

Growth & Changes in Population and Sex Ratio in Munger District, Bihar, India.

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Abstract

This study examines the growth and changes in population and sex ratio in Munger District, Bihar, using Census data from 2001 and 2011. The analysis focuses on variations in total population, male & female composition, decadal growth rate, and overall sex ratio. Results show that the district experienced moderate population growth during the decade, although the pace of increase has started to slow, indicating a gradual demographic transition. The overall sex ratio exhibited slight improvement, suggesting marginal progress toward gender balance, whereas the child sex ratio showed fluctuations that reflect ongoing socio-cultural preferences and differential care practices. Changes in literacy levels, urbanisation, and migration patterns also influenced demographic outcomes. The study highlights the need for targeted interventions in maternal and child health, women's education, and gender sensitisation to promote balanced demographic development in Munger District. Findings provide useful insights for regional planning and policy formulation.

Keywords: Population Growth, Gender Balance, Demographic Development, Decadal Growth Rate.

1. INTRODUCTION

Population dynamics are crucial for socio-economic planning and sustainable development, particularly in developing regions such as Eastern India. Understanding population growth and sex ratio trends helps analyse fertility, mortality, migration, and socio-cultural conditions. At the district level, such studies are vital because districts serve as key administrative units for planning and monitoring development. Munger district in south-eastern Bihar has experienced notable demographic changes over recent decades. The Census years 2001 and 2011 provide important benchmarks for assessing these shifts, which reflect improvements in literacy, infrastructure, and awareness of gender issues. Studying population growth and sex ratio trends during this period is essential for understanding the district's demographic trajectory. While population growth indicates natural increase and migration, the sex ratio highlights gender relations, health conditions, and cultural preferences. Changes in the child sex ratio further reveal gender bias and differences in early childhood care. Although demographic studies exist for Bihar, limited research specifically examines Munger. This study fills that gap by analysing population growth, male-female distribution, and changes in overall and child sex ratios, offering insights for evidence-based planning and gender-sensitive policy formulation.

2. LITERATURE REVIEW

The study of population growth and sex ratio has long been central to understanding regional demographic transitions and their socio-economic implications. A substantial body of literature provides insights into structural changes, spatial variations, and determinants of demographic behaviour. **Baliyan (2016)** examines structural changes and population growth trends in Uttar Pradesh, noting that although the primary sector's contribution to state income has declined to 41 per cent, it still supports nearly 73 per cent of the working population, highlighting the demographic economic imbalance in populous states. At the state level, **Dilshi et al. (2017)** analyse decennial census data for Bihar and report a declining sex ratio, interpreting it as evidence of the low status of women and the unequal gender roles that persist across the state. Extending the analysis to Bihar, **Imam (2020)** investigates spatio-temporal variations in population growth and sex ratio across districts of South Bihar, including Munger, using Karl Pearson's correlation to identify inter-district demographic disparities. **Singh (2020)** evaluates population growth dynamics in Sheohar district and argues that changes in population structure significantly affect the socio-economic framework, emphasising that human resources, unlike physical resources, are unevenly distributed and not uniformly productive across regions. Further, **Imam (2021)** explores the relationship between female literacy and child sex ratio in Bihar, showing that despite an increase in overall literacy (from 47.53% in 2001 to 61.80% in 2011) and female literacy (from 33.12% to 51.50%), both the sex ratio and child sex ratio declined during the same period, reflecting persistent gender bias. **Yadav and Singh (2023)** argue that understanding population dynamics requires analysis of total population, density, sex ratio, literacy, caste composition and workforce participation, as demonstrated in their study of Gorakhpur district. **Kumari (2024)**, in an empirical study of Ranchi district, analyses the distribution and change in sex structure using secondary data, reinforcing that demographic characteristics are neither evenly distributed nor universally beneficial for socio-economic development. Similarly,

3. STUDY AREA

Munger district, located in the southeastern part of Bihar within the historic Anga region, extends over 1,419 sq. km between 24°22'– 25°30' N latitude and 86°47'– 87°30' E longitude. It is bordered by Khagaria and Begusarai in the north, Bhagalpur in the east, and Lakhisarai in the west, with the Ganga River shaping its agriculture and settlements. Administratively, it includes blocks such as Munger Sadar, Jamalpur, Dharhara, Bariarpur, Tarapur, Tetiha Bambor, and Kharagpur. The district's mixed rural–urban character, rising literacy, infrastructural growth, and shifting livelihoods have significantly influenced its population distribution and sex ratio trends.

