International Journal of Community Medicine and Public Health
Gupta A et al. Int J Community Med Public Health. 2023 Oct;10(10):3947-3951
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20233137

Review Article

Maternal health disparities in district Jhansi, Uttar Pradesh: a time series analysis using health management information system records

Arjita Gupta[1]*, Utsav Raj[2]

[1]Master of Public Health Scholar, Indian Institute of Public Health-Delhi, NCR, India
[2]Public Health Specialist, Chief Medical Office- District Jhansi, Uttar Pradesh, India

Received: 05 July 2023
Accepted: 20 September 2023

***Correspondence:**
Dr. Arjita Gupta,
E-mail: arjitagupta2807@gmail.com

ABSTRACT

This study focused on investigating the status of maternal health in Jhansi District, Uttar Pradesh, India. A comprehensive analysis of data obtained from the health management information system (HMIS) spanning the period from 2010 to 2020. The findings of this study indicate notable fluctuations in the percentage of first-trimester ANC registrations, accompanied by an overall improvement in compliance with the recommended number of ANC checkups. In addition, the study identifies a growing inclination towards institutional deliveries and increased utilization of cesarean section (C-section) procedures. This study emphasizes the urgent and continued implementation of measures to enhance timely access to ANC services and to ensure the presence of skilled birth attendants during all childbirths. These insights are of substantial significance to policymakers and healthcare providers in their efforts to advance maternal healthcare services, diminish maternal mortality rates, and enhance women's overall well-being in Jhansi District, Uttar Pradesh, India. The study recommends reinforcing ANC services, promoting collaborative initiatives to improve maternal health outcomes, and establishing clear guidelines and regular quality audits to ensure the appropriate utilization of C-sections.

Keywords: Maternal health, HMIS, MMR, Antenatal care, Institutional deliveries

INTRODUCTION

Maternal health pertains to women's overall physical, mental, and social well-being during pregnancy, childbirth, and the postpartum phase, typically spanning the first six weeks after delivery. Its primary objective is to ensure that women have access to suitable healthcare services, support, and resources for safe and positive pregnancy experiences. Maternal health plays a crucial role in the development of any nation by promoting equity and alleviating poverty. The survival and well-being of mothers are significant at the individual level and have far-reaching implications for addressing broader economic, social, and developmental challenges in developing nations such as India.[1]

In 2010, there were approximately 287,000 maternal deaths globally, with the majority occurring in low-and middle-income countries. These deaths were largely preventable.[2] According to a report from the national sample registration system (SRS) data, the maternal mortality ratio (MMR) in India for the period 2016-18 was recorded as 113 maternal deaths per 100,000 live births. This indicates a reduction of 17 points from the previous period of 2014-16, which had an MMR of 130 deaths per 100,000 live births. In practical terms, this decline in MMR signifies savings of approximately 2,500 additional mothers annually in 2018 compared to 2016. The total estimated number of maternal deaths also decreased from 33,800 in 2016 to 26,437 in 2018.[3] District Jhansi, situated in Uttar Pradesh, India, has been specifically selected for this study. Given its large

population and diverse demographics, Uttar Pradesh is facing significant obstacles to maternal health.

Maternal health is a critical concern worldwide and in India, Uttar Pradesh is an EAGA state and one of the worst performing in terms of maternal health, District Jhansi faces particular challenges in ensuring optimal maternal health outcomes. The MMR of the Uttar Pradesh was estimated to be 208.[4] Despite efforts to improve maternal healthcare services, the Bundelkhand region continues to experience high maternal mortality rates and various barriers to quality care. To address these issues effectively, it is crucial to identify the specific challenges and barriers faced by women in district Jhansi regarding maternal health. Understanding the socioeconomic factors, cultural practices, and healthcare infrastructure that influences maternal health outcomes is essential for developing evidence-based recommendations and policies. By focusing on this specific region, this study aims to contribute to the existing body of knowledge on maternal health and provide valuable insights to policymakers and healthcare providers. The goal is to improve maternal healthcare services, reduce maternal mortality rates, and enhance women's overall well-being in the Jhansi district.

