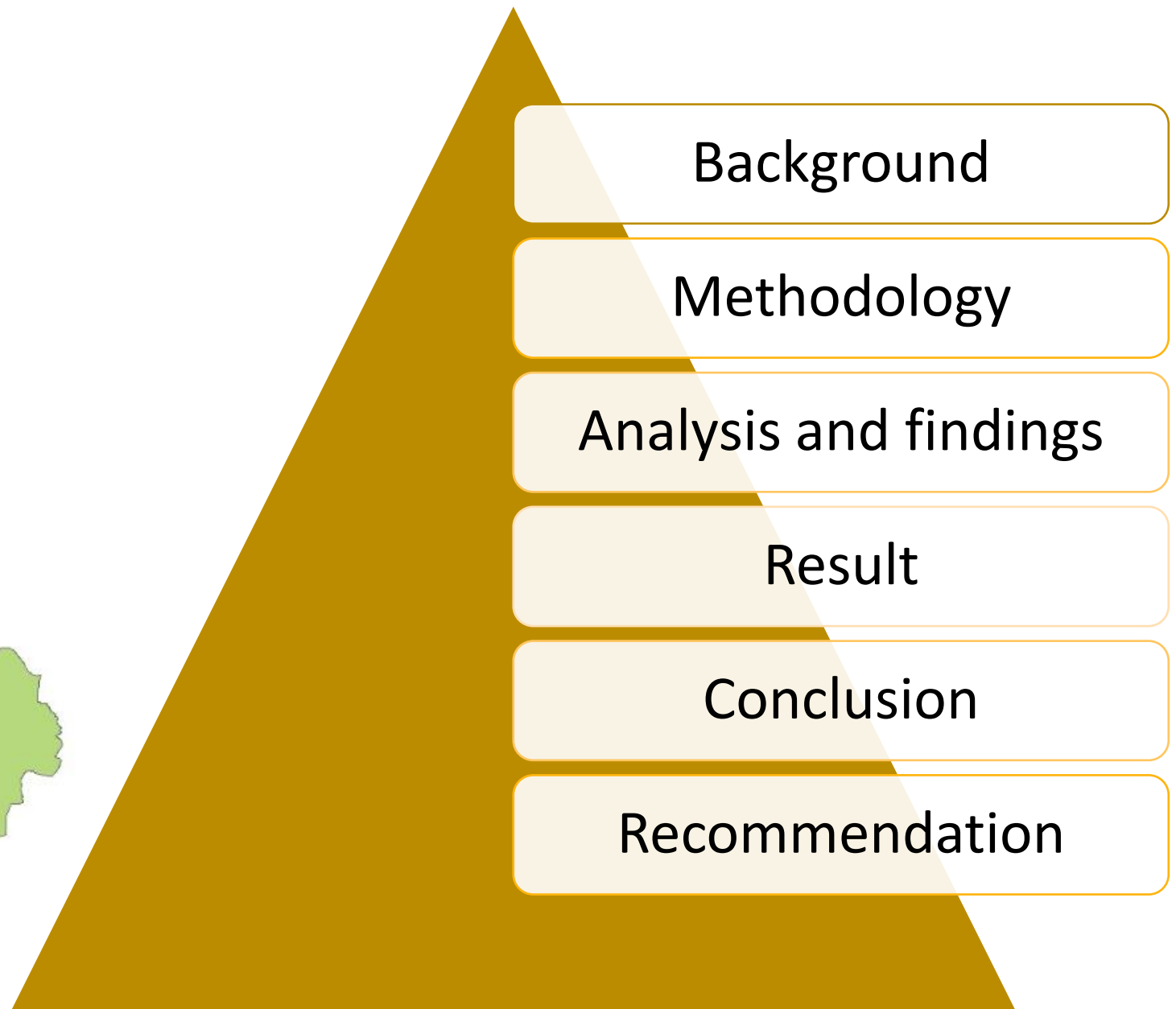


A background image of a rural landscape. In the foreground, there is a dirt path leading through a field of dry, brownish grass. To the left, there are several large, leafy green trees. In the middle ground, a small, simple house with a thatched roof is visible, surrounded by more trees. The sky is blue with some light clouds.

**Identifying and addressing structural barriers to Neonatal Mortality Risk
and Home Delivery among Tribal Population in Shahdol District,
Madhya Pradesh**

Presented by- Suramya Nair (1634)

Under the guidance- Dr Seema Mehta



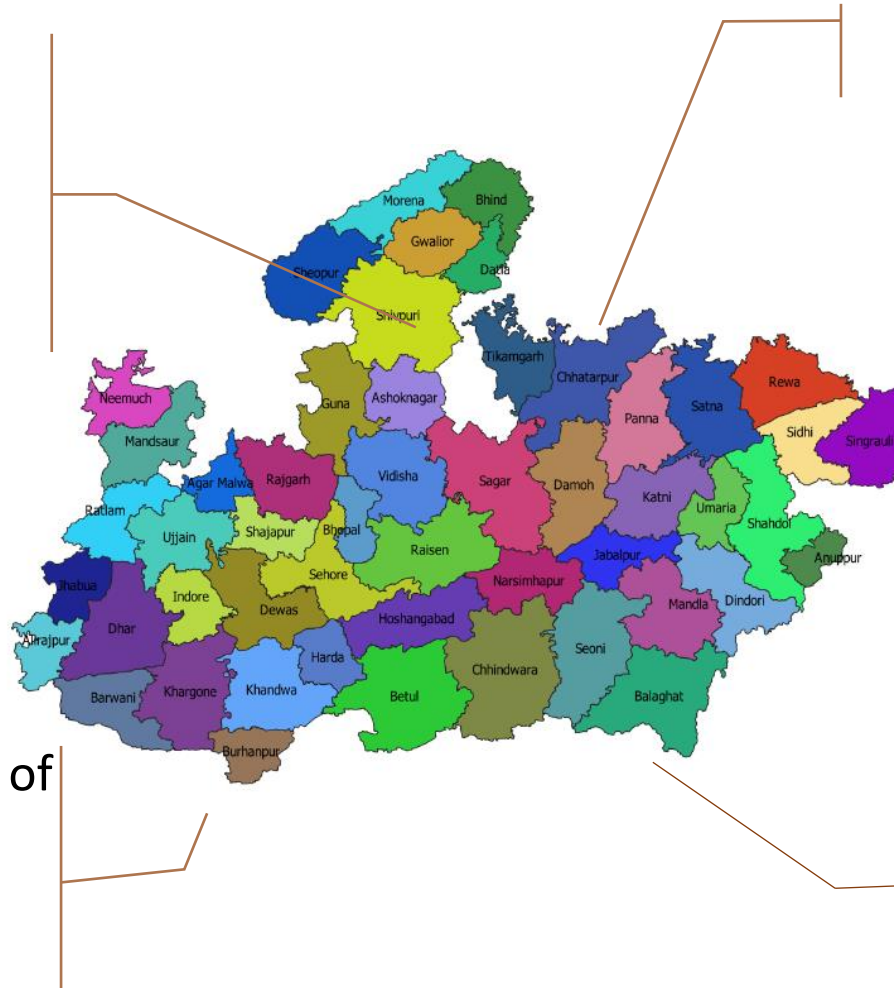
Background & Health Status in Madhya Pradesh

Geography:

- 7 divisions, 52 districts,
- 412 tehsils, 313 blocks,
- 364 statutory towns,
- 112 census towns, and
- 54,903 villages

Demography:

- ~72+ million accounting for 6% of total Population of India.
- 73% of state population is rural



Status of Health in MP:

173
9

MMR per 100,000 live births
(SRS: 2016-2018)

Maternal Deaths per Day

10 % of India's Maternal Death

35
157

NMR: 1000 live births
(SRS: 2018)