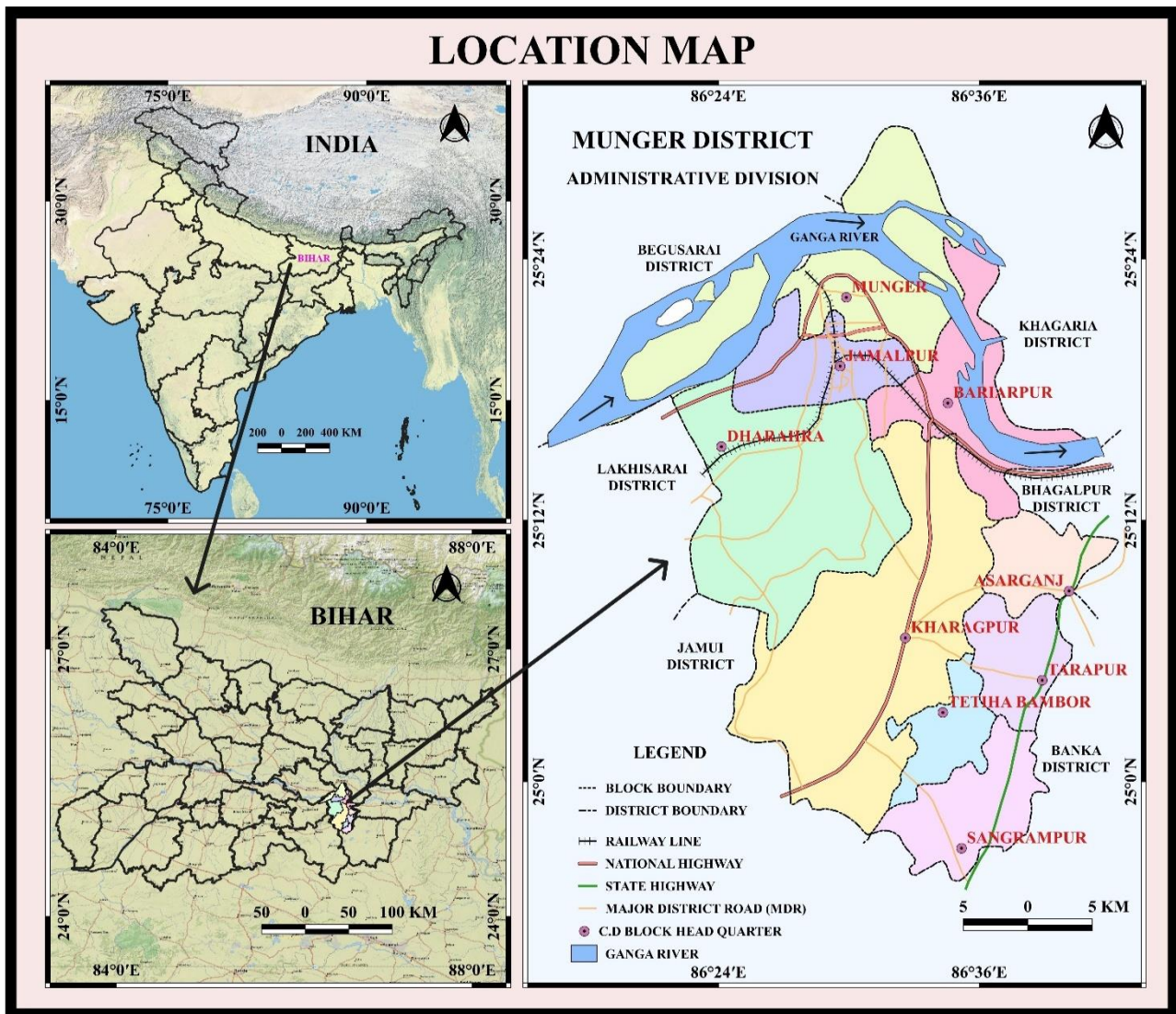


Figure 1: Location Map of the Study Area

4. OBJECTIVES

The specific objective of this research paper:

- To analyse the growth of the population in Munger district between 2001 and 2011.
- To evaluate the block-wise changes in the sex ratio from 2001 and 2011.
- To compare changes in population growth and sex ratio within Munger district.

