

Literacy and Fertility Trends in India Since Independence: An Empirical Study

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Abstract

India has experienced major demographic and social changes since Independence in 1947. Two of the most important indicators reflecting these changes are literacy and fertility. This paper examines the trends in literacy and fertility in India over the post-Independence period using official secondary data from the Census of India, the Sample Registration System (SRS), and various rounds of the National Family Health Survey (NFHS). The study focuses particularly on changes in female literacy and their association with fertility decline. Using descriptive statistics and tabular analysis, the paper observes a steady rise in literacy levels alongside a continuous decline in fertility rates. The findings suggest a clear inverse relationship between female literacy and fertility, indicating that improvements in women's education have played a significant role in shaping reproductive behaviour in India. The study highlights the importance of education, especially female education, as a key factor in India's demographic transition and population stabilization.

Keywords — Literacy, Female Literacy, Fertility Rate, Demographic Transition

INTRODUCTION

Since gaining Independence in 1947, India has undergone profound social, economic, and demographic transformations. At the time of Independence, the country faced widespread poverty, high population growth, low literacy levels, and poor health indicators. According to the Census of India (1951), the overall literacy rate was only 18.3 percent, while fertility levels were extremely high, with women giving birth to an average of more than six children during their reproductive years. These conditions posed serious challenges for economic development, resource allocation, and social welfare.

Literacy and fertility are two closely linked indicators of socio-economic development. Literacy not only reflects access to education but also influences employment opportunities, health awareness, social mobility, and decision-making capacity, particularly among women. Fertility, on the other hand, plays a central role in determining population growth, age structure, and long-term development prospects. High fertility rates, when

combined with low literacy, often result in intergenerational cycles of poverty and underdevelopment.

In the decades following Independence, the Indian state adopted several policy measures aimed at improving educational attainment and controlling population growth. Major initiatives such as the expansion of primary and secondary education, the National Literacy Mission (1988), Sarva Shiksha Abhiyan (2001), and the Right to Education Act (2009) significantly improved access to education across the country. Parallel to these efforts, India implemented one of the earliest national family planning programmes in the world, with increasing emphasis over time on reproductive health, maternal care, and voluntary contraception.

As a result of these interventions, India has witnessed a steady rise in literacy levels and a substantial decline in fertility rates. However, this transition has not been uniform across regions, social groups, or genders. While overall literacy has increased, female literacy has historically lagged behind male literacy. Similarly, fertility decline has

been faster in states with higher levels of female education and slower in states where educational attainment remains low. These disparities suggest a strong link between education—particularly women’s education—and reproductive behaviour.

Existing demographic and sociological literature has widely acknowledged the role of female literacy in fertility decline. Educated women tend to marry later, have better access to health information, participate more actively in household decision-making, and prefer smaller families. In the Indian context, several studies based on National Family Health Survey (NFHS) data have demonstrated that women with higher levels of education have significantly lower fertility rates compared to illiterate women. Despite this, a comprehensive long-term analysis covering the entire post-Independence period using official data remains limited in scope.

The present study seeks to address this gap by examining literacy and fertility trends in India from 1951 onwards, with particular emphasis on female literacy. By using official data from the Census of India, Sample Registration System (SRS), and various rounds of NFHS, the study aims to provide a clear and systematic understanding of how improvements in literacy have influenced fertility behaviour over time. Rather than focusing on short-term changes, the study adopts a long-term perspective to capture India’s broader demographic transition.

Understanding the relationship between literacy and fertility is crucial for policy formulation, especially in the context of population stabilization and sustainable development. Although India has recently reached below-replacement fertility at the national level, significant regional and socio-economic disparities persist. Identifying education as a key determinant of fertility decline can help policymakers design more effective, non-coercive population policies that focus on human development rather than numerical targets.

REVIEW OF LITERATURE

The relationship between literacy and fertility has been widely studied in demographic and socio-economic literature. Classical theories of demographic transition suggest that declines in

fertility are closely associated with improvements in education, health, and overall living standards. One of the earliest explanations was provided by Coale (1973), who argued that fertility decline occurs when individuals perceive the benefits of smaller families and possess the means to control reproduction. Education plays a crucial role in shaping such perceptions and capabilities.

