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# Rural–Urban Disparities in Maternal Health: A Geographical Assessment of Rajasthan

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**Abstract:** ***Maternal health remains a key indicator of regional development and public health status. Rajasthan, with its diverse geographical and socio-cultural landscape, experiences pronounced rural–urban disparities in maternal healthcare access, utilization, and maternal outcomes. This study examines the geographical patterns of maternal health indicators—including antenatal care, institutional delivery, skilled birth attendance, maternal mortality, and postnatal care—in selected urban centres (Jaipur, Udaipur, Jodhpur, Kota, Ajmer) and rural–tribal districts (Baran, Pratapgarh, Dungarpur, Karauli, Jalore). Using secondary data (2006–2017), field surveys, interviews with ASHA workers, and spatial analysis, the study highlights significant disparities in health infrastructure, socio-economic status, cultural norms, and geographic accessibility. The results indicate that while urban areas show high institutional delivery rates (85–95%), rural–tribal regions lag behind (45–65%), leading to higher maternal mortality. Clusters of poor maternal health in tribal belts and desert margins. The study underscores the importance of improving transportation, health facility density, and women's education for reducing maternal health inequality.***

**Keywords: Maternal health, Rural–urban disparities, Rajasthan, Medical geography, Antenatal care, GIS mapping, Institutional delivery, Maternal mortality.**

## 1.1 Introduction

Maternal health is an essential dimension of public health and human development. Indicators such as antenatal care coverage, institutional delivery, maternal morbidity, and maternal mortality reflect the effectiveness of a region's healthcare system. Rajasthan, despite recent improvements, continues to experience wide inequalities between urban and rural populations.

Urban districts such as Jaipur, Jodhpur, Kota, and Ajmer have advanced medical infrastructure and educational attainment, whereas rural and tribal districts—Dungarpur, Jalore, Baran, Pratapgarh, Karauli—face constraints including poor transportation, socio-cultural restrictions, poverty, and low literacy rates among women.

Medical geography offers an analytical framework to study how geographical factors, including accessibility, terrain, population distribution, and socio-economic structure, shape the spatial patterns of maternal health.

This research provides an in-depth assessment of the disparities between rural and urban Rajasthan, highlighting geographical determinants, spatial variations, and policy gaps.

## 1.2 Objectives

1. To analyze rural–urban disparities in maternal health indicators across Rajasthan.

2. To examine the spatial distribution of antenatal care, institutional delivery, and maternal mortality.

3. To identify geographical and socio-economic determinants of maternal health inequality.

4. To map maternal health outcomes using GIS techniques.

5. To propose region-specific policy interventions to reduce disparities.

## 1.3 Methodology

**I. Data Sources**

1. Secondary Data

2. NFHS-3 (2005–06)

3. NFHS-4 (2015–16)

4. District Health Society reports (2006–2017)

5. HMIS maternal health datasets

**II. Primary Data**

1. 500 household surveys (300 rural, 200 urban)

2. Interviews with ASHA, ANM, and PHC medical officers

3. Field visits to tribal villages, CHCs, and district hospitals

**III. Sampling Framework**

1. Multi-stage stratified sampling

2. Urban: Jaipur, Udaipur, Jodhpur, Ajmer, Kota

3. Rural/Tribal: Baran, Karauli, Jalore, Sirohi, Pratapgarh, Dungarpur

**IV. Tools and Techniques**

1. Spatial clustering

2. Accessibility analysis using road-distance buffers

3. Simple statistical analysis

**V. Maternal Health Parameters Studied**

1. Antenatal care
2. Institutional delivery
3. Skilled Birth Attendance
4. Maternal mortality ratio
5. Postnatal care
6. Anaemia prevalence among pregnant women

## 1.4 Study Area

Rajasthan, the largest state of India situated in the north-western part of the Indian union is largely and arid state for most of its part. The Tropic of Cancer passes through south of Banswara town. Presenting an irregular rhomboid shape, the state has a maximum length of 869 km. from west to east and 826 km. from north to south. The western boundary of the state is part of the Indo-Pak international boundary, running to an extent of 1,070 km. It touches four main districts of the region, namely, Barmer, Jaisalmer, Bikaner and Ganganagar. The state is girdled by Punjab and Haryana states in the north, Uttar Pradesh in the east, Madhya Pradesh in south east and Gujarat in the south west.

Rajasthan which consisted of 19 princely states, the centrally administered province of Ajmer-Merwara, and 3 principalities in the times of the British rule, was formerly known as Rajputana-the land of Rajputs, whose chivalry and heroism has been celebrated in the legendary tales from times immemorial. The. formation of Rajasthan state in its present form started in 1948 when the states Reorganization Commission reconstited the various provinces.

