 2020-21. There is an evident need for the Government of Rajasthan to invest in capacity building for healthcare professionals in the realm of maternal death audits. This proactive measure can help demystify the factors contributing to maternal deaths categorized as "other causes," which range from 31% to 58% between the years 2016-17 and 2020-21. Identifying the precise underlying causes of these deaths is crucial for informed decision-making and the implementation of corrective actions.

The Major gap we identify is the non-availability of data, where data are most needed. Second, where data are available, they are often incomplete. Accurate and routine information on causes of maternal deaths is very important for implementation of interventions and tracking and interpretation of the gaps in coverage.

4 Conclusion

Government initiatives such as the Janani Suraksha Yojana (JSY), Janani Shishu Suraksha Karyakaram (JSSK), and Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA) have significantly increased institutional deliveries, reduced out-of-pocket expenses, and enhanced access to quality maternal healthcare. Despite these efforts, maternal mortality remains a serious concern. Maternal death data and audits underscore that hemorrhage, sepsis, hypertensive disorders, and obstructed labor persist as the primary causes. Addressing these issues necessitates a comprehensive approach, encompassing the enhanced capacity building of healthcare professionals to accurately discern the underlying causes of maternal deaths.

However, it is worth noting that the relatively low percentage of abortion-related deaths reported in maternal death audits may not entirely align with global evidence, which emphasizes a more significant impact of unsafe abortions on maternal mortality. Furthermore, anemia, an indirect contributor to maternal mortality, demands greater attention and inclusion within maternal death audits.

To achieve the Sustainable Development Goal (SDG) target of an MMR below 70 by 2030, active community involvement is imperative. Initiatives aimed at combatting malnourishment among girls, preventing early marriages, and discouraging early childbearing practices must be vigorously promoted alongside healthcare interventions.

In conclusion, while significant progress has been made in maternal healthcare through government initiatives, challenges persist. To move forward, it is essential to prioritize addressing the major causes of maternal mortality, such as hemorrhage, sepsis, hypertensive disorders, and obstructed labor. Additionally, a more comprehensive evaluation of abortion-related deaths and the role of unsafe abortions is necessary. Anemia should be given due attention as an indirect contributor to maternal mortality. Achieving the SDG target necessitates a multifaceted approach, with active community engagement to tackle issues like malnourishment among girls, early marriages, and early childbearing. These steps collectively represent the novel path forward to further improve maternal health and reduce maternal mortality in India.

References

- 1) Maternal Mortality Ratio (MMR) reduction report. 2015. Available from: <https://pib.gov.in/newsite/PrintRelease>.
- 2) Special Bulletin On Maternal Mortality In India 2017-19. 2022. Available from: https://censusindia.gov.in/nada/index.php/catalog/40525/download/44157/SRS_MMR_Bulletin_2017_2019.pdf.
- 3) Sustainable Development Goal (SDG) target of an MMR. . Available from: <http://www.searo.who.int/mediacentre/features/2018/india-groundbreaking-success-reducing-maternal-mortality-rate/en/>.
- 4) Maternal Mortality Ratio Bulletin 2011-13. . Available from: http://www.censusindia.gov.in/vital_statistics/mmr_bulletin_2011-13.pdf.
- 5) Say L, Chou D, Gemmill A, Tunçalp Ö, Moller AB, Daniels J, et al. Global causes of maternal death: a WHO systematic analysis. *The Lancet Global Health*. 2014;2(6):e323–e333. Available from: [https://doi.org/10.1016/S2214-109X\(14\)70227-X](https://doi.org/10.1016/S2214-109X(14)70227-X).
- 6) Naik SS, Mohakud NK, Mishra A, Das M. Quality Assessment of Maternal Death Review: A Pilot Study in 10 High Priority Districts of Odisha State, India. *Indian Journal of Community Medicine*. 2020;45(2):184–188. Available from: https://journals.lww.com/ijcm/fulltext/2020/45020/quality_assessment_of_maternal_death_review_a.16.aspx.
- 7) Ahmed MS, Khan S, Yunus FM. Factors associated with the utilization of reproductive health services among the Bangladeshi married women: Analysis of national representative MICS 2019 data. *Midwifery*. 2021;103:103139. Available from: <https://doi.org/10.1016/j.midw.2021.103139>.
- 8) Literacy Rate by sex and gender gap in Literacy Rates, Rajasthan: 1971-2011. . Available from: http://www.rajcensus.gov.in/PCA_2011_FINAL_DATA/PCA_chapter_3.pdf.
- 9) Paul S, Paul S, Gupta AK, James KS. Maternal education, health care system and child health: Evidence from India. *Social Science & Medicine*. 2022;296:114740. Available from: <https://doi.org/10.1016/j.socscimed.2022.114740>.
- 10) Birth Rate HMIS/MoHFW Periodic Reports. . Available from: <https://hmis.mohfw.gov.in/>.
- 11) Pregnancy, child tracking, and health service management system. . Available from: <https://pctsrjmedical.raj.nic.in/private/login.aspx>.
- 12) Debsarma D, Karmakar R, Saha J. Trends and determinants in the utilization of maternal healthcare services in West Bengal, India: Findings from the 3rd and 4th round National Family and Health Survey. *Midwifery*. 2022;112:103387. Available from: <https://doi.org/10.1016/j.midw.2022.103387>.
- 13) NFHS-02 (1998-99) Rajasthan FACT SHEET - STATES. . Available from: <http://rchiips.org/NFHS/data/India/keyfact.pdf>.
- 14) NFHS-03 (2005-06) Rajasthan Factsheet. . Available from: <http://rchiips.org/NFHS/pdf/Rajasthan.pdf>.
- 15) Rajasthan Fact Sheets - National Family Health Survey. . Available from: http://rchiips.org/nfhs/pdf/NFHS4/RJ_FactSheet.pdf.
- 16) NFHS-05 (2019-21). . Available from: http://rchiips.org/nfhs/NFHS-5_FCTS/Rajasthan.pdf.
- 17) JSY Beneficiaries in Rajasthan. Government of Rajasthan. . Available from: <http://www.sihfwrajasthan.com/ppts/full/jsy.pdf>.
- 18) Sharma S, Mohanty PS, Omar R, Viramgami AP, Sharma N. Determinants and Utilization of Maternal Health Care Services in Urban Slums of an Industrialized City, in Western India. *Journal of Family & Reproductive Health*. 2020;14(2):95–101. Available from: <https://publish.kne-publishing.com/index.php/JFRH/article/view/4351>.
- 19) JSSK Scheme in Rajasthan. . Available from: https://www.nhm.gov.in/New_Updates_2018/NHM_Components/RMNCHA/MH/Guidelines/JSSK_Final_English.pdf.
- 20) JSSK Scheme in Rajasthan. . Page no 20. Available from: <https://rajswasthya.nic.in/Pragati%20Prativaden.htm>.
- 21) Kushal Mangal Karyakram. . Page no 24. Available from: <https://rajswasthya.nic.in/Pragati%20Prativaden.htm>.
- 22) Safe Motherhood Day camps. . Page no 25. Available from: <https://rajswasthya.nic.in/Pragati%20Prativaden.htm>.
- 23) Diwas Prasuti Niyojan. . Page no 26. Available from: <https://rajswasthya.nic.in/Pragati%20Prativaden.htm>.
- 24) Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA). . Available from: [https://www.nhp.gov.in/pradhan-mantri-surakshitmatritva-abhiyan-\(pmsma\)_pg](https://www.nhp.gov.in/pradhan-mantri-surakshitmatritva-abhiyan-(pmsma)_pg).

- 25) Pragati Prativedan_2021-22. . Available from: <https://rajswasthya.nic.in/Pragati%20Prativaden.htm>.
- 26) Say L, Chou D, Gemmill A, Tunçalp Ö, Moller ABB, Daniels J, et al. Global causes of maternal death: a WHO systematic analysis. *The Lancet Global Health*. 2014;2(6):e323–e333. Available from: [https://doi.org/10.1016/S2214-109X\(14\)70227-X](https://doi.org/10.1016/S2214-109X(14)70227-X).