Maternal and Neonatal Health in Madhya Pradesh

• Trends • Insights • Scope

Maternal, newborn and child health care is a top priority and is critical for the development of a country. Services to pregnant women are a vital component of reproductive health care.[1] In 2017, India contributed 15% of global maternal deaths.[2] The Empowered Action Group (EAG) states have the highest Maternal Mortality Ratio (MMR) and contribute to 71% of infant mortality in India.

CURRENT HEALTH SCENARIO OF MADHYA PRADESH

Madhya Pradesh (MP) has made significant progress with maternal and child health interventions. However, as one of the EAG states, maternal, neonatal and under-5 mortality remains sub-optimal.

MP has the highest...

neonatal
35/1000
(live births)

infant
48/1000
(live births)

under-5-mortality
56/1000
(live births)

among the larger states in India, and the third highest maternal mortality ratio (173/100000 live births).

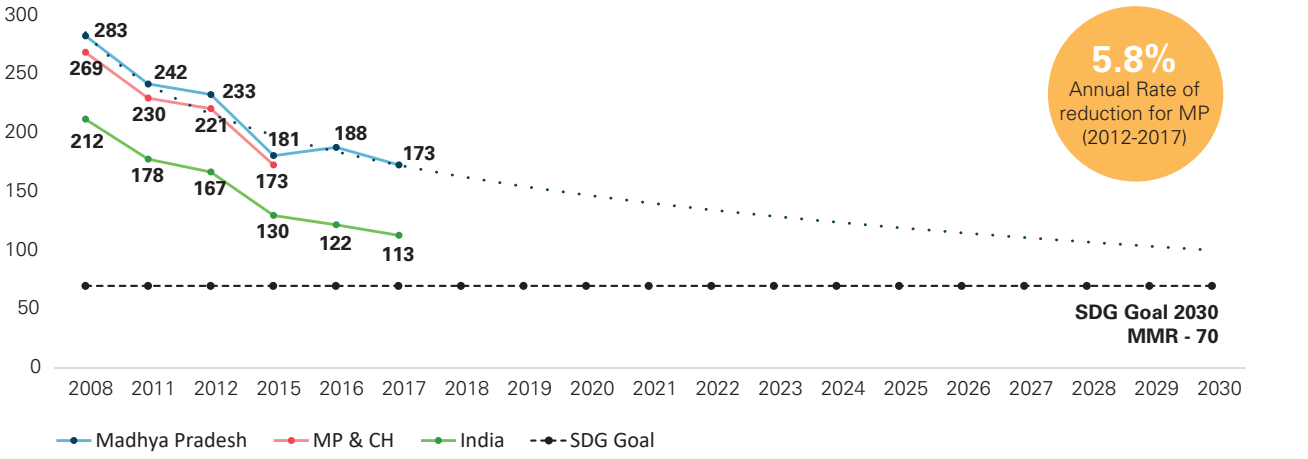
[1]World Health Organization: Reconciling maternal, newborn and child health with health system development. World Health Report 'Make every mother and child count' Geneva, Switzerland: WHO; 2005.

[2]Nair H, Panda R. Quality of maternal healthcare in India: Has the national rural health mission made a difference? J Glob Health. 2011;1:79–86.

MAGNITUDE AND TRENDS IN MATERNAL AND NEONATAL MORTALITY IN MP

The MMR in MP and India has declined in the last decade (Figure 1). However, the Annual Rate of Reduction (between 2012 and 2017) in Madhya Pradesh (5.8%) was lower than that of India (7.5%). While India may achieve the Sustainable Development Goal of < 70 per 100000 live births by 2030, MP may require a longer period of time.

