



Impact of Institutional Delivery in Reducing Neonatal Mortality Rate in Madhya Pradesh

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Abstract

Neonatal mortality remains a pressing public health issue in India, especially in Madhya Pradesh, which reported one of the highest Neonatal Mortality Rates (NMR) at 30 per 1,000 live births (SRS, 2021). This research examines the correlation between institutional deliveries and neonatal mortality reduction using secondary data from HMIS, NFHS-4 and NFHS-5, and SRS 2025. The study finds a significant rise in institutional deliveries from 90.1% in 2017 to 98.9% by 2024–25 accompanied by a decline in home deliveries and a projected drop in NMR to 26 per 1,000 by 2025. While institutional births are associated with improved neonatal outcomes, the study reveals that quality of care, skilled attendance, and postnatal follow-up remain critical challenges. Recommendations emphasize enhancing rural health infrastructure, expanding Facility-Based new-born Care (FBNC), and reinforcing public health schemes to meet the SDG target of $NMR \leq 12$ by 2030.

Keywords: Institutional Delivery, Neonatal Mortality Rate, Madhya Pradesh, NFHS, Public Health, FBNC, JSY, JSSK

1. Introduction

Neonatal mortality- the death of infants within the first 28 days constitutes a critical health indicator reflecting the effectiveness of maternal and child health systems. Despite improvements in institutional deliveries in India, neonatal mortality reduction has been uneven across states. Madhya Pradesh continues to report high NMR, driven by infrastructural, cultural, and systemic challenges.



This study aims to assess the effectiveness of institutional deliveries in reducing neonatal deaths in Madhya Pradesh, using a combination of national datasets. Theoretical grounding is provided by the Three Delays Model, which highlights how institutional deliveries can reduce the delay in receiving appropriate care.

1.1 Background of the Study

Neonatal mortality, defined as the death of a new-born within the first 28 days of life, remains one of the most critical public health challenges globally and in India. Despite the country's substantial investments in maternal and child healthcare, India continues to contribute significantly to the global burden of neonatal deaths, with Madhya Pradesh persistently recording among the highest Neonatal Mortality Rates (NMR) across Indian states. According to the Sample Registration System (SRS) 2021, Madhya Pradesh reported an NMR of 30 per 1,000 live births, significantly exceeding the national average of 20.

Over the past two decades, India has emphasized institutional deliveries as a primary strategy to reduce maternal and neonatal mortality. Institutional delivery, defined as childbirth in a health facility under the supervision of trained personnel, is considered a critical intervention to ensure timely medical care, manage complications, and provide essential new-born care. Government programs such as Janani Suraksha Yojana (JSY), Janani Shishu Suraksha Karyakram (JSSK), and LaQshya have significantly increased the percentage of institutional deliveries, particularly in rural and underserved regions.

Despite these achievements, neonatal mortality remains stubbornly high in Madhya Pradesh. This raises an important question: does the increase in institutional deliveries directly translate into improved neonatal survival outcomes? It also calls attention to the broader issues of care quality, health infrastructure, service equity, and early postnatal interventions.

This study investigates the impact of increasing institutional delivery coverage on neonatal mortality trends in Madhya Pradesh between 2017 and 2025. It draws upon data from the Health Management Information System (HMIS), National Family Health Survey (NFHS-4 and NFHS-5), and Sample Registration System (SRS) to evaluate whether higher institutional delivery rates have contributed to tangible reductions in neonatal deaths and to explore the enabling factors and remaining barriers affecting neonatal health outcomes.



1.2 Significance of the Study

This study holds considerable importance in the fields of public health research, maternal and child health policy, and health system strengthening in India. The significance can be explained across several dimensions:

1. **Public Health Relevance:** Neonatal mortality remains a major contributor to under-five mortality in India. Understanding its determinants and exploring effective interventions is crucial for achieving national and global health goals, including Sustainable Development Goal (SDG) 3.2, which aims to reduce neonatal mortality to less than 12 per 1,000 live births by 2030.
2. **Policy Implications:** The findings of this study provide valuable insights into the effectiveness of flagship government programs such as JSY, JSSK, and LaQshya. By analysing the relationship between institutional delivery and neonatal survival, the research can inform future policy directions, resource allocation, and targeted interventions in high-burden states like Madhya Pradesh.
3. **Programmatic Improvement:** This research highlights gaps between access and quality in institutional deliveries. Identifying bottlenecks in service delivery, infrastructure, human resources, and community engagement allows for the formulation of actionable strategies to improve program implementation and maternal-new-born health outcomes.
4. **Equity and Access:** Madhya Pradesh is home to a large rural and tribal population that faces persistent socio-economic and cultural barriers to accessing institutional care. This study sheds light on disparities in health service utilization and outcomes, offering recommendations to bridge these gaps and ensure equitable healthcare access.
5. **Academic Contribution:** By using empirical data to examine the link between institutional delivery and neonatal mortality, this study contributes to the academic literature on maternal and child health, especially within the Indian context where subnational disparities remain critical yet understudied.