It was on 18th March 1948, that the feudal states of Alwar, Bharatpur, Dhaulpur and Karauli were merged to form the "Matsya Union", the confederation having its capital at Alwar. Only about a week later, on 25th March 1948, other ten states viz. Banswara, Bundi, Dungarpur, Kishangarh, Kushalgarh, Kota, Jhalawar, Pratapgarh, Shahpura and Tonk formed another union of states called "Eastern Rajasthan" with its separate capital at Kota. On the April 18th 1948, Udaipur state also joined this federation which was renamed as Union of Rajasthan. About a year later, on March 30th 1949, the other major states of Rajputana viz. Bikaner, Jaipur, Jodhpur and Jaisalmer also joined the federation. The Matsya Union was also merged with the larger federation and the combined political complex, under the name of Greater Rajasthan, came into existence with Jaipur as the capital. On January 26th 1950, Sirohi state too joined this federation which was thereafter named as Rajasthan. The centrally administefred area of Ajmer Merwara was merged with Rajasthan on November 1 th 1956, when the recommendations of the State Reorganization Commission were accepted, and the new state of India came into existence.

The rich wealth of non-renewable resources is yet to be explored and exploited. Their judicious exploitation can make the state economically self-sufficient. At the same time, renewable resources like solar power, wind and water can also be harnessed effectively to serve man's needs.

## 1.5 Observations

**I. Antenatal Care**

| Region | Antenatal Care (at least 1 visit) | Antenatal Care (4+ visits) |
|---|---|---|
| Urban | 90–97% | 65–78% |
| Rural | 65–80% | 25–42% |
| Tribal (Dungarpur–Pratapgarh) | 50–68% | 18–30% |

**II. Institutional Delivery**

1. Urban districts: 85–95%
2. Rural districts: 55–70%
3. Tribal belts: 40–55%

**III. Maternal Mortality Ratio (MMR)**

1. Urban areas: 120–150 per 100,000 live births
2. Rural areas: 200–230
3. Tribal belts: 250–300+

**IV. Sociocultural Factors**

1. High preference for home births in tribal belts
2. Restrictions on women's mobility
3. Poor awareness of complications
4. Early marriage prevalent in rural Rajasthan

**V. Geographic Accessibility**

1. Many villages > 8–15 km from nearest PHC/CHC
2. Hilly terrains in Pratapgarh and Dungarpur reduce transportation speed
3. Desert terrain restricts night transportation during emergencies

**VI. Hotspots Identified**

1. Poor maternal health clusters:
2. Dungarpur–Pratapgarh hills
3. Karauli–Sawai Madhopur plateau
4. Jalore–Barmer rural margins

**VII. High-performing regions:**

1. Jaipur city
2. Ajmer metropolitan area
3. Udaipur urban belt

## 1.6 Discussion

Rural–urban disparities in maternal health in Rajasthan are shaped by a combination of geographical, cultural, and infrastructural factors. Urban districts benefit from dense medical facilities, better roads, higher literacy, and social awareness. Meanwhile, rural–tribal belts lack transportation, suffer from poverty, and maintain conservative cultural norms discouraging institutional delivery.

**Terrain plays a critical role:**

**1. Hilly tribal areas:** Difficult to reach healthcare services, delaying maternal emergency care.

**2. Desert margins:** Long travel distances, fewer trained birth attendants.

**3. Socio-economic factors** (income, education, caste dynamics) further reinforce disparities. The higher prevalence of anaemia in rural women also contributes to adverse maternal outcomes.

The study's spatial analysis highlights that districts with low female literacy and poor health infrastructure density also exhibit high maternal mortality.

## 1.7 Results

1. Rural–urban gap in institutional delivery ranges from 20–45 percentage points.

2. Maternal mortality is 1.5–2 times higher in rural–tribal areas than in urban Rajasthan.

3. ANC 4+ visits show the sharpest disparity (urban: 65–78%; tribal: 18–30%).

4. GIS mapping identified 19 clusters of high maternal vulnerability.

5. Key determinants: literacy, road connectivity, hospital density, cultural norms.

6. Tribes (Bhil, Meena, Garasia) show lowest maternal health indicators.

## 1.8 Conclusion

The study concludes that maternal health in Rajasthan is profoundly shaped by geographical disparities. Urban areas enjoy advanced medical facilities and higher utilization rates, while rural and tribal districts face systemic barriers, including poor transportation, low awareness, and inadequate health infrastructure.

The findings confirm that improving maternal health requires region-specific approaches that incorporate geographical realities, socio-cultural dynamics, and infrastructural deficits.

## 1.9 Recommendations

1. Strengthen rural healthcare infrastructure, focusing on tribal belts.

2. Mobile maternal health units for remote villages.

3. Women's education and empowerment programs to encourage ANC/PNC.

4. Upgrade road connectivity in hilly and desert areas.

5. 24×7 emergency obstetric care at strategically located CHCs.

6. Increased ASHA/ANM training in high-risk districts.

7. Culturally sensitive maternal health counselling for tribal communities.

8. Maternal health monitoring system for identifying high-risk zones.

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