The HMIS is a web-based monitoring information system implemented by the Ministry of health and family welfare (MoHFW) of the government of India. It operates on a government to government (G2G) basis and is designed to monitor the national health mission, along with other health programs. The HMIS plays a crucial role in providing essential inputs for policy formulation and in guiding appropriate program interventions.[5]The national HMIS platform was introduced by the government of Uttar Pradesh (GOUP) in 2009.[6]

MATERIALS AND METHODS USED

The healthcare infrastructure in Jhansi is comprised of diverse facilities. Notably, there is one allopathic medical college hospital, Maharani Laxmibai medical college, and one AYUSH (Ayurvedic) medical college hospital, Rajkiya ayurvedic college. District-level healthcare is supported by two hospitals: district hospital and district women's hospital. To meet community healthcare needs, Jhansi has eight community health centers (CHCs) that provide comprehensive care. These include block primary health centers (BPHCs) and first referral units (FRUs) in Mauranipur, Babina (FRU), Bangra, Gursarai, Moth, Badagaon, Chirgaon, and Bamaur (BPHCs). In addition, 36 Primary Health Centers (PHCs) or Additional PHCs served as vital healthcare facilities. Supporting these centers are 326 sub-centers, acting as primary points of contact for healthcare delivery at the grassroots level in Jhansi's diverse communities.[7]

This scientific study obtained the necessary permissions from the district health administration to access data on maternal health in istrict Jhansi. Data were extracted from the HMIS via the district health records department. The analysis focused on a time-trend analysis using data from the following years (April-March):2010-2020. Considering this extended period, a comprehensive examination of maternal health indicators was conducted, enabling a robust analysis of trends over time. The inclusion of multiple years strengthens the scientific rigor of this research study, providing valuable insights into the dynamics of maternal health in the Jhansi District.

OUTCOME

Our study revealed three prominent trends identified through the HMIS data resources. The HMIS data served as a valuable tool for assessing and evaluating the coverage of maternal health services to analyze various domains, sub-domains, and indicators related to maternal health. This analysis provided a systematic framework for assessing the coverage and outcomes of different aspects of maternal care. The domains included in the table were antenatal care (ANC) coverage, intranasal care (INC) coverage, and postnatal care (PNC) coverage.

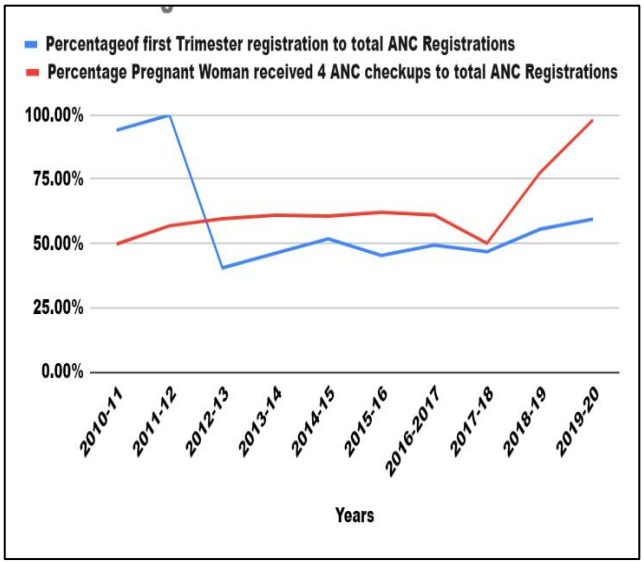

Figure 1: Comparison of ANC registration and 4 ANC coverage.

As analyzed in Figure 1, two key trends are related to ANC registrations among pregnant women. percent of first-trimester registrations to total ANC registrations and the percentage of pregnant women receiving four or more ANC checkups to the total ANC registrations. These trends shed light on the timeliness, adequacy, and impact of the ANC services provided to pregnant women over a specific period.