In summary, this study not only evaluates the effectiveness of institutional delivery in reducing neonatal deaths in Madhya Pradesh but also offers a roadmap for enhancing maternal and new-born care systems to meet public health targets in India.

2. Objectives

1. To assess institutional and home delivery trends from 2017–2025.
2. To correlate institutional delivery rates with neonatal mortality trends.
3. To evaluate service indicators from NFHS-4 and NFHS-5.
4. To analyse the role of FBNC in neonatal survival.
5. To identify implementation challenges and enabling factors.
6. To recommend policy measures for sustainable NMR reduction.

3. Methodology

This study employs a **secondary data analysis** design using:

- **HMIS** data (2016–2025) for institutional and home delivery statistics.
- **SRS** data (2017–2021) and trends till 2025.
- **NFHS-4 and NFHS-5** for maternal and neonatal care indicators.

Study Area: Madhya Pradesh

Time Frame: 2016–2025

Analysis Tools: Trend analysis, correlation, and comparison of health indicators.

4. Results

The results of this study reveal a clear upward trend in institutional deliveries in Madhya Pradesh from 2016–17 to 2024–25, accompanied by a steady decline in home births. Concurrently, the Neonatal Mortality Rate (NMR) shows a gradual reduction, indicating a potential association between improved institutional delivery coverage and better neonatal outcomes. Data from NFHS-4 and NFHS-5 further support this trend, showing notable improvements in antenatal care, postnatal care, and skilled birth attendance. Despite these positive developments, challenges such as rising out-of-pocket expenditure and low early breastfeeding initiation persist, suggesting the need to focus on the quality of care alongside service coverage.

4.1 Institutional Delivery Trends (2016–2025)

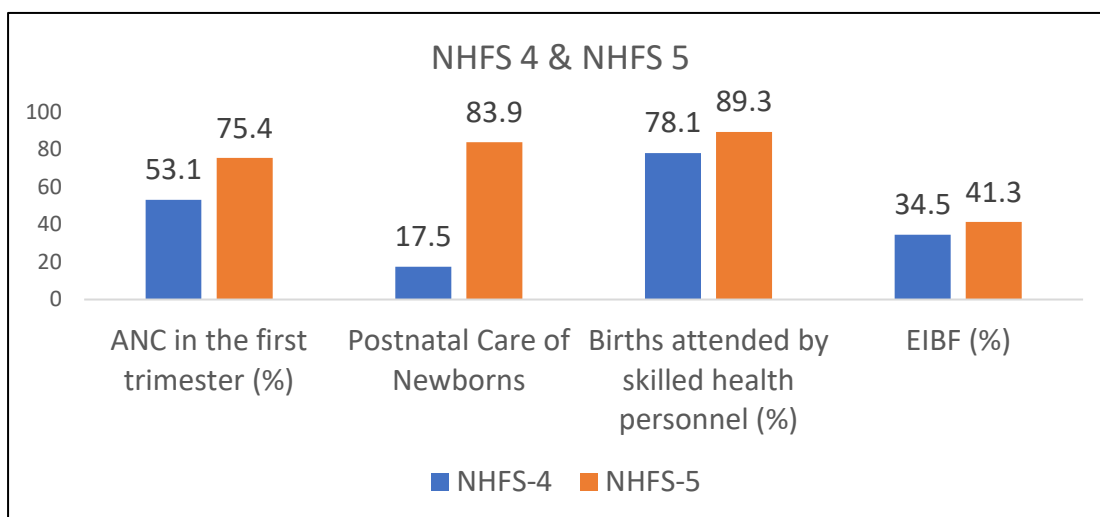
- Institutional deliveries rose from 90.1% in 2016–17 to 98.9% by 2024–25.
- Home deliveries declined from 121,432 in 2016–17 to 14,962 by 2024–25.

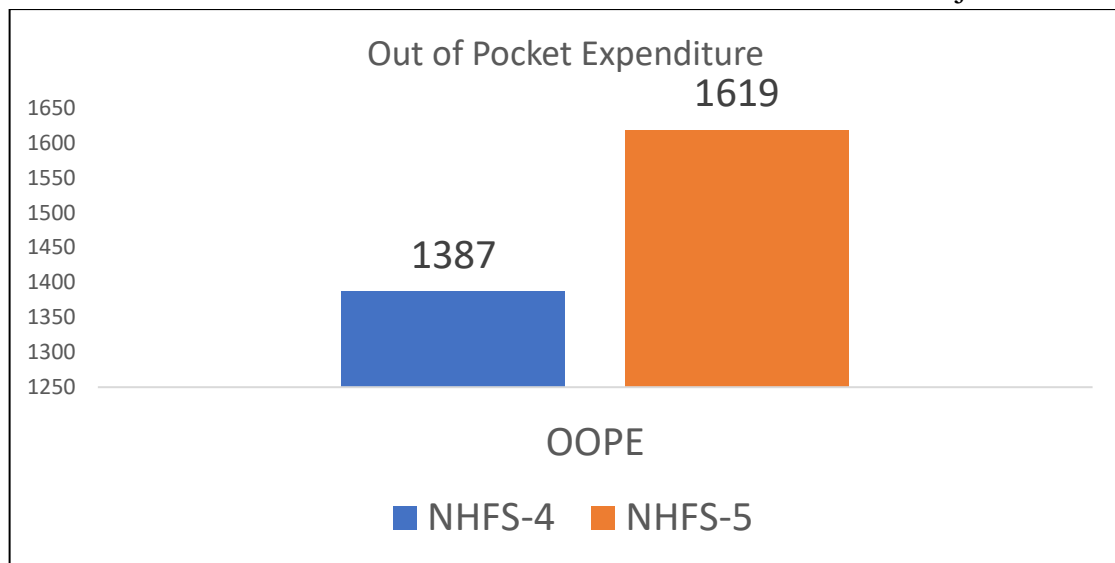
4.2 NMR Decline and Projections

- NMR dropped from 33 (2016–17) to 30 (2021).
- Projected NMR for 2025 is 26, assuming an Annual Reduction Rate (ARR) of 3.22%.

4.3 NFHS-4 vs. NFHS-5 Comparison

Indicator	NFHS-4	NFHS-5
ANC in 1st Trimester (%)	53.1	75.4
Postnatal care (new-borns) (%)	17.5	83.9
Skilled birth attendance (%)	78.1	89.3
Early breastfeeding (%)	34.5	41.3
OOPE (₹)	1387	1619





4.4 Correlation Analysis

- A weak to moderate correlation exists between institutional delivery and NMR, indicating improved survival outcomes but moderated by other variables.

5. Discussion

Institutional deliveries offer safer conditions for childbirth and new-born care. The findings validate that improved institutional coverage correlates with reduced NMR, especially when coupled with skilled birth attendance and early postnatal care.

However, rising OOPE and stagnating early breastfeeding rates suggest gaps in quality and accessibility. Remote areas, especially tribal districts, lag behind due to infrastructure deficits and cultural hesitancy.

Government programs like JSY and JSSK have been instrumental in increasing facility-based births. Still, partial implementation, informal costs, and staff shortages limit their full impact.

6. Conclusion

Institutional delivery plays a pivotal role in reducing neonatal deaths in Madhya Pradesh. While coverage has improved, quality of care during and after delivery remains the key to sustaining gains. The projected NMR of 26 by 2025 is a step forward but still short of the SDG target. A shift from coverage to quality is essential for transformative impact.



7. Recommendations

1. **Strengthen Rural Infrastructure:** Equip all PHCs with NBCCs and CHCs with NBSUs.
2. **Boost Skilled Birth Attendance:** Recruit and incentivize staff in underserved regions.
3. **Improve Referral Systems:** Scale up emergency transport (e.g., 108 ambulances).
4. **Community Engagement:** Leverage ASHAs and local influencers to combat home delivery practices.
5. **Enhance Postnatal Care:** Enforce 48-hour facility stay post-delivery and strengthen HBNC.
6. **Ensure JSSK/JSY Implementation:** Timely DBT and full coverage of entitlements.
7. **Expand FBNC Units:** Especially in high NMR and tribal districts.
8. **Data-Driven Monitoring:** Real-time dashboards and community-based feedback loops.

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