Caldwell (1980) emphasized the importance of female education in fertility reduction, arguing that educated women tend to challenge traditional norms related to early marriage and high fertility. According to Caldwell, education alters the direction of intergenerational wealth flows, making large families less economically beneficial. This perspective has been widely applied in studies of developing countries, including India.

In the Indian context, early studies using Census and Sample Registration System data highlighted the persistence of high fertility despite economic growth, particularly during the 1950s and 1960s. Dyson and Moore (1983) emphasized the role of social institutions, such as gender relations and kinship structures, in shaping fertility behaviour in India. Their study showed that regions with higher female autonomy, which is closely linked to education, exhibited lower fertility rates.

Dreze and Sen (2013) argued that social development indicators, especially education and health, are more influential in reducing fertility than income growth alone. Using state-level data, they demonstrated that Indian states with higher female literacy rates, such as Kerala and Tamil Nadu, achieved replacement-level fertility much earlier than states with low literacy levels like Bihar and Uttar Pradesh. This finding supports the view that literacy acts as a catalyst for demographic change.

Evidence from the National Family Health Survey (NFHS) consistently shows a strong inverse relationship between women’s education and fertility. NFHS-3 and NFHS-4 data reveal that women with secondary or higher education have significantly fewer children compared to illiterate women. These surveys also indicate that educated women tend to marry later, use contraception more effectively, and have better access to maternal healthcare services.

Recent studies based on NFHS-5 data highlight that although India has reached below-replacement fertility at the national level, considerable regional and socio-economic disparities persist. Researchers have pointed out that states with lower female literacy continue to experience relatively higher fertility rates, suggesting that the demographic transition remains incomplete in certain regions.

Despite the extensive literature on fertility decline in India, many studies focus on specific time periods, regions, or survey rounds. There is relatively limited research that provides a long-term post-Independence perspective linking literacy trends with fertility decline using official data sources over several decades. The present study seeks to contribute to this literature by examining literacy and fertility trends in India since Independence, with a particular focus on female literacy, using a comprehensive and historical approach.

Objectives of the Study

- 1 .To analyse the trends in literacy in India since Independence
- 2 .To examine changes in fertility rates over time
- 3 .To study gender differentials in literacy
4. To assess the relationship between female literacy and fertility decline

Data Sources and Methodology

1. Data Sources

The study is based entirely on secondary data collected from :

Census of India (1951–2011)

Sample Registration System (SRS)

National Family Health Survey (NFHS-1 to NFHS-5)

Registrar General of India

2. Methodology

The methodology adopted in this study includes:

Descriptive statistical analysis

Time-series comparison

Tabular presentation of data

Graphical interpretation of trends

TRENDS IN LITERACY IN INDIA SINCE INDEPENDENCE

Literacy is widely recognised as a key indicator of social and human development. In the Indian

context, literacy not only reflects access to education but also influences employment opportunities, health awareness, social participation, and demographic behaviour. Higher literacy levels, particularly among women, are associated with delayed marriage, improved child health, and reduced fertility. Therefore, an examination of literacy trends is essential for understanding broader demographic changes in India.

The Census of India defines a literate person as one who can read and write with understanding in any language, and literacy rates are calculated for the population aged seven years and above. Since Independence, successive censuses have provided a consistent and reliable source of information on literacy levels across the country. The post-Independence period is particularly significant as it captures the impact of state-led educational expansion, constitutional commitment to universal education, and targeted literacy programmes implemented over time.

In the early decades after Independence, India’s literacy levels were extremely low, with sharp gender disparities. However, sustained policy efforts in primary education, adult literacy programmes, and later, compulsory schooling initiatives, led to a gradual but steady improvement in literacy rates. Analysing literacy trends over time helps in assessing the pace and pattern of educational progress and provides a foundation for examining its relationship with fertility decline.

TABLE 1 : LITERACY RATES IN INDIA (1951–2021)

| Year | Total Literacy (%) | Male Literacy (%) | Female Literacy (%) |
|------|--------------------|-------------------|---------------------|
| 1951 | 18.3 | 27.2 | 8.9 |
| 1961 | 28.3 | 40.4 | 15.4 |
| 1971 | 34.5 | 45.9 | 21.9 |
| 1981 | 43.6 | 56.4 | 29.8 |
| 1991 | 52.2 | 64.1 | 39.3 |
| 2001 | 64.8 | 75.3 | 53.7 |
| 2011 | 74.0 | 82.1 | 65.5 |
| 2021 | 77.7 | 84.7 | 70.3 |

Source: Census of India, Office of Registrar General, India and survey by NSO

Table 1 presents the trends in literacy rates in India from 1951 to 2021, disaggregated by gender. The data reveal a substantial and continuous improvement in literacy levels over the post-Independence period. Overall literacy increased from 18.3 percent in 1951 to 77.7 percent in 2021. This improvement reflects sustained public investment in education and gradual expansion of schooling facilities across the country. Male literacy increased from 27.2 percent in 1951 to 84.7 percent in 2021, while female literacy rose more sharply from a very low base of 8.9 percent to 70.3 percent during the same period. The faster growth in female literacy, particularly after 1981, suggests the positive impact of targeted policy interventions aimed at improving girls' education and reducing gender disparities.

The data also indicate that the pace of literacy growth was relatively slow during the early decades after Independence but accelerated significantly from the 1990s onwards. This acceleration coincides with the implementation of major education reforms such as the National Literacy Mission(1988), Sarva Shiksha Abhiyan, and increased emphasis on universal elementary education. These initiatives helped bring previously excluded populations, especially women into the formal education system.

From a demographic perspective, the rise in female literacy is particularly significant, as it is closely associated with changes in reproductive behaviour, health awareness, and family size preferences.

FERTILITY TRENDS IN INDIA SINCE INDEPENDENCE

Fertility is a central component of demographic change, as it directly determines population growth and age structure. In demographic studies, fertility is commonly measured using the Total Fertility Rate (TFR), which represents the average number of children a woman would have during her reproductive years, assuming current age-specific fertility rates remain constant. TFR is widely used because it provides a comprehensive picture of

reproductive behaviour and allows for comparison across time and regions.

At the time of Independence, India exhibited extremely high fertility levels, largely due to early marriage, limited access to contraception, high infant mortality, and low levels of female education. Large families were socially and economically preferred, particularly in agrarian settings where children were considered an economic asset. Over time, however, socio-economic development, urbanisation, improvements in healthcare, and increased educational attainment, especially among women began to influence reproductive choices.

The post-Independence period is particularly significant for analysing fertility trends in India because it captures the impact of government-led population policies and public health interventions. India was among the first countries in the developing world to launch a national family planning programme in 1952. Although early efforts had limited success, subsequent shifts towards voluntary family planning, maternal and child health services, and reproductive health awareness contributed to a gradual decline in fertility rates.

Data on fertility trends in India are primarily obtained from the Sample Registration System (SRS) and various rounds of the National Family Health Survey (NFHS). These sources provide reliable and consistent estimates of fertility over time. Examining long-term fertility trends helps in understanding the pace of demographic transition and sets the foundation for analysing the role of literacy in influencing fertility decline.

TABLE 2: TOTAL FERTILITY RATE IN INDIA (1951–2021)

| Year | 1951 | 1961 | 1971 | 1981 | 1991 | 2001 | 2011 | 2021 |
|-----------------------------|------|------|------|------|------|------|------|------|
| Total Fertility rate | 6.0 | 5.9 | 5.4 | 4.5 | 3.6 | 3.1 | 2.4 | 2.0 |

Source: SRS and NFHS

The data presented in Table 2 indicate a steady and sustained decline in fertility rates in India since

Independence. From a TFR of around six children per woman in the early 1950s, fertility levels declined gradually during the 1960s and 1970s and more rapidly from the 1980s onwards. This acceleration coincides with improvements in female literacy, expansion of reproductive health services, and increased awareness regarding family planning.

By the early 21st century, India had moved close to replacement-level fertility (i.e.TFR of 2.1), and recent estimates as per NFHS-5, suggest that the national average has fallen below this level.

Overall, the observed fertility trends reflect India’s gradual transition from a regime of high fertility and high population growth to one of low fertility and slower growth. These trends underscore the importance of social development factors, particularly education, in shaping reproductive behaviour over time.

Relationship Between Female Literacy and Fertility

Female literacy is widely regarded as one of the most influential socio-economic factors affecting fertility behaviour. Education enhances women’s awareness, decision-making ability, and access to health and reproductive information. In the Indian context, improvements in female literacy have been closely associated with changes in marriage patterns, contraceptive use, and family size preferences. To examine this relationship over time, Table 3 presents selected data on female literacy rates and total fertility rates in India since Independence.

TABLE 3: FEMALE LITERACY AND TOTAL FERTILITY RATE IN INDIA

| Year | Female Literacy (%) | Total Fertility Rate |
|-------------|----------------------------|-----------------------------|
| 1951 | 8.9 | 6.0 |
| 1961 | 15.4 | 5.9 |
| 1971 | 21.9 | 5.4 |
| 1981 | 29.8 | 4.5 |
| 1991 | 39.3 | 3.6 |
| 2001 | 53.7 | 3.1 |
| 2011 | 65.5 | 2.4 |
| 2021 | 70.3 | 2.0 |

Source: Census of India, SRS, NFHS

The data presented in Table 3 reveal a clear inverse relationship between female literacy and fertility in India over the post-Independence period. As female literacy levels increased steadily, fertility rates declined correspondingly. In 1951, when female literacy was below 10 percent, fertility levels were extremely high, with women having an average of around six children. Over subsequent decades, rising female literacy was accompanied by a consistent reduction in fertility rates.

The most pronounced decline in fertility is observed during periods of rapid improvement in female literacy, particularly after the 1980s. This phase coincides with increased investment in girls’ education, expansion of secondary schooling, and greater emphasis on women’s empowerment. Educated women are more likely to marry later, seek employment, and actively participate in decisions related to childbearing, leading to smaller family sizes.

The relationship highlighted in the table also reflects broader social and behavioural changes. Higher levels of female literacy are associated with improved knowledge and use of contraception, better maternal and child health practices, and a shift away from traditional norms favouring large families. As a result, fertility decline in India appears to be driven not merely by family planning programmes but by deeper social changes linked to education.

Although the national trend demonstrates a strong inverse relationship, it is important to note that the impact of female literacy on fertility varies across regions and social groups. States with higher female literacy have reached replacement-level fertility earlier, while states with lower literacy levels continue to experience relatively higher fertility.

To further illustrate the relationship between female literacy and fertility, Figure 1 presents the long-term trends in female literacy rates and total fertility rates in India.

Figure 1 clearly demonstrates the inverse relationship between female literacy and fertility over time. While female literacy shows a steady upward trend, fertility rates decline consistently,

