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A Regional Analysis of Fertility and Mortality Patterns in Bilaspur Division of Chhattisgarh State

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Abstract: Understanding regional demographic patterns is essential for effective development planning, especially in regions characterized by socio-economic diversity, cultural heterogeneity, and uneven healthcare access. The Bilaspur Division of Chhattisgarh—comprising Bilaspur, Korba, Raigarh, Janjgir-Champa, Mungeli, and Gaurela-Pendra-Marwahi (GPM)—presents significant spatial disparities in fertility and mortality outcomes. This study provides a comprehensive analysis of fertility indicators such as Total Fertility Rate (TFR), Crude Birth Rate (CBR), General Fertility Rate (GFR), and Adolescent Fertility Rate (AFR), alongside mortality parameters including Infant Mortality Rate (IMR), Under-5 Mortality Rate (U5MR), Crude Death Rate (CDR), and Maternal Mortality Rate (MMR). Using secondary data and comparative district-wise evaluation, the study identifies a clear demographic gradient ranging from low fertility and low mortality in Bilaspur to high fertility and high mortality in GPM and Mungeli. These differences are deeply shaped by socio-economic conditions, women's literacy levels, healthcare infrastructure, cultural norms, and geographic accessibility. The study highlights the urgent need for district-specific health interventions, educational investments, and strengthened maternal-child health programs. The findings contribute to regional population studies and offer insights for designing targeted policies to reduce fertility and mortality inequalities in the Bilaspur Division.

Introduction - Demographic behaviour, particularly fertility and mortality patterns, serves as a key indicator of a region's socio-economic wellbeing and level of development. Fertility reflects reproductive preferences and family norms, while mortality highlights the health conditions and healthcare accessibility of a population. Regional analysis of these indicators helps identify disparities, understand underlying determinants, and guide the formulation of targeted public policies. The Bilaspur Division of Chhattisgarh is one such region where economic contrasts, cultural diversities, and infrastructural imbalances significantly influence demographic outcomes.

Chhattisgarh, a predominantly tribal state, exhibits wide inter-regional variations in demographic indicators. The Bilaspur Division, consisting of six districts, represents a complex demographic landscape that includes urban centres like Bilaspur, industrial belts such as Korba and Raigarh, and predominantly rural-tribal districts like GPM and Mungeli. These districts differ in development indicators such as literacy, health infrastructure, economic opportunities, and women's empowerment. Consequently, fertility and mortality patterns differ significantly across the division.

As India advances through its demographic transition, regional variations continue to pose challenges for achieving uniform reproductive health outcomes and population stabilization. With disparities in healthcare infrastructure, family planning adoption, antenatal care, maternal nutrition, and socio-cultural norms, understanding district-level fertility and mortality patterns becomes crucial. This research aims to provide an in-depth analysis of these patterns in the Bilaspur Division, contributing to the broader discourse on population, health, and regional development.

Objectives:-

1. To analyze district-wise fertility indicators such as TFR, CBR, GFR, and AFR in the Bilaspur Division.
2. To examine spatial variations in mortality indicators including IMR, U5MR, CDR, and MMR across six districts.
3. To identify socio-economic, cultural, and infrastructural determinants influencing fertility and mortality differences.
4. To compare demographic performance across districts and categorize them based on demographic transition levels.
5. To propose district-specific policy measures aimed at reducing fertility and mortality disparities in the region.

Methodology: This study employs a descriptive and analytical research design rooted in secondary data evaluation and socio-spatial interpretation.

Data Sources: The analysis is based on data from:

1. National Family Health Survey (NFHS-5)

2. Sample Registration System (SRS)
3. District-level health records
4. Government of Chhattisgarh health reports
5. Researcher's field observations and literature reviews

Indicators Studied

Fertility indicators:

1. Total Fertility Rate (TFR)
2. Crude Birth Rate (CBR)
3. General Fertility Rate (GFR)
4. Adolescent Fertility Rate (AFR)

Mortality indicators:

1. Infant Mortality Rate (IMR)
2. Under-5 Mortality Rate (U5MR)
3. Crude Death Rate (CDR)
4. Maternal Mortality Rate (MMR)

Analytical Approach:

1. District-wise comparative analysis
2. Spatial interpretation linking demographic outcomes with socio-economic characteristics
3. Examination of tribal vs. non-tribal demographic behaviour
4. Qualitative interpretation of determinants such as education, healthcare access, cultural norms, and economic conditions