The first trend focused on the percentage of pregnant women who registered for ANC during their first trimester among the total number of ANC registrations. The data revealed a fluctuating pattern from 2010 to 2020. Notably, in 2011-12, the percentage peaked at 100%, indicating that all pregnant women could register

for ANC during the first trimester. However, in subsequent years (2013-2020), the percentage decreased, reaching a low of 40.5% in 2012-13. This suggests a decline in the timely initiation of ANC registrations among pregnant women during these years.

The second trend examined the percentage of pregnant women who received four or more ANC checkups out of the total number of ANC registrations. This trend displayed an overall increasing pattern, indicating an improvement in adherence to the recommended number of ANC checkups. In 2010-11, the percentage was as low as 49.8%, but it gradually rose to 98.1% in 2019-20. Notably, 2018-2020 exhibited higher percentages than the earlier years (2011-2017), indicating an encouraging upward trend.

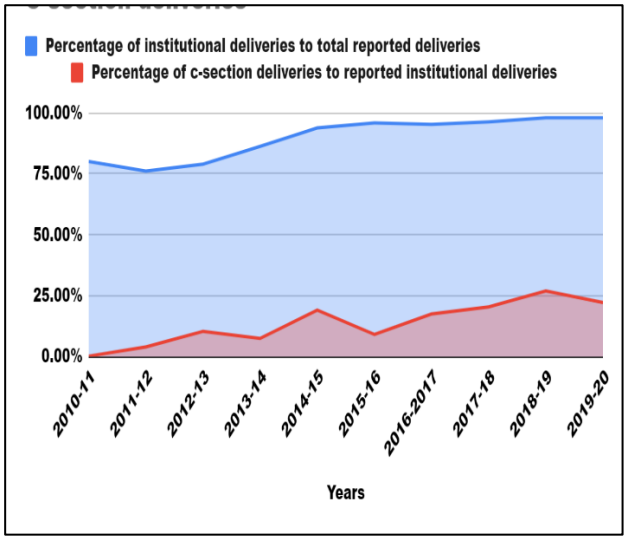

Figure 2: Comparison of institutional deliveries and C-section deliveries.

The analysis in Figure 2 examines two key trends related to childbirth: the proportion of deliveries occurring in institutional settings out of the total reported deliveries and the proportion of C-section deliveries out of the total reported institutional deliveries. These trends provide insights into the prevalence of institutional deliveries and utilization of C-section procedures.

The first trend shows a consistent increase in the percentage of deliveries in healthcare facilities over the years. The data reveals a range of percentages, from 76.20% in 2011-12 to 98.10% in 2018-19 and 2019-20. This indicates a growing preference for institutional deliveries, with a significant proportion of deliveries (70-80%) occurring in healthcare facilities rather than at home or in other non-institutional settings.

The second trend focuses on the percentage of C-section deliveries out of the total number of reported institutional deliveries. The data shows varying rates, ranging from 0.20% in 2010-11 to 27.00% in 2018-19.

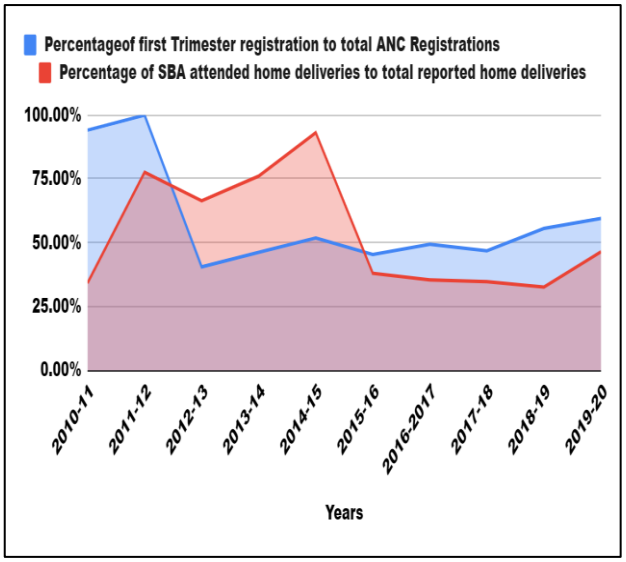

Figure 3: Comparison of ANC registration and SBA attendance at home deliveries.