Figure 1: Maternal Mortality in Madhya Pradesh and India

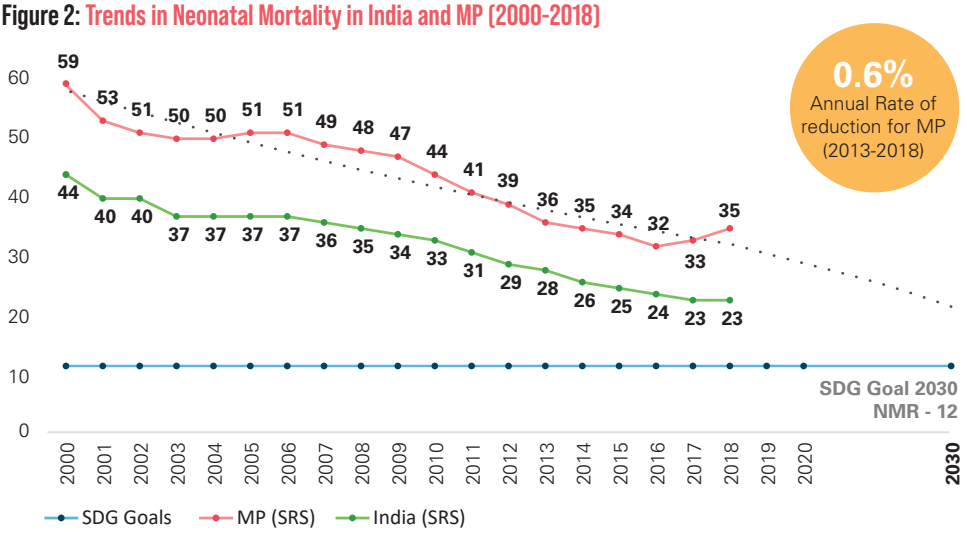


* MMR was estimated to segregate MP and Chhattisgarh (CH) using a weighted analysis assuming constant MMR ratio between the two states

Shows the MMR for aggregate (MP + Chhattisgarh)

Similarly, the Neonatal Mortality Rate (NMR) has been declining in MP and India in the last decade (Figure 2). The Annual Rate of Reduction (between 2013 and 2018) in MP (0.6%) was lower than that of India (3.8%).

Figure 2: Trends in Neonatal Mortality in India and MP (2000-2018)



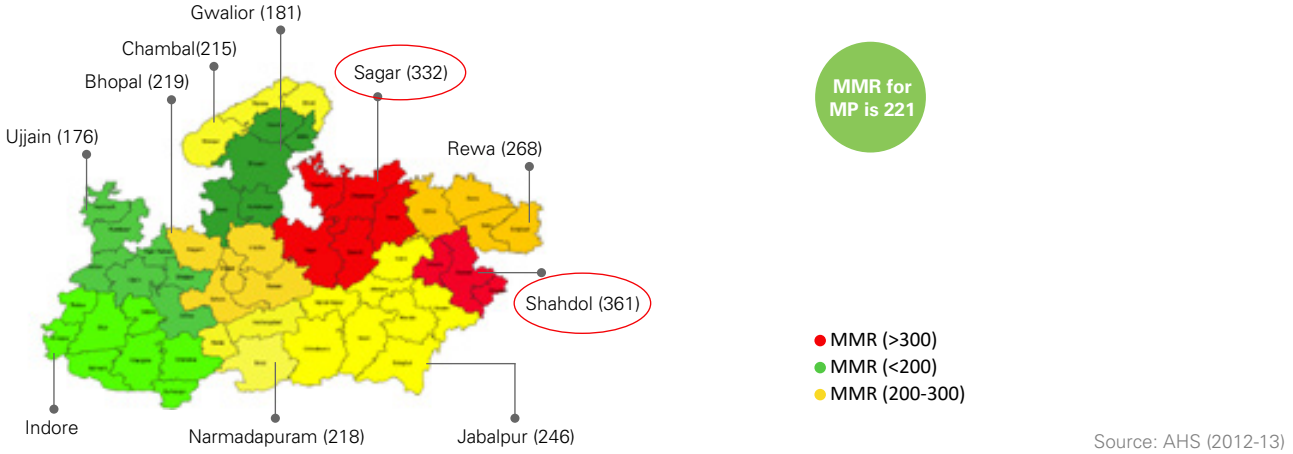
Source: SRS (2000-2018)

HETEROGENEITY IN DISTRIBUTION AND DETERMINANTS OF MORTALITY

The distribution of maternal mortality in divisions within MP is uneven (Map 1). The north eastern region of MP has higher MMR; with Shahdol[3] and Sagar divisions[4] having highest Maternal Mortality Rates.

Similarly, the district-wise distribution of neonatal mortality, using a composite indicator categorizing NMR as high, medium and low and the AARC also depicts the heterogeneity of neonatal mortality within MP (Map 2). Again, it is observed that the north-eastern part of MP (NE MP) has high NMR and a low Annual Rate of Reduction.

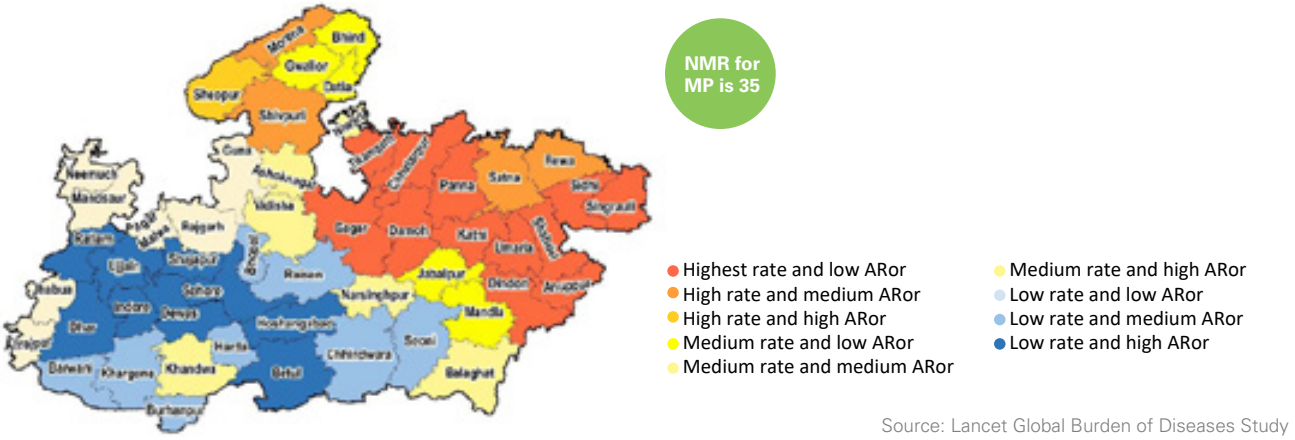
Map 1: Maternal Mortality Rates in Divisions of MP, 2012-13



Source: AHS (2012-13)

Map 2: Neonatal Mortality Rates in Districts of MP, 2017

Annual Rate of Reduction has been calculated based on NMR values between 2010 and 2017



Source: Lancet Global Burden of Diseases Study

HOME VERSUS INSTITUTIONAL DELIVERY

To reduce maternal and newborn mortality, high coverage and quality of services for institutional delivery is critical. However, almost one in five pregnant women in MP deliver at home. NMR, IMR, and U5MR are highest among women who delivered at home (Table 1).

Table 1: Child Mortality Indicators by Place of Delivery

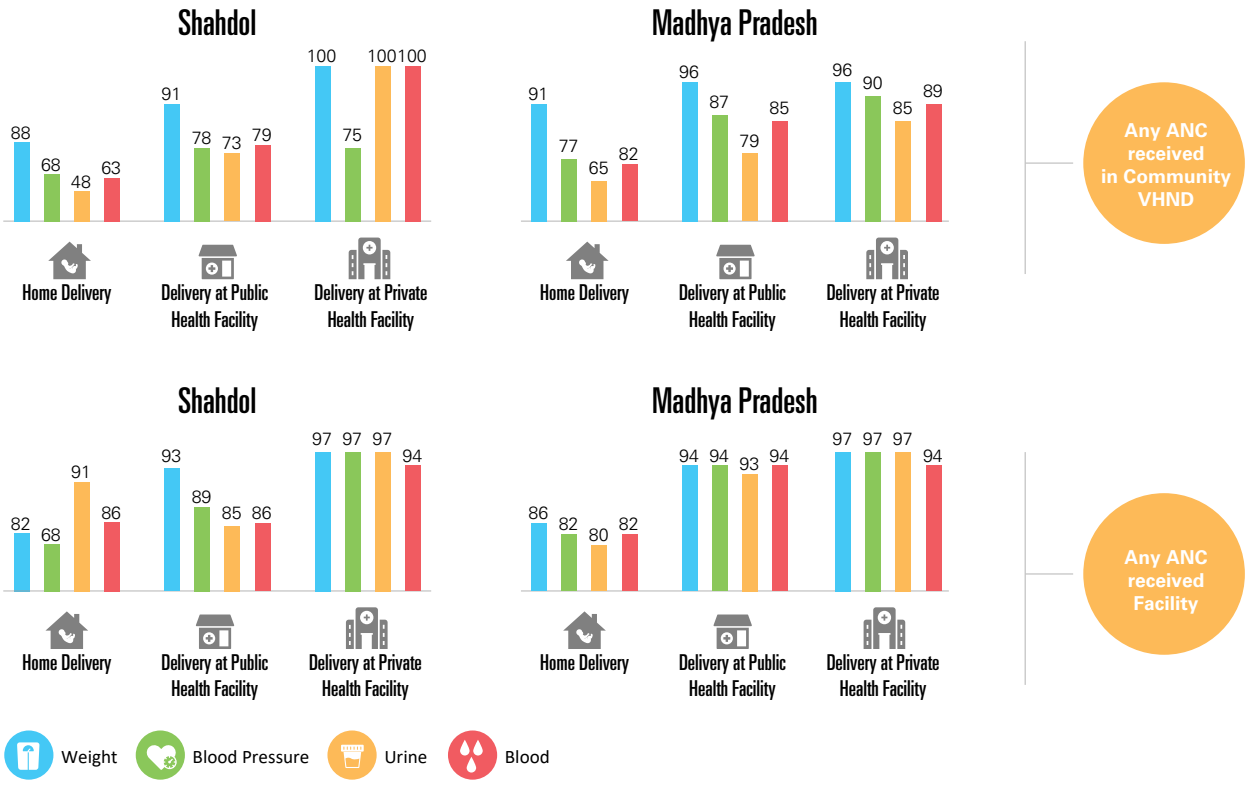
Place of Delivery	NMR	PNMR	IMR	U5MR
Home Delivery	53	20	73	95
Delivery in Public health Facility	35	14	49	59
Delivery in Private health Facility	33	12	45	51

[3]Shahdol Division: Anuppur, Shahdol, Umaria districts

[4]Sagar Division: Chhatarpur, Damoh, Panna, Sagar, Tikamgarh districts

Coverage of antenatal care (ANC) services among pregnant women who deliver at home in Shahdol is much lower than among women who deliver in a health facility (public or private), across the state of MP. This is irrespective of whether the ANC services were received within a facility or in a Village Health and Nutrition Day (VHND)/ community setting (Figure 3).

Figure 3: Tests/measurements during ANC to detect High-Risk Pregnancy (HRP)



NFHS-4 data cascade analysis shows that the coverage of quality ANC and post-natal care (PNC) services such as early ANC (ANC in the first trimester), four or more ANC, post-natal check-up and early PNC are all lower in Shahdol and Sagar division and are lowest for those who deliver at home (Figure 4).

Figure 4: Cascade from NFHS-4 for Shahdol & Sagar division vs Rest of the state

Total Deliveries
Sagar & Shahdol division:- 2231
Rest of the state:- 14950

Home Deliveries
Sagar & Shahdol division:- 21%
Rest of the state:- 18%

	Shahdol & Sagar Division	Rest of the state
Early ANC	23%	33%
4 or more ANC	8%	19%
Post Natal Check-Up	21%	25%
Postnatal care within 2 Days of Delivery	12%	16%

Institutional Deliveries
Sagar & Shahdol division:- 79%
Rest of the state:- 82%

Deliveries in Public Health Facilities
Sagar & Shahdol division:- 71%
Rest of the state:- 69%

	Shahdol & Sagar Division	Rest of the state
Early ANC	40%	56%
4 or more ANC	22%	40%
Post Natal Check-Up	59%	67%
Postnatal care within 2 Days of Delivery	40%	47%

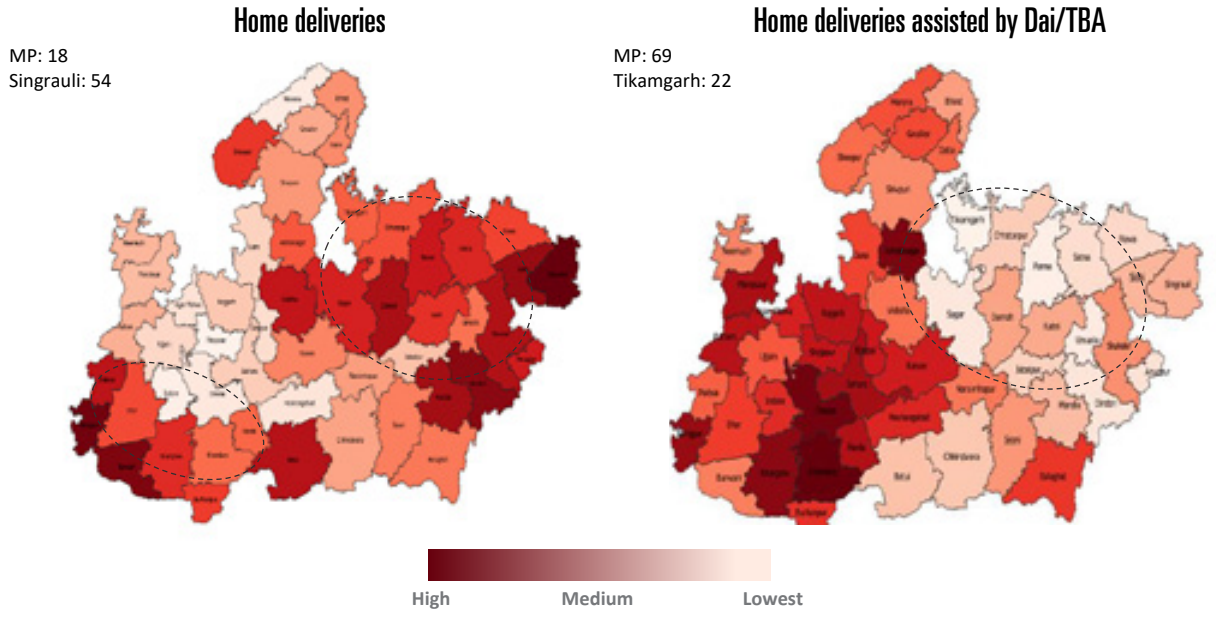
Deliveries in Private Health Facilities
Sagar & Shahdol division:- 7%
Rest of the state:- 13%

	Shahdol & Sagar Division	Rest of the state
Early ANC	62%	72%
4 or more ANC	51%	64%
Post Natal Check-Up	77%	82%
Postnatal care within 2 Days of Delivery	36%	44%

Source: NFHS-4 (2015-16)

NFHS-4 district level analysis indicates that there are high proportions of home deliveries with low proportions attended by skilled birth attendants in NE MP (Map 3).

Map 3: Home Deliveries and Home Deliveries assisted by Trained/Skilled Birth Attendants in MP



AVAILABILITY OF HEALTH FACILITIES AND HUMAN RESOURCE

The availability of health facilities in Shahdol division is sub-optimal (Table 2). In most districts of the division, the population coverage of facilities is higher than the prescribed norms.

Table 2: Availability of Health Facilities in Shahdol division

District Name	Population* coverage by Per CHC	Population* coverage by Per PHC	Population* coverage by Per SC
Anuppur	78404	34846	3995
Shahdol	145116	33860	4638
Umaria	219782	54945	5784
MP	188912	51650	6230

**Prescribed population norm for hilly, backward and tribal areas: 80,000 for Community Health Centres (CHCs), 20,000 for Primary Health Care (PHCs) and 3000 for sub-centres (SCs)*

Even though the population covered by each ANM appears to be as per norm, she looks after twice the number of sub-centres than that prescribed in all three districts in Shahdol division (Table 3), suggesting a need to support travel or increase the numbers.

Table 3: Availability of ANM/FHW/CHO per Sub Centre

District Name	Sub Centres	No. of ANM/FHW/CHO at SC	Average ANM/FHW/CHO per SC	Population coverage by per ANM/FHW/CHO
Anuppur	157	283	1.80	2216
Shahdol	219	391	1.78	2598
Umaria	114	230	2.01	2867
MP	10006	11840	1.18	5265

ANM: Auxiliary nurse midwife, FHW: Female Health Worker, CHO: Community Health Officer

Similarly, the numbers of delivery centers, both for Basic Emergency Obstetric and Neonatal Care (BEmONC) centers and Comprehensive Emergency Obstetric and Newborn Care (CEmONC) centres in Shahdol and Sagar Division are inadequate (Table 4).

Table 4: Availability of Delivery Points by type of facility

District	Number of basic delivery centers with referral linkages (at least 5 per facility) L1			Number of BEmONC centers (at least 30 per facility) L2			Number of CEmONC centres (at least 340 per facility) L3		
	Required	Available	Difference	Required	Available	Difference	Required	Available	Difference
Anuppur	21	29	-8	14	11	3	2	2	0
Shahdol	34	16	18	23	14	9	3	3	0
Umaria	27	18	9	18	8	10	2	2	0
MP	2326	711	1615	1551	753	798	171	160	11

BEmONC: Basic Emergency Obstetric and Neonatal Care , CEmONC: Comprehensive Emergency Obstetric and Newborn Care

The availability of Staff-Nurses (SNs) at delivery points against the average delivery load is inadequate in two of the three districts (Table 5).

Table 5: Availability of Staff-Nurse at Delivery Points

District Name	Staff Nurse in DH** (in maternity* ward)	Staff Nurse in SDH (in maternity* ward)	Staff Nurse in CHC	Staff Nurse in PHC	Average delivery work Load in DH (per SN per month per DH)	Average delivery work Load in SDH (per SN per month per SDH)	Average delivery work Load in CHC (per SN per month per CHC)	Average delivery work Load in PHC (per SN per month per PHC)
Anuppur	16	0	39	17	14	0	8	13
Shahdol	21	2	49	9	31	91	9	57
Umaria	12	0	14	5	17	0	20	72

**It is assumed that 15% of SNs in district hospital (DH) facilities are engaged in the maternity services. As per government norms, there should be at least 4 SNs per sub-divisional hospital (SDH) and per DH for every 100 deliveries, 10 SNs per CHC, and 3 SNs per PHC for every 100 deliveries on average.*
*** Nomenclature for SDH in Madhya Pradesh is Civil Hospital*

The availability of Specialists [Obstetrics and Gynaecology(OBG)/Anaesthetist/Paediatrics/General Medicine/ Surgeon] in the districts of Shahdol and Sagar division are also inadequate (Table 6). A per government norms there should be at least one OBG and other specialists in every DH, SDH and CHC.

Table 6: Availability of Specialist services

District	No. of facilities (DH+SDH+CHC)	ObGy/Anesthetist/Pd./general medicine/Surgeon	Avg. delivery per year	Complicated deliveries per year	Complicated deliveries per day
Anuppur	11	3	18129	3626	10
Shahdol	11	3	29139	5828	16
Umaria	6	2	22018	4404	12

DH: District Hospital, SDH: Sub-Divisional Hospital, CHC: Community Health Centre

KEY LEARNING AND RECOMMENDATIONS

- The annual rate of reduction in MMR and NMR lags behind in MP, especially within NE divisions of MP
- The coverage of key community interventions (ANC and PNC services) can be enhanced by building upon platforms such as the VHND and improving human resource availability and competencies
- Improvements in the availability of health facilities and the numbers of human resources, especially specialists, need special focus in the tribal districts.
- Home delivery must be reduced and attended to by skilled birth attendants.
- A cohort analysis or serial cross-sectional surveys could help track behaviors among pregnant women and health care providers that would help understand changes in service utilization over time.

LIMITATIONS

- The quality of care data is largely lacking in settings of institutional or home delivery. Availability of these data would further help to enhance our understanding.
- Certain analysis is based on NFHS-4 data and refers to a period 6-7 years ago. However, as the NFHS-5 is made available, a similar analysis would provide updated information on the current situation.
- Information on the availability and utilization of emergency medical transportation and the availability of private sector facilities for emergency obstetric and newborn care, under the PMJAY scheme was not included in the analyses.

CONCLUSION

Madhya Pradesh will need to accelerate the AARC in MMR to 6.8% to reach the SDG 2030 target of less than 70 Maternal Deaths per 100,000 live births, and an AARC in NMR to 8.6% to reach the SDG 2030 target of less than 12 Neonatal Deaths per 1000 live births. Focused interventions in the North-East parts of Madhya Pradesh, among tribal populations, especially within the Shahdol division could help to accelerate improvement in maternal and new-born health outcomes in this region and state-wide.

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