5. DATA SOURCES AND METHODOLOGY

The study is based on secondary data collected from the Census of India (2001 and 2011) and the District Census Handbook of Munger. These sources provide information on the total population and male-female distribution. MS Excel was used for tabulation, calculation of decadal growth rates, sex ratios, and preparation of charts. Geographic analysis and spatial representation of demographic patterns, such as block-wise population and sex ratio variations, were carried out using QGIS. A comparative analytical approach was adopted to examine changes between 2001 and 2011, supported by descriptive statistics and mapping techniques.

6. RESULT AND DISCUSSION

1. The Growth of the Population in Munger District Between 2001 and 2011

The population data of Munger district between 2001 and 2011, given in Table 1, reveal significant spatial variations in demographic expansion across its nine administrative blocks. At the district level, the population increased from 11,37,797 in 2001 to 13,67,765 in 2011, marking an overall decadal growth rate of 20.2%, which is consistent with broader demographic trends in rural Bihar. However, the block-wise distribution shows notable differences influenced by fertility patterns, migration flows, and levels of socio-economic development. The fastest population growth occurred in Tetiha Bambor (32.2%), followed closely by Tarapur (30.1%), Dharhara (26.6%), and Asarganj (25.0%). These predominantly rural blocks may be experiencing higher fertility rates, limited access to family planning services, and sustained natural population increase. Their rapid growth may also reflect improvements in basic amenities and a greater reliance on agriculture-based livelihoods, which traditionally encourage larger household sizes. Blocks like Sangrampur (24.5%) also show substantial demographic expansion, suggesting similar socio-economic patterns. Moderate population growth is observed in Bariarpur (18.3%), Kharagpur (17.0%), and Munger Sadar (16.7%), indicating a relatively slower pace of increase compared to rural interiors. Munger Sadar, being the administrative and partially urbanised centre, typically experiences lower fertility levels due to better healthcare access, more widespread family planning, and changing social attitudes associated with urban lifestyles. Jamalpur (14.6%) recorded the lowest growth rate among all blocks, which may be attributed to higher urbanisation, out-migration for employment, and relatively stable natural growth. Overall, the data highlight two broad demographic patterns: rural blocks are expanding more rapidly, while urban and semi-urban blocks show slower, stabilising population growth. This divergence indicates uneven demographic transition within the district. The rapid growth in rural blocks may place additional pressure on resources, infrastructure, healthcare, and agricultural land, whereas in more urbanised areas, the demographic trend points toward gradual stabilisation. The block-wise differences underscore the need for customised development strategies tailored to local population dynamics.

Table 1: Population & Growth Rate of Munger District (2001- 2011)

Sl. No.	Blocks	Population		Growth (%)
		2001	2011	
1.	Munger	297741	347392	16.7
2.	Bariarpur	92406	109359	18.3
3.	Jamalpur	181751	208330	14.6
4.	Dharhara	104037	131753	26.6
5.	Kharagpur	181409	212305	17.0
6.	Asarganj	59507	74380	25.0
7.	Tarapur	84649	110214	30.1
8.	Tetiha Bambor	57734	76303	32.2
9.	Sangrampur	78518	97729	24.5
District Total		1137797	1367765	20.2

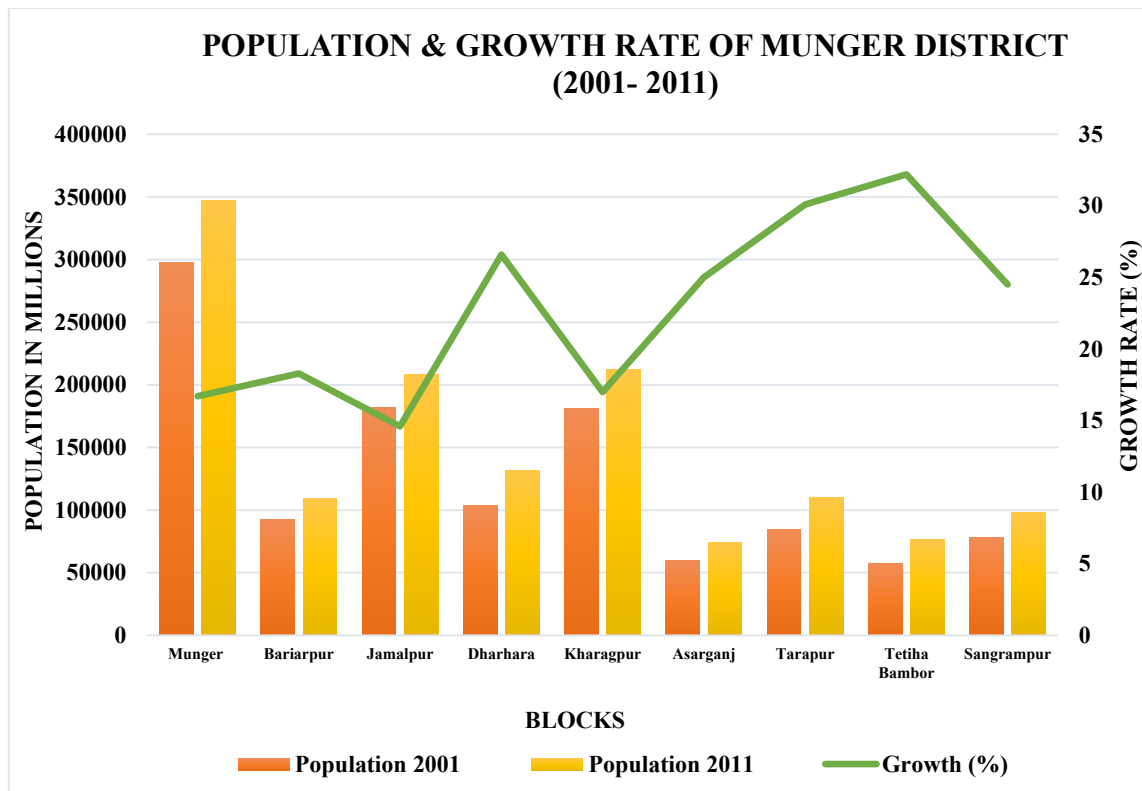


Figure 2: Population & Growth Rate of Munger District (2001- 2011)

Sources: Census Handbook of Munger District (2001 & 2011)

2. Block-Wise Changes in the Sex Ratio (2001-2011)

The analysis of sex ratio across the blocks of Munger district between 2001 and 2011, as shown in Table 2, reveals a varied and uneven pattern of demographic change, reflecting differences in gender balance and socio-cultural conditions within the district. At the district level, the sex ratio increased slightly from 872 to 876 females per 1,000 males, indicating only marginal improvement over the decade. However, a closer examination of block-wise trends shows considerable variation. Munger block recorded the highest increase of 2.1%, followed by Tetia Bambor with a rise of 1.39%, suggesting improvements in female survival rates, better healthcare access, and possibly changing attitudes toward gender equity. Smaller yet positive gains in Kharagpur (0.34%), Jamalpur (0.34%), and Bariarpur (0.23%) indicate gradual progress, although the pace of improvement remains slow.

Conversely, several blocks experienced a decline in sex ratio, highlighting areas where gender disparities persist. Asarganj registered the sharpest decline at -1.58%, followed by Dharhara (-1.36%), Sangrampur (-0.79%), and Tarapur (-0.67%). These reductions may stem from entrenched socio-cultural preferences for sons, unequal access to maternal and child healthcare, or gender-differentiated migration patterns. The decline also points to the possibility of higher female infant mortality or discriminatory practices affecting female survival in early life. Overall, the mixed pattern of improvement and deterioration across blocks underscores a heterogeneous demographic landscape in Munger district. It suggests that while some areas are moving toward better gender balance, others lag, necessitating targeted, block-specific interventions to address the underlying causes of gender inequality. Comprehensive efforts in health services, gender sensitisation, and women’s empowerment are essential to ensure balanced demographic development across the district.

Table 2: Block-wise changes in Sex Ratio of Munger district (2001-2011)

Sl. No.	Blocks	Sex- Ratio		Changes (%)
		2001	2011	
1.	Munger	859	877	2.1
2.	Bariarpur	861	863	0.23
3.	Jamalpur	874	877	0.34
4.	Dharhara	881	869	-1.36
5.	Kharagpur	877	880	0.34
6.	Asarganj	885	871	-1.58
7.	Tarapur	894	888	-0.67
8.	Tetiha Bambor	863	875	1.39
9.	Sangrampur	883	876	-0.79
District Total		872	876	0.46

Sources: Census Handbook of Munger District (2001 & 2011)

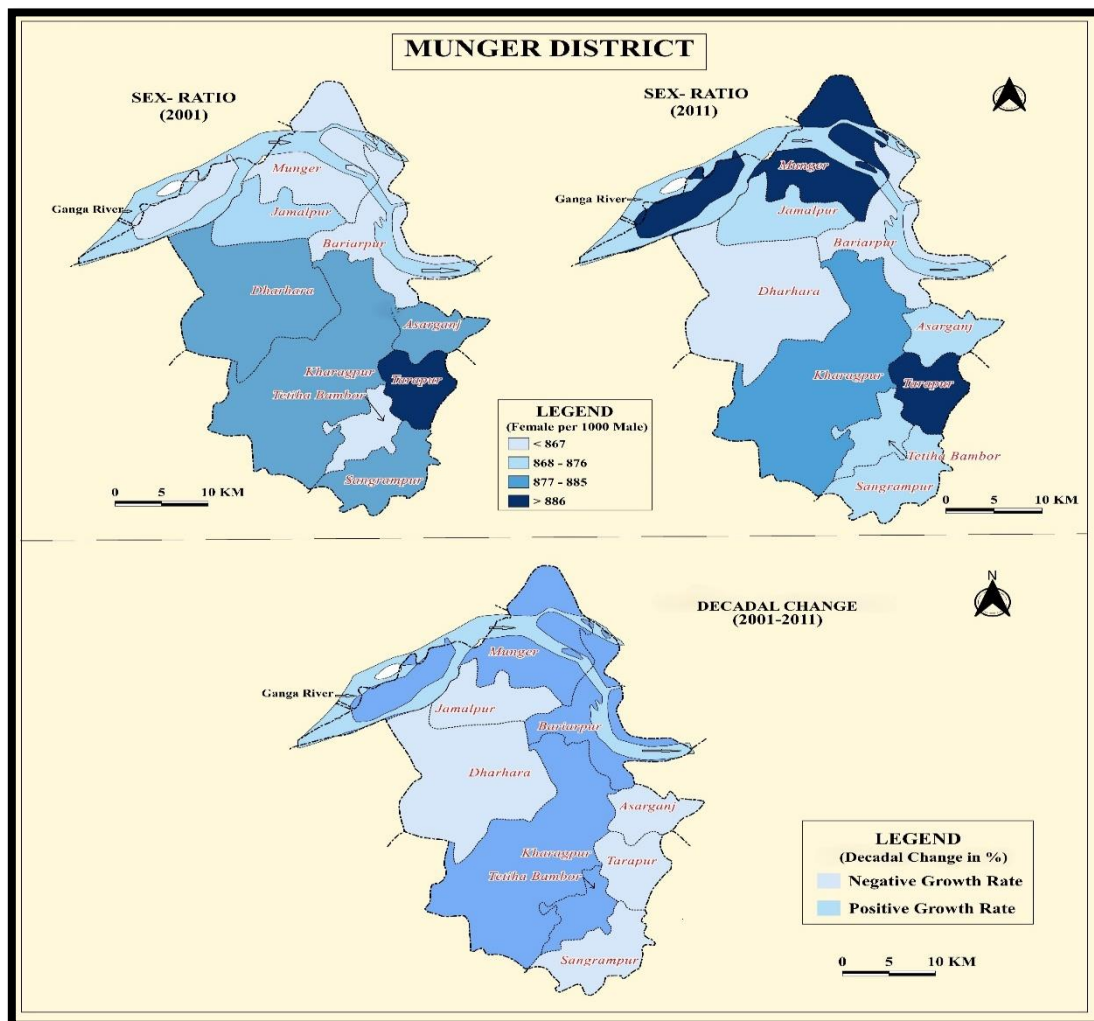


Figure 2: Map of Sex Ratio of Munger District (2001-2011)

3. Changes In Population Growth and Sex Ratio in Munger District

The demographic profile of Munger district during 2001–2011 exhibits considerable variations in both population growth and sex ratio across its blocks. At the district level, the population increased from 11.37 lakh to 13.67 lakh, registering a growth of 20.2%, while the sex ratio improved marginally from 872 to 876, an increase of 0.46%. However, the block-level patterns reveal a more diverse and uneven demographic transition. Population growth was highest in Tetia Bambor (32.2%), Tarapur (30.1%), Dharhara (26.6%), and Asarganj (25%), indicating rapid demographic expansion in predominantly rural blocks. These areas may be experiencing higher fertility rates, natural population increase, and possibly lower out-migration. Moderate growth was observed in Sangrampur (24.5%), whereas relatively lower increases occurred in more urban or semi-urban blocks such as Munger (16.7%), Jamalpur (14.6%), and Kharagpur (17%). The pattern suggests that rural blocks are expanding faster, while urban areas show slower but stable growth due to limited land availability, higher urban density, and controlled migration trends. In contrast, the changes in sex ratio show a mixed pattern of improvement and decline. Blocks such as Munger (2.1%), Tetia Bambor (1.39%), Jamalpur (0.34%), Kharagpur (0.34%), and Bariarpur (0.23%) recorded an increase in sex ratio, reflecting better gender balance, improved female survival, and possibly enhanced health facilities. However, several blocks witnessed a decline: Asarganj (-1.58%), Dharhara (-1.36%), Sangrampur (-0.79%), and Tarapur (-0.67%), indicating persistent gender disparities, socio-cultural preferences, or differential migration patterns that disadvantage females. Overall, the comparative analysis reveals that population growth in the Munger district is increasing rapidly in rural blocks, while the sex ratio shows inconsistent progress across the region. The coexistence of high population growth and a declining sex ratio in certain blocks points to underlying socio-economic challenges that require targeted policy attention. This combined assessment of population and gender distribution effectively captures the diverse demographic dynamics that have shaped the Munger district over the past decade.

Table 3: Block-wise Population Growth and Sex Ratio Change (2001–2011)

Sl. No.	Blocks	Population (2001)	Population (2011)	Population Growth (%)	Sex Ratio (2001)	Sex Ratio (2011)	Change in Sex Ratio (%)
1.	Munger	297,741	347,392	16.7	859	877	2.10
2.	Bariarpur	92,406	109,359	18.3	861	863	0.23
3.	Jamalpur	181,751	208,330	14.6	874	877	0.34
4.	Dharhara	104,037	131,753	26.6	881	869	-1.36
5.	Kharagpur	181,409	212,305	17.0	877	880	0.34
6.	Asarganj	59,507	74,380	25.0	885	871	-1.58
7.	Tarapur	84,649	110,214	30.1	894	888	-0.67
8.	Tetiha Bambor	57,734	76,303	32.2	863	875	1.39
9.	Sangrampur	78,518	97,729	24.5	883	876	-0.79
District Total		1,137,797	1,367,765	20.2	872	876	0.46

Sources: Compiled by Author

7. SUGGESTIONS & RECOMMENDATIONS

Based on the demographic trends observed in Munger district between 2001 and 2011, several steps are necessary to strengthen development planning and improve gender balance. Blocks experiencing a decline in sex ratio, such as Asarganj, Dharhara, Sangrampur and Tarapur, require targeted interventions to enhance maternal and child health through improved antenatal care, nutritional support for expectant mothers, and awareness programmes that reduce gender-based disparities. Promoting women's education and vocational training is equally vital, as higher literacy strengthens women's decision-making power and contributes to favourable demographic outcomes. Community-level gender sensitisation initiatives, including behaviour change communication and school-based awareness campaigns, are essential to challenge persistent son preference. Rapid population growth in rural blocks like Tetiha Bambor, Tarapur, Dharhara and Asarganj further highlights the need for decentralised monitoring, strengthened family planning services, and improved outreach. Investment in rural infrastructure, particularly healthcare, sanitation and education, can help reduce spatial inequalities and promote equitable development. Policy efforts should adopt block-specific demographic action plans that address varying needs, integrate population indicators into planning processes, and utilise GIS-based monitoring for accurate spatial analysis. Collaboration with local institutions, NGOs and community groups can enhance programme implementation, while expanding employment opportunities for women in agriculture, cottage industries, and services can support gender equity. Regular demographic surveys at five-year intervals are also recommended to generate timely data for informed policy responses.

8. CONCLUSION

The analysis of Census 2001 and 2011 data reveals that Munger district experienced moderate but spatially uneven population growth, with rural blocks such as Tetiha Bambor, Tarapur, and Dharhara registering the highest increases. Urban and semi-urban blocks like Munger and Jamalpur show comparatively slower demographic expansion. Similarly, sex ratio patterns vary widely across blocks, with some areas showing improvement (Munger, Tetiha Bambor) and others experiencing sharp declines (Asarganj, Dharhara). These divergent trends point to underlying socio-economic and cultural factors influencing gender balance. The study underscores that demographic change in Munger is shaped by a combination of literacy improvements, migration trends, economic diversification, and entrenched gender norms. A key outcome of this research is the recognition that a uniform district-wide approach is inadequate; instead, block-specific demographic strategies are essential for promoting balanced and equitable development. The findings contribute valuable insights for policymakers and planners and highlight the need for sustained investments in women's education, healthcare, and gender-sensitive development programmes.

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