The analysis in Figure 3 focuses on two key trends related to maternal healthcare: the percentage of first-trimester registrations to total ANC registrations, and the percentage of home deliveries attended by skilled birth attendants (SBAs) to total reported home deliveries. These trends provide insights into the timeliness of ANC registration and the presence of skilled attendants during home births.

The first trend examined the percentage of pregnant women who registered for ANC during their first trimester out of the total ANC registrations. The data reveals a range of percentages, from a low of 40.50% in 2012-13 to a high of 59.50% in 2019-20. While there were fluctuations, including a drop in 2012, the overall trend showed a gradual increase in early ANC registration. This indicates that a higher proportion of pregnant women are accessing prenatal care early in their pregnancies, with percentages ranging from 40% to 100%.

The second trend focused on the percentage of home deliveries attended by skilled birth attendants out of the total reported home deliveries. The data shows varying percentages, ranging from a low of 32.60% in 2018-19 to a high of 93.10% in 2014-15. The trend displays fluctuations, with drops observed in 2015 and 2018 at 38% and 32%, respectively. Despite an initial increase, the analysis showed a decline in skilled birth attendance during home deliveries. Early ANC registration and access to prenatal care during the first trimester have also improved. Efforts are needed to promote early registration and to ensure comprehensive maternal care. Access to skilled attendants for all births, regardless of the location, is crucial. Further research and interventions are necessary to address the decline in skilled birth attendance at home and to promote safer practices.

This study examined the coverage of TT2 + TT Booster vaccination, treatment for severe anemia, attendance of obstetric complications, and postpartum check-up rates among pregnant women from 2010-11 to 2019-20. The data shows varying vaccination coverage, with improvements from 88.14% to 94.12%, followed by fluctuations and a subsequent increase to 97.10% and 93.30%, respectively. Treatment rates for severe anemia were initially low but improved over time, peaking at 3.74%. Attendance at obstetric complications varied, with a notable spike at 19.50% in 2016-17. Postpartum checkup rates increased, reaching 61.90%, but declined to 44.30% in 2019-20.

DISCUSSION

Our study indicated an improvement in ANC utilization and the provision of comprehensive care to pregnant women. It also highlighted the increasing trend in the number of pregnant women receiving the recommended number of ANC checkups, which reflects the progress in ensuring comprehensive care for pregnant women. This was similar to a study conducted by Kamal SMM in Bangladesh, which highlighted the increasing preference for institutional deliveries and the growing utilization of C-section procedures, similar to previous studies conducted in Bangladesh, who also found an improvement in ANC utilization and provision of comprehensive care to pregnant women.[8,9] This reflects a positive shift towards safer and more comprehensive maternal care.

The current study evaluated skilled birth attendants present during home deliveries and found gaps in the area of awareness that needed to be improved. A study conducted in Nigeria found that home births were most commonly conducted by untrained persons, accounting for 25.4% of the deliveries.[10] The current study also signifies progress in improving maternal healthcare but underscores the need for ongoing efforts to enhance timely ANC access and ensure the presence of skilled attendants during all births, which is also underlined by a previous study conducted to look for spatial inequalities in India.[11] In our study, institutional delivery was reported in the range of 70-80% over the past decade. These findings provide evidence suggesting an improvement in institutional delivery, and the role of Janani Suraksha Yojana (JSY) in the utilization of public hospitals helped reduce maternal mortality.