Neonatal Deaths per Day

9% of India's neonatal Deaths

48

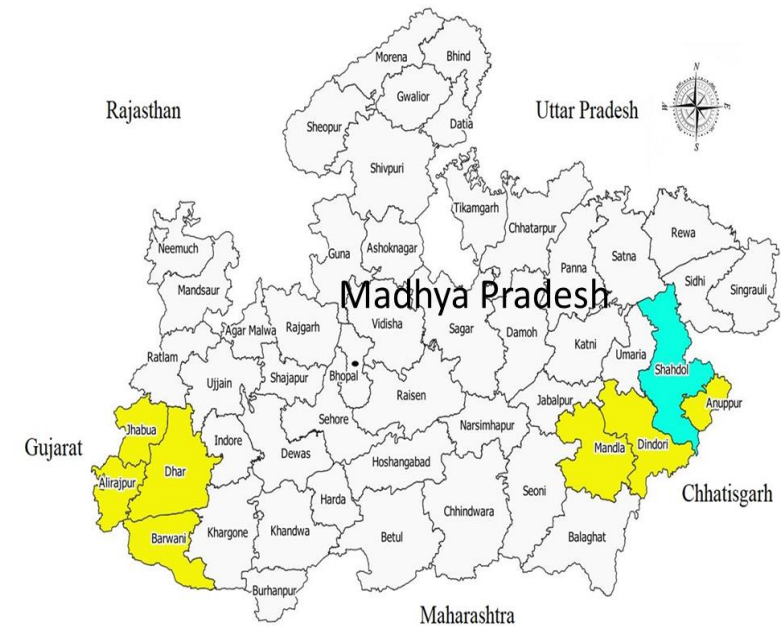
IMR: 1000 live births
(SRS: 2018)

56

U5MR: 1000 live births
(SRS: 2018)

Intervention District Shahdol (Madhya Pradesh)

- Shahdol is a rural district with over 50% tribal population.
- Shahdol Division¹ has the highest MMR in the state with 361 maternal deaths per 100K live births
- NMR in the district was 35 per 1000 live births²
- Intermediate outcomes are poor; Early ANC was 31%, Institutional Delivery was 72% and PNC for Newborns 4%.³
- Institutional delivery is largely in public facilities, which have inadequate but basic human resources⁴ (OB/GYN:2, Pediatrician:1, Doctors>40, Nurse:>150, ANM:>200).



- Eastern tribal districts despite sub-optimal MNCH outcomes have limited presence of development partners.
- Within these eastern tribal districts, Shahdol has amongst the poorest MNCH outcomes

1 Division includes Shahdol, Umariya and Dhindori (AHS 2012-13)

2: LANCET; Global Burden of Disease Study - 2017

3: NFHS 4

4: Human Resource Management Information System (HRMIS) GoMP

BACKGROUND

Shahdol District in northeastern Madhya Pradesh exemplifies these challenges with high neonatal and infant mortality rates and a substantial proportion of home deliveries. The district's difficult terrain, seasonal inaccessibility, and weak infrastructure exacerbate these issues. Despite interventions like Project MANCH, neonatal mortality remains high, highlighting the need to redefine hard-to-reach areas (HRAs) from an MCH perspective.

This study aims to identify and address structural barriers to healthcare access in Shahdol, focusing on neonatal mortality and home delivery rates, and proposing targeted solutions to improve MCH outcomes.

Madhya Pradesh Shahdol



☐ MMR- 173

☐ NMR- 29

☐ IMR- 41

☐ U5MR-50



☐ MMR- 173

☐ NMR- 43

☐ IMR- 72

☐ U5MR- 80



Research Question

- How does accessibility influence the risk of neonatal deaths and the Home Deliveries among tribal populations in Shahdol district, Madhya Pradesh?
- How can the definition of hard-to-reach areas be refined to better address maternal and child health needs in Shahdol District, Madhya Pradesh?

Objectives

- Identify the barriers to accessibility and neonatal mortality, home delivery among the tribal population of Shahdol district.
- Study the relationship between accessibility and home delivery among tribal in Shahdol.
- Define hard to reach area more precisely, incorporating variables from accessibility and maternal and child health variables in view of evidence.

Significance of the Study

- Address health disparities in inaccessible areas of Shahdol and redefine HRAs considering maternal and infant health outcomes.
- Provide actionable insights for targeted interventions to reduce neonatal mortality and home deliveries.
- Assist in making suitable policy decisions, resource allocation strategies, and designs of interventions for improving health outcomes in Shahdol and similar areas.

METHODOLOGY

Research Design

- Analytical Research design using real-time data collection via structured interviews and analysis
- Secondary data analysis.

Research Setting

- **Location:** Shahdol District, Madhya Pradesh, India
- **Focus Blocks:** Beohari, Burhar, Jaisinghnagar, Sohagpur
- **Challenges:** Poor road connectivity, flawed communication network, seasonal inaccessibility.

Study Population

- **Pregnant Women Who Delivered at Home:** Reasons for home deliveries and accessibility issues
- **Neonatal Death Families:** Conditions leading to neonatal deaths and healthcare service quality
- **Exclusion Criteria:** Families outside HRAs in Shahdol District

Study Duration

- 3 Months

Study Tools

- **Databases:** SNCU, RCH-ANMOL
- **GIS Tools:** Mapping hard-to-reach areas
- **Interviews:** Structured interviews for validation



Sampling Size and Technique

- **Data Sources:** RCH-ANMOL, SNCU-DH Shahdol
- **Sample Size:** Random sampling 27 cases from identified populations for in-depth analysis
- **Sampling Technique:** Random selection

Data Collection Techniques

- **Primary Data Collection**
- **Secondary Data Collection**

Data Collection Procedure

- **Home Delivery Records Review-** April 2022 to March 2024, there were 876 identified home deliveries. Out of these, 66 women were identified to be residing HRA
- **Neonatal Death Records Review-** April 1, 2021, to March 31, 2024, has reported 320 neonatal deaths, out of which 10 are from HRA regions.
- **GIS Mapping**
- **Structured Interviews**

Data Analysis

- **Software:** STATA for statistical analysis
- **Descriptive Statistics:** Summarize neonatal mortality and accessibility barriers
- **Inferential Statistics:** Chi-square tests for associations
- **GIS Mapping:** Identify and locate HRA regions



ANALYSIS AND FINDINGS

S.No	Block Name	PHC Name	SHC Name	Village Name
1	Burhar	Keshwahi	Rupaula	Koti
2		Jaitpur	Balbhadrapur	Nawatola
3			Sejhai	Kothitaal
4	Beohari	Nipaniya	Dalkokothar	Dalkokothar
5			Papod	Khusaria
6				Banasi
7				Jamunhiha
8				Duara
9			Tikhwa	Chatwa
10				Mair (Alhara)
11				Kharhara
12				Chuhi
13			Papondh	Tendua
14	Sohagpur	Khairaha	Sarangpur	Silpari
15				Semra
16			Arjhula	Arjhula
17			Arjhuli	Arjhuli
18			Khoh	Khoh
19		Bhemouri	Dhanura	Turri
20	Jaisinghnager	Aamdeeh	Pipri	Pipri
21				Belha
22				Palha

These are the identified hard-to-reach areas in Shahdol District; these are four blocks: Sohampur, Beohari, Jaisinghnagar, and Burhar, according to the vaccination perspective wherein the AVD (Alternate vaccine deliver) Vehicle is not reachable for delivering the vaccines to villages.

Gohparu does not have any identified HRA as per vaccination perspective. These HRA regions are further used to identify the accessibility issues in the areas and its impact on maternal and child health outcome – neonatal death and home delivery for further analysis of the study.

CHI-SQUARE ANALYSIS

Place of Delivery	Others	Lack of Transportation	Total
Home	2	19	21
Healthcare Institute	6	0	6
Total	8	19	27
Pearson chi2(1) = 18.3214 Pr = 0.000			

Distribution:

- Out of 21 home deliveries, 19 were due to lack of transportation, whereas 2 were due to other reasons.
- All 6 healthcare institute deliveries were due to other reasons rather than transport issues.

Chi-square test:

- The Pearson chi-square value is 18.3214 with 1 degree of freedom.
- P-value (Pr) is 0.000, which is less than the conventional level of significance of 0.05.

Interpretation of the association:

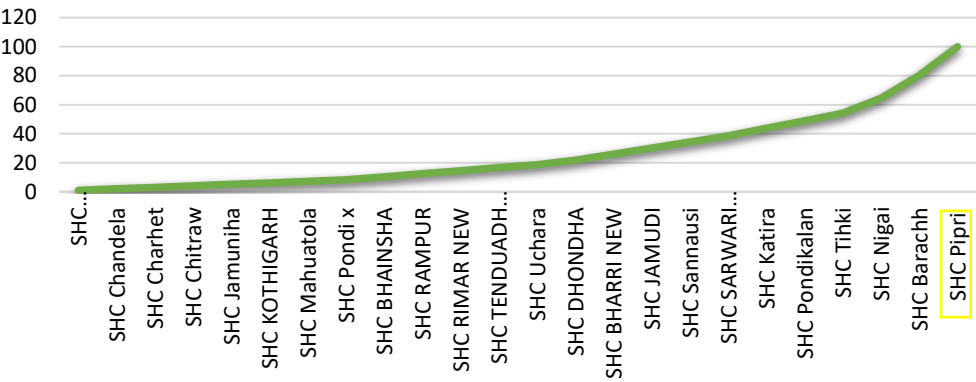
- A strong relationship exists between lack of transportation and home deliveries.
- On the other hand, those who delivered at healthcare institutes did not quote lack of transportation as a reason, indicating thereby they had access to transportation.

Implications:

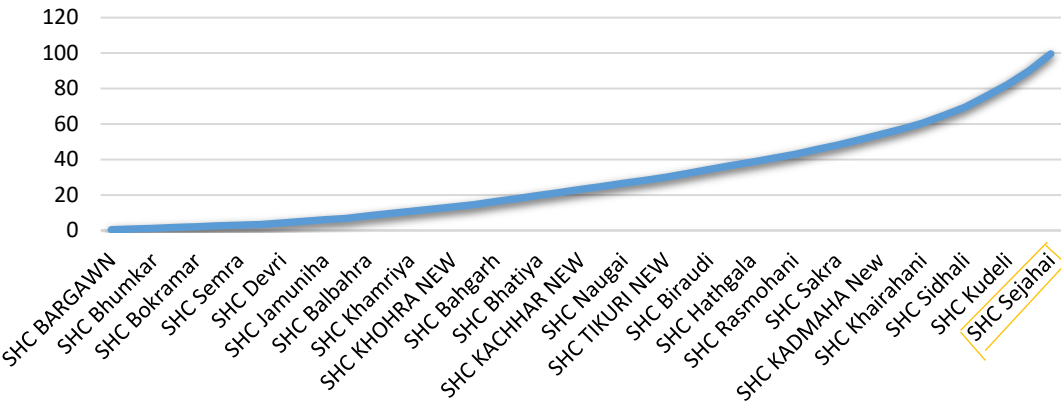
- This data very strongly supports the hypothesis that transportation is a critical barrier to institutional deliveries in the study area.
- The improvement in access to transportation could lead to a dramatic increase in the institutional delivery rate.

HOME DELIVERY DATA- ANMOL

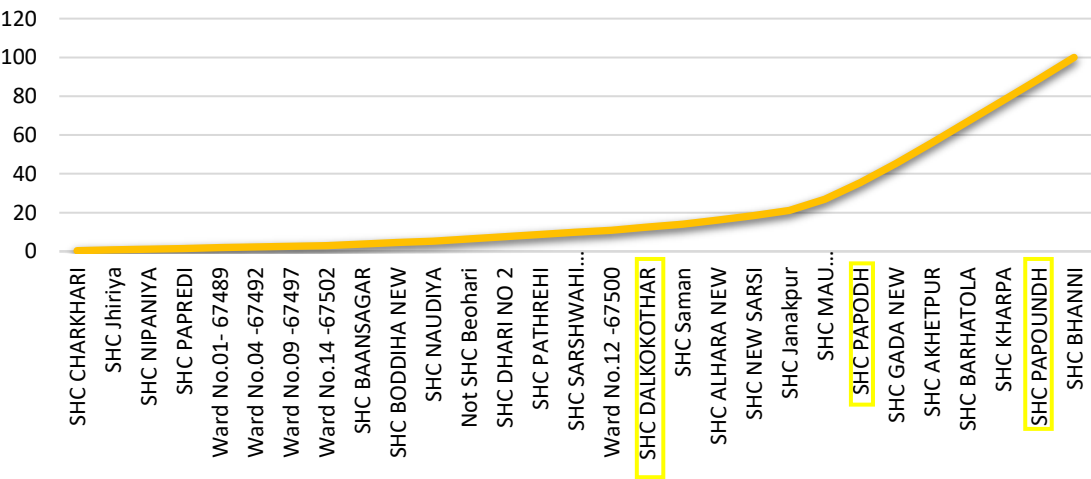
Cumulative % of HD in Jaisinghnagar Block



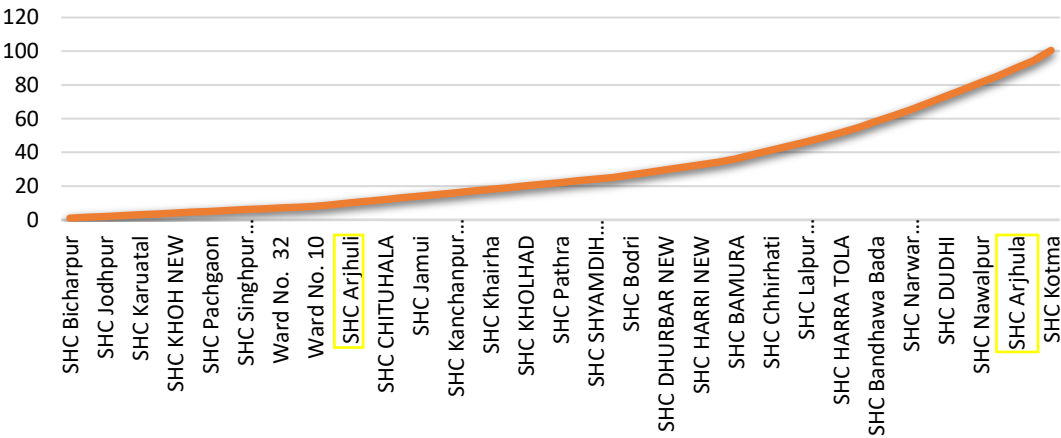
Cumulative % of HD in Burhar



Cumulative % of HD in Beohari Block



Cumulative % of HD in Sohagpur Block



Descriptive Analysis of Tool

Demographic Characteristics

Block-wise Activity Distribution: Beohari and Jaisinghnagar have the highest responses, indicating severe structural barriers to healthcare.

Village-wise Distribution: Turri and Pipri face the most acute healthcare access challenges.

Tribal Distribution: 97% of cases are among STs, with the Baiga and Gond tribes most affected.

Antenatal Care (ANC) Utilization

ANC Visits: Only 46% of women had one ANC visit, highlighting insufficient prenatal care.

Early ANC Utilization: 56% of respondents missed first trimester ANC checkups due to lack of awareness and accessibility issues.

Challenges to Attending ANC Visits: 89% cited lack of transportation as the primary barrier to ANC visits.

Home Delivery

Place of Delivery: 78% of deliveries were home-based, significantly higher than institutional deliveries.

Distance from Home to Nearest Delivery Point: 78% of respondents live more than 10 km away from the nearest delivery point, contributing to the high rate of home deliveries.

Reasons for Home Delivery	Assistance during Home Delivery	Awareness of Institutional Delivery Benefits	Transport to the Health Facility	Ambulance Reach at Home	Inaccessibility due to Seasonal Variation
• Transportation Issues 70%, • Distance to Healthcare Facilities 52%, • Cultural Preferences 30%, • Financial Constraints 26%, • Trust in Healthcare Facilities Only 7% and • Other Reasons 22% mentioned specific issues like lack of necessary documents, no one to stay at home, and delayed ambulance services, pointing to diverse administrative and logistical challenges.	• Family Members 52%, • No Assistance 15%, • Traditional Birth Attendants 11% , • Unknown Assistance 22% of cases, assistance type was either not available or not applicable, possibly including institutional deliveries or unreported data.	• Awareness Levels: 59% of respondents were aware of the benefits of institutional delivery, whereas 41% were not, indicating a significant gap in knowledge and awareness. • Barriers: Despite awareness, persistent factors like transport, financial constraints, and cultural norms obstruct access to institutional deliveries.	• Principal Mode of Transport: 74% of respondents walk to health facilities, highlighting significant accessibility challenges. • Use of Public Transport: 26% rely on public transport, indicating potential issues with availability, frequency, and cost.	• Inadequate Ambulance Service: 70% of respondents report that ambulances do not reach their homes, reflecting severe inadequacies in emergency medical services. • Ambulance Accessibility: Only 30% have access to ambulance services at home, leaving a significant portion of the population without vital emergency care.	• Seasonal Challenges: 81% report difficulties accessing healthcare during the rainy season due to geographical isolation and poor infrastructure. • Year-Round Access: 19% indicate no seasonal effect on healthcare access, suggesting a minority with stable access throughout the year.

Continue

Communication Network

- **Reliable Communication:** 52% have access to reliable communication networks, benefiting from improved telecommunications infrastructure.
- **Lack of Reliable Network:** 48% lack reliable communication, complicating healthcare access in hard-to-reach areas.

Accessibility-Improving Measures

- **Mobile Health Units:** 89% prefer mobile health units, emphasizing the need for healthcare services to reach remote areas.
- **Improved Transportation:** 81% favor better transportation, underscoring the critical impact of transport issues on healthcare access.
- **More Healthcare Facilities:** 41% agree on establishing more healthcare facilities to enhance access to health services.
- **Awareness and Education:** 37% highlight the importance of raising awareness and education in improving healthcare utilization.
- **Financial Support:** Only 11% prioritize financial support, indicating that economic issues are less critical compared to logistical and infrastructural barriers.

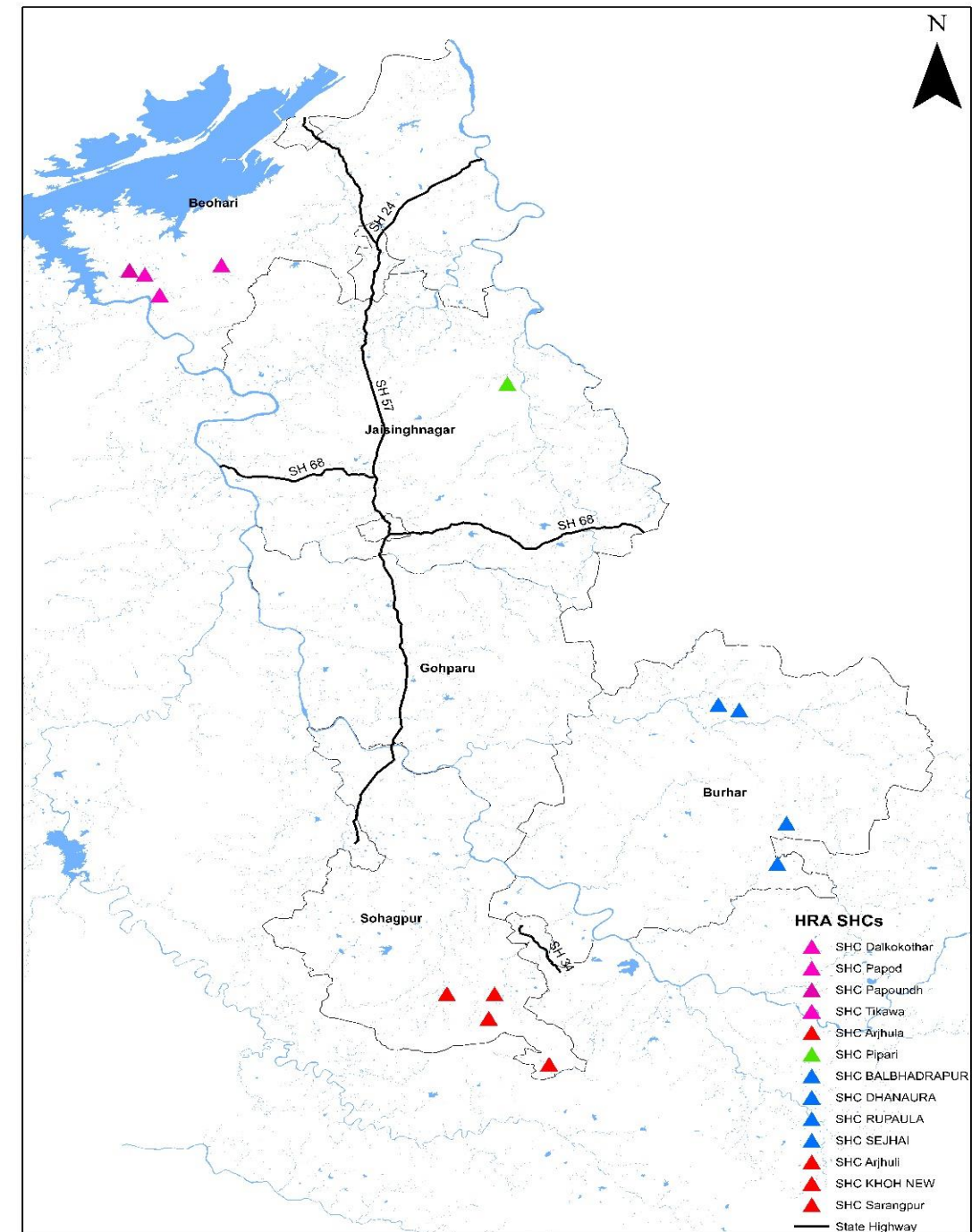
HRA Area

•



RESULT

- 78% of total births are home deliveries
- 70% lack transport facilities
- 52% find health institutions too far
- The chi-square test confirms a strong association between delivery location and reasons
- A major chunk of home deliveries occur in SHCs in HRAs of all four blocks
- Higher neonatal mortality in HRAs with 10 deaths
- 97% of neonatal mortality cases are from Scheduled Tribes
- 89% of antenatal care visits report no transport
- 81% report increased difficulty during the rainy season
- **Major accessibility issues:** lack of transportation and roads, geographical isolation by jungles and rivers
- Rainy season blocks roads due to muddy paths and lack of bridges
- Communication network issues hinder contact in some villages
- GIS mapping shows most HRAs far from state highway
- Beohari HRA near Bansagar Dam faces natural hazard from river
- Need for alternative routes and targeted interventions due to geographical and infrastructural challenges



CONCLUSION

The research in Shahdol District, Madhya Pradesh, highlights the significant impact of healthcare accessibility on maternal and child health outcomes in Hard-to-Reach Areas (HRAs).

The study confirmed that limited access to health services increases health risks for mothers and newborns, with HRAs exhibiting higher rates of neonatal mortality and home deliveries due to transportation barriers.

This underscores the need for a broader definition of HRAs that encompasses various structural barriers. Seasonal variations further exacerbate these challenges, highlighting inequities in healthcare access. These findings emphasize the importance of targeted interventions to improve healthcare access and outcomes in HRAs.



RECOMMENDATIONS

Improve Maternal and Child Health in HRA

Redefining Hard-to-Reach Areas

- Hard-to-reach areas are defined as villages or hamlets where the beneficiaries find difficulties in accessing healthcare services due to various structural barriers

Better Transport Solutions

- Establish a community-based emergency transport system for pregnant women and newborns in collaboration with local village committees.

Improving Accessibility to Healthcare in HRAs

- Operationalize Mobile Health Units to conduct regular health camps focusing on antenatal and postnatal care.
- Set up temporary residential facilities near healthcare hubs for pregnant women from HRAs to stay close to the health system before delivery.

Enhancing Community Participation

- Conduct targeted awareness campaigns on the importance of institutional deliveries and early antenatal care.
- Train local women as community health ambassadors to provide peer support and education.
- Utilize local communication channels to disseminate health information and overcome cultural barriers.

Infrastructure Development in Health Organization

- Establish well-equipped PHCs/CHCs in accessible locations to serve HRAs.
- Maintain and rebuild roads and river crossings to ensure year-round access to health facilities.
- Implement telemedicine



THANKYOU