

Declining Population Growth Rate in Sikkim

Rikesh Pradhan¹, Lakpa Tamang², Naresh Bhusal³

¹Assistant Professor, Department of Geography, Sikkim Government College, Namchi

²Research scholar, G.B Pant National Institute of Himalayan Environment, Gangtok, Sikkim

³Assistant Professor, Department of Geography, Sanchaman Limboo Government College, Arigaon Gyalshing.

Abstract:

Sikkim has witnessed a consistent decline in population growth since 1991, continuing in 2011 Census. This study tries to explore the underlying causes and implications of this trend by examining key demographic and socio-economic factors, including decadal growth rates, literacy levels, healthcare infrastructure, and workforce participation. The population growth rate fell from 50.77% in 1981 to 28.47% in 1991, 33.06% in 2001, and 12.89% in 2011, indicating a clear downward trajectory. Conversely, literacy improved significantly from 41.59% in 1981 to 82.2% in 2011. These shifts suggest that higher literacy, improved medical infrastructure, and greater participation of women in the workforce have contributed to the decline in population growth. To address this issue, the study recommends targeted policies such as incentives for larger families, affordable quality healthcare access, and support systems for working women. The findings hold crucial policy relevance, emphasizing the complex interrelationship between education, health, gender dynamics, and population growth in Sikkim.

Keywords: Population, literacy, growth rate, medical infrastructure, Sikkim.

Introduction

Population plays a crucial role in resource utilization and economic development. Frank W. Notestein's Demographic Transition Theory (1945) explains how societies shift from high birth and death rates to low rates as they modernize, driven by healthcare improvements, rising costs of child-rearing, and women's empowerment. This universal process reduces fertility and slows population growth, emphasizing the need for informed policies to ensure sustainable development. In contrast, Sikkim faces a sharp decline in population growth rate, after 1981 and reached to 12.89% in 2011 Census. Factors such as increased literacy particularly women's literacy, delayed marriages, and improved healthcare have contributed to decline in population growth rate of the state. More educated women are healthier, bearing fewer and healthier children, than women with little or no education at all. Several models have been put forward to explain the factors through which education will affect the population in their choice of a certain pattern of fertility behavior. However, all theories agree on the point that education has a major role to play in the fertility decline. The education-fertility relationship is very relevant because the education level of a society can be directly influenced by government policy. This brings the State to be a key variable in the demographic transition that is clearly tied up with development prospects. (Goujon, 2014)

It was seen that number of children more than two was higher for mothers who had married below 30 years than after 30 years (Chauhan BK, 2022). Education has a strong impact on fertility rates; it increases awareness about health and family planning further women with more year of schooling tend to marry later and this shortens the reproductive window naturally lowering fertility rates. As the pattern of lowest fertility among the most educated women holds for all societies. In every country it has been examined that women with 10 or more years of schooling have much lower fertility than women who have not attended school (UN, 1996). This trend indicates that education, a key driver of economic growth and cultural development, has had a direct impact on population growth. According to the Health and Welfare Department of the Government of Sikkim, the state currently has a total of 184 health institutions, including hospitals, primary health centers, and other facilities, with a combined bed capacity of 2255 beds. This infrastructure is designed to provide comprehensive healthcare services to the population, addressing various medical needs and promoting overall well-being. The department's efforts aim to ensure accessible and quality healthcare across Sikkim, leveraging these institutions to deliver essential health services and support the health and welfare of the state's residents. This infrastructure is vital for Sikkim's healthcare system.

Objectives

- To access the declining population trend in Sikkim.
- To know the status of health infrastructure, literacy and its impact on population growth rate.

Materials and Methods

The present study is based on a descriptive research design using secondary data. The population in this study is the entire population of Sikkim as recorded in census report (1891-2011). The study comprises published reports, census data, and statistical documents related to population growth, health infrastructure, and literacy rate in Sikkim. The sampling techniques applied is purposive sampling, as only those documents and data sources relevant to the objective of the study were included as a sample.

Study Area

The study focuses on the state of Sikkim; a small Himalayan state located in the northeastern region of India. Sikkim shares its borders with Nepal to the west, Bhutan to the east, Tibet (China) to the north, and the Indian state of West Bengal to the south. Geographically, it covers an area of approximately 7,096 square kilometers, characterized by mountainous terrain, steep slopes, and varying altitudes ranging from 300 meters to over 8,500 meters above sea level and the climate varies from sub tropical in lower valley to alpine in high latitudes.

According to Census 2011, Sikkim recorded a total population of 610,577, making it one of the least populous states in India. The state has witnessed a significant demographic transition over the past few decades, with population growth declining from 50.77% in 1981 to 12.89% in 2011. This trend is accompanied by substantial socio-economic changes such as rising literacy rates, expansion of healthcare facilities, and increased female workforce participation.

Sikkim's unique geographic location, small population size, and rapid social transformation make it an ideal case for examining the interrelationship between education, healthcare, gender dