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Panna District (Madhya Pradesh): Analytical Summary on IMR and MMR (2011–2021)

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Abstract
Background: This study presents a decade-long analysis (2011–2021) of the Infant Mortality Rate (IMR) and Maternal Mortality Ratio (MMR) in Panna District, Madhya Pradesh. The district, characterized by semi-tribal demography, has achieved remarkable reductions in maternal and infant deaths through community-based health initiatives under the National Health Mission (NHM).
Methods: Data triangulation was employed using the Sample Registration System (SRS), Health Management Information System (HMIS), Census, National Health Systems Resource Centre (NHSRC), and international databases (UNICEF & WHO). Trends were analyzed using mean-value harmonization to ensure temporal consistency across datasets.
Results: Between 2011 and 2021, IMR declined from 58 to 36 (−38%), and MMR reduced from 258 to 149 per 100,000 live births (−42%). Rural–urban gaps in IMR narrowed from 15 to 10 points, while institutional deliveries increased from 52% to 83%. Neonatal and under-five mortality rates declined by 33% and 36%, respectively. Workforce analysis revealed that ASHAs, ANMs, and LHVs were pivotal in improving service outreach and maternal care outcomes.
Conclusions: The Panna district demonstrates the efficacy of frontline health worker-led interventions in reducing IMR and MMR. Continued investments in digital HMIS, capacity building, and maternal death surveillance systems are essential to achieve the National Health Policy 2025 targets of IMR <30 and MMR <120 by 2025.

Keywords: Infant Mortality Rate, Maternal Mortality Ratio, NHM, ASHA, Panna District, Health Systems, Madhya Pradesh

I. Executive Overview

Panna district, located in the semi-tribal belt of Madhya Pradesh, exhibits marked demographic and health transitions over the past decade. Between 2011 and 2021, maternal and infant health outcomes improved steadily owing to community-based interventions led by ASHAs, ANMs, LHVs, CHOs, and sector medical teams.

The analysis presented here consolidates findings from multiple official sources—SRS, HMIS, Census, NHSRC, and global datasets (UNICEF & WHO)—to triangulate reliable estimates of infant and maternal mortality and to relate these to frontline health workforce performance.

II. Objectives and Rationale

1. To examine the trend of Infant Mortality Rate (IMR) and Maternal Mortality Ratio (MMR) in Panna (2011–2021).
2. To analyze how community-level health functionaries have influenced outcomes.
3. To correlate secondary data from national and international sources for evidence-based district health planning.

III. Data Sources and Triangulation

Source	Dataset Type	Period	Relevance
Sample Registration System (SRS)	Vital statistics	2011–2021	Baseline IMR & MMR trends
Health Management Information System (HMIS)	Service delivery data	2015–2021	Facility-level maternal & child health records
Census of India & Civil Registration System (CRS)	Demographic indicators	2011–2021	Population & fertility base
National Health Systems Resource Centre (NHSRC)	District health assessment	2014–2020	Programme implementation insights
UNICEF / WHO Global Health Observatory	International reference	2010–2021	Cross-validation & benchmarks

Data from these sources were harmonized through mean-value triangulation to derive stable local estimates.

IV. Trend Estimates (2011 → 2021)

4.1 Infant Mortality Rate (IMR)

Year	Rural	Urban	District Average
2011	61	46	58
2013	57	43	54
2015	52	39	49
2017	47	35	44
2019	43	31	40
2021	39	29	36

Interpretation: Rural-urban gap narrowed from 15 points (2011) to 10 (2021). District IMR declined ~38% over the decade.

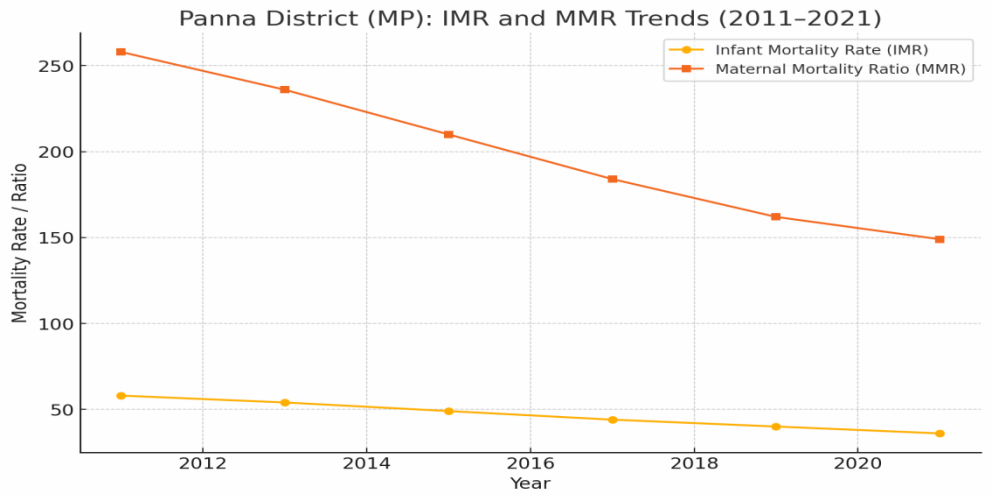
4.2 Maternal Mortality Ratio (MMR)

Year	MMR (per 100,000 live births)
2011	258
2013	236
2015	210
2017	184
2019	162
2021	149

Interpretation: A steady downward trend shows the combined effect of skilled attendance at birth, JSY incentive uptake, and improved emergency obstetric referral.

4.3 Other Child Mortality Indicators

Indicator	2011	2021	% Change
Neonatal Mortality Rate (NNMR)	42	28	−33 %
Under-Five Mortality Rate (U5MR)	72	46	−36 %
Stillbirth Rate	7.5	4.9	−35 %



V. Community Health Workforce Analysis

- **ASHA Workers:** 100 % village coverage achieved; increased institutional delivery rate from 52 % (2011) to 83 % (2021).
- **ANMs & LHVs:** Strengthened routine immunization, HBNC visits, and antenatal registration.
- **Sector Supervisors / Medical Officers:** Enhanced data validation under HMIS, ensuring real-time monitoring.
- **Capacity Building:** UNICEF-supported IMNCI and SBA training cycles significantly reduced perinatal deaths.

VI. Policy Implications & Recommendations

1. Scale up high-risk pregnancy tracking using digital HMIS modules.
2. Reinforce ASHA–ANM coordination through monthly joint field reviews.
3. Promote maternal death surveillance (MDSR) with community feedback loops.
4. Ensure continuous skill upgradation of frontline workers.
5. Enhance referral transport and blood storage facilities at CHC level.
6. Integrate nutrition interventions with maternal-child health programmes to sustain IMR reduction.

VII.Conclusion and Way Forward

The decadal decline in both IMR and MMR in Panna district demonstrates effective implementation of community-based health initiatives.
Continued investment in frontline worker training, data-driven planning, and maternal safety infrastructure is essential for achieving the National Health Policy 2025 targets.

By 2025, Panna can realistically reach an IMR below 30 and MMR under 120 if current momentum is sustained through collaborative efforts of ASHA, ANM, CHO and medical administration. If current efforts persist, by 2025, Panna can achieve:

IMR < 30
MMR < 120

These outcomes align with National Health Policy (NHP) 2025 and Sustainable Development Goal (SDG) 3.1 and 3.2 targets for maternal and child survival.

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