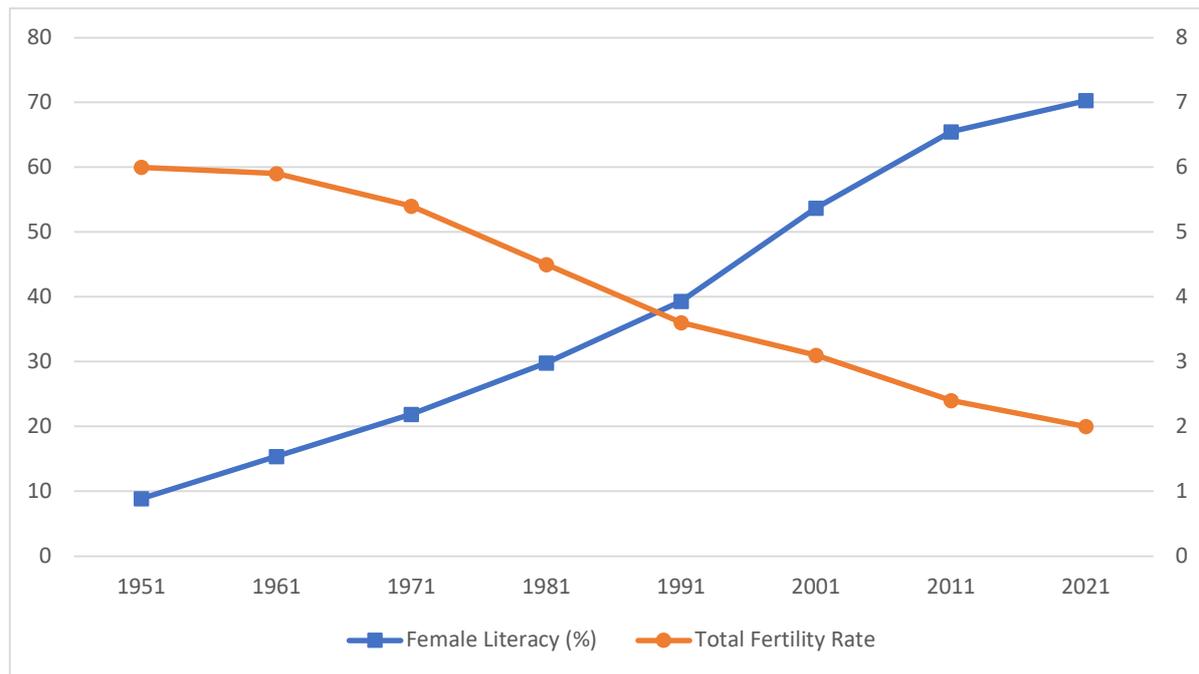


Figure 1: Trends in Female Literacy and Total Fertility Rate in India

Government Initiatives

Since Independence, the improvement in literacy levels in India has not been a spontaneous process but the outcome of sustained public policy interventions aimed at expanding access to education, reducing gender disparities, and improving educational outcomes. The literacy trends observed in the preceding tables and charts closely correspond with the timing and intensity of these government initiatives.

In the initial decades after Independence (1951–1971), educational expansion remained limited due to financial constraints, inadequate infrastructure, and low prioritization of mass education. Although constitutional provisions such as Article 45 of the Indian Constitution emphasized free and compulsory education for children, progress in literacy during this period was relatively slow, particularly in rural areas and among women.

A significant policy shift occurred in the late 1980s with the launch of the National Literacy

particularly after the 1980s. The visual representation reinforces the argument that improvements in female education have played a crucial role in India's fertility transition.

Mission (NLM) in 1988, which focused on adult education, especially targeting non-literate women and marginalized populations. This initiative marked the beginning of a more inclusive approach to literacy, contributing to noticeable improvements during the 1991–2001 period.

The Sarva Shiksha Abhiyan (SSA), introduced in 2001, represented a major milestone by emphasizing universal elementary education through school infrastructure development, teacher recruitment, and incentives for enrolment and retention. The effects of SSA are reflected in the accelerated growth of literacy rates during the early 2000s, particularly among younger cohorts and females.

The enactment of the Right of Children to Free and Compulsory Education Act, 2009 (RTE Act) further strengthened the policy framework by making elementary education a legal entitlement. This rights-based approach improved access, reduced dropout rates, and helped narrow gender gaps in literacy across states.

In recent years, integrated programmes such as Samagra Shiksha Abhiyan and targeted initiatives like Beti Bachao Beti Padhao have placed special emphasis on female education, recognizing its broader social and demographic implications. These initiatives align closely with the observed decline in fertility rates, highlighting the role of female literacy in influencing reproductive behavior, age at marriage, and family size preferences.

Overall, government policies and educational initiatives have played a crucial role in shaping India's literacy trajectory since Independence. The correspondence between the implementation of educational policies and the rise in literacy levels emphasizes the need for sustained public spending and well-directed interventions to support long-term demographic and social transformation.

CONCLUSION

This study examined the trends in literacy and fertility in India since Independence, with a particular focus on the role of female literacy in shaping demographic outcomes. Using official data sources and a combination of tables and charts, the analysis highlighted a steady improvement in literacy levels alongside a significant decline in fertility rates over the post-Independence period.

The findings reveal that the growth in literacy has been uneven across time, regions, and gender groups. While the initial decades after Independence witnessed slow progress, especially among women, subsequent policy interventions led to accelerated improvements in literacy rates, particularly from the 1990s onwards. These improvements coincided with a marked decline in fertility rates, suggesting a strong inverse relationship between literacy, especially female literacy and fertility behavior.

The study also underscores the role of public policy in influencing both educational and demographic transitions. Government initiatives aimed at universalizing education, reducing gender disparities, and improving access to schooling have contributed significantly to the observed trends. The evidence indicates that improvements in literacy have not only enhanced educational outcomes but have also influenced broader social factors such as

age at marriage, awareness of family planning, and reproductive decision-making.

Overall, the analysis confirms that literacy functions as a key driver of demographic change in India. Enhancing educational attainment, particularly among women, remains essential for achieving sustainable population stabilization and inclusive development. The experience of post-Independence India demonstrates that continued investment in education is crucial not only for human capital formation but also for long-term social and demographic transformation.

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