This study's findings uncover important insights. First, the HMIS in India shows satisfactory performance in recording birth indicators in the majority of the states.[12] The reliability of mortality data routinely recorded by healthcare personnel cannot be error-free; however, if managed effectively, systems such as the HMIS could offer a lasting solution to the longstanding issue of the absence of detailed demographic and health information at the micro level in India.[2] Although there are some limitations associated with HMIS data on maternal deaths, it fills a crucial information gap at the district level, where no other reliable data sources exist. This decent-quality information can significantly contribute to policymaking and planning within the country. To ensure accessible and high-quality maternal healthcare for all, the Pradhan Mantri Matritva Vandana Yojana must consider the need to increase incentives provided by Janani Suraksha Yojana. By doing so, affordable and high-quality maternal health services can be guaranteed for a wider population.[4] The positive outcomes already observed with minimal support for the HMIS suggest that implementing an integrated review system and enhancing supervision could lead to even better results.[4]

CONCLUSION

ANC services are key components in improving and enhancing maternal health outcomes, which are the main components of RCH and a major focus for poor-performing states such as Uttar Pradesh. Promoting early ANC registrations, raising awareness, and providing proper treatment to ANC women along with sustained efforts directed towards addressing the barriers that hinder timely access to ANC will ensure that women will be able to avail of these services without any delay and will result in improved maternal and child outcomes. Enhancing maternal health outcomes necessitates fostering collaboration among the various stakeholders involved in maternal healthcare. A comprehensive approach with continuous monitoring and evaluation mechanisms will help assess the progress made and identify areas that require further attention and improvement.

ACKNOWLEDGEMENTS

Author would like to thanks to Dr. Ajay Bhale, additional chief medical officer of Jhansi, for his invaluable support and guidance throughout this research project. Also, to Mr. Rishiraj, district program manager, for his encouragement and valuable contributions to this research.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Maternal health care service utilization among young married women in India, 1992–2016: trends and determinants-PMC. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7877063/. Accessed on 21 June, 2023.
2. Health Information System in India: Issues of Data Availability and Quality 1. Available at: https://www.researchgate.net/publication/232084914_Health_Information_System_in_India_Issues_of_Data_Availability_and_Quality_1. Accessed on 21 June, 2023.

3. Maternal health. UNICEF India. Available at: https://www.unicef.org/india/what-we-do/maternal-health. Accessed on 23 June, 2023.
4. Goli S, Puri P, Salve PS, Pallikadavath S, James KS. Estimates and correlates of district-level maternal mortality ratio in India. PLOS Glob Publ Heal. 2022;2(7):e0000441.
5. HMIS-Health Management Information System. Available at: https://hmis.mohfw.gov.in/#!/aboutus. Accessed on 24 June, 2023.
6. Optimizing the Health Management Information System in Uttar Pradesh, India: Implementation Insights and Key Learnings-PMC. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9426977/. Accessed on 24 June, 2023.
7. Uttar Pradesh Monitoring Report- Q1 2013-14.pdf. Available at: http://164.100.117.80/sites/default/files/Uttar%20Pradesh%20Monitoring%20%20Report-%20Q1%202013-14.pdf. Accessed on 24 June, 2023.
8. Matsungo TM, Mudzuri S, Chopera P. Early registration for antenatal care was associated with improved birth outcomes in a low-income community in Harare. In Review; 2020. Available at: https://www.researchsquare.com/article/rs-21962/v1. Accessed on 29 June, 2023.
9. Kamal SMM. Preference for Institutional Delivery and Caesarean Sections in Bangladesh. J Health Popul Nutr. 2013;31(1):96-109.
10. Bukar M, Jauro YS. Home births and postnatal practices in Madagali, north-eastern Nigeria. Niger J Clin Pract. 2013;16(2):232-7.
11. Mishra PS, Sinha D, Kumar P, Srivastava S. Spatial inequalities in skilled birth attendance in India: a spatial-regional model approach. BMC Publ Heal. 2022;22:79.
12. Chatterjee P, Gupta A, Subramanian SV. Can administrative health data be used to estimate population level birth and child mortality estimates? A comparison of India's Health Information Management System data with nationally representative survey data. SSM-Popul Health. 2022;19:101148.

Cite this article as: Gupta A, Raj U. Maternal health disparities in district Jhansi, Uttar Pradesh: a time series analysis using health management information system records. Int J Community Med Public Health 2023;10:3947-51.