Study Area Description: The Bilaspur Division is located in central Chhattisgarh and includes six districts:

1. Bilaspur – urbanized, educational hub, best healthcare facilities

2. Korba – industrial district with mixed tribal-nontribal population

3. Raigarh – industrial–agricultural district with moderate health indicators

4. Janjgir-Champa – agrarian region with improving health and education

5. Mungeli – largely rural, dependent on subsistence agriculture

6. Gaurela-Pendra-Marwahi (GPM) – predominantly tribal, forested, geographically isolated

The region experiences significant variation in economic activities, literacy rates, health infrastructure, and cultural practices—all of which influence fertility and mortality patterns.

Results and Discussion

Fertility Patterns: The fertility scenario of Bilaspur Division reveals substantial inter-district variation. Bilaspur, the most urbanized district, has the **lowest TFR**, indicating a shift toward small-family norms. High female literacy, better employment opportunities for women, and greater access to contraceptive methods contribute to declining fertility. The prevalence of nuclear families, rising cost of living, and modern reproductive choices further reinforce this trend.

Janjgir-Champa displays moderately low fertility due to agricultural prosperity, higher income stability, and improved maternal healthcare services. Awareness of family planning methods is moderately high, and adolescent fertility shows a declining trend.

Korba and Raigarh exhibit **intermediate fertility levels**, shaped by heterogeneous population structures. While the industrial economy provides employment and exposure to urban practices, tribal and rural pockets retain traditional reproductive norms, leading to a mixed fertility pattern.

Mungeli and GPM reflect **high fertility regions**. These districts are characterized by early marriage practices, limited access to contraception, low female education, limited health awareness, and cultural preference for larger families. GPM, being predominantly tribal, retains strong traditional norms that favour high fertility and early childbearing. Adolescent fertility is significantly higher in these districts, contributing to elevated TFR and GFR.

Mortality Patterns: Mortality indicators exhibit a similarly uneven distribution. Bilaspur records the **lowest IMR, U5MR, CDR, and MMR** in the division. This is attributed to high institutional delivery rates, advanced health infrastructure, qualified medical professionals, and better maternal and child healthcare facilities. Immunization coverage is high, and awareness about nutrition and antenatal care is strong.

Raigarh, Korba, and Janjgir-Champa show moderate mortality levels. Despite industrial development in Raigarh and Korba, health disparities persist due to occupational hazards, pollution, uneven distribution of healthcare, and neglected tribal areas. Janjgir-Champa performs slightly better due to ongoing improvements in rural health services and child care programs.

Mungeli and GPM exhibit the **highest mortality rates**, indicating significant public health challenges. Infant mortality is high due to malnutrition, inadequate immunization, poor sanitation, and delayed medical care. Maternal mortality remains high due to lack of emergency obstetric services, limited antenatal care, and poor transportation. GPM faces geographical isolation, low awareness about maternal health, and socio-economic marginalization, leading to severe mortality burdens.

Conclusion: The study highlights significant demographic disparities across the Bilaspur Division. Bilaspur district demonstrates advanced demographic transition with low fertility and low mortality, while Mungeli and GPM remain caught in the high fertility–high mortality trap. Korba, Raigarh, and Janjgir-Champa occupy intermediate positions, indicating gradual progress yet persistent gaps. Fertility and mortality outcomes are closely linked with educational attainment, female autonomy, healthcare access, economic status, and cultural norms. The findings underline the need for targeted and district-specific interventions to improve reproductive and child health outcomes across the division.

Policy Suggestions:

1. Strengthen Health Infrastructure in GPM and Mungeli by establishing fully equipped CHCs, maternity

wards, and mobile health units.

2. **Promote female education**, especially in tribal areas, to reduce early marriages and increase contraceptive adoption.
3. **Enhance family planning services** through door-to-door counselling, ASHA worker training, and availability of modern contraceptives.
4. **Improve maternal healthcare** by ensuring regular antenatal check-ups, nutrition programmes, emergency obstetric care, and transport support.
5. **Reduce adolescent fertility** through school-based awareness programmes and reproductive health education.
6. **Expand immunization and nutrition programmes** to reduce child mortality in Mungeli and GPM.
7. **Address socio-cultural barriers** by involving local tribal leaders and community groups in health campaigns.
8. **Develop district-specific demographic policies** recognizing unique cultural, economic, and geographic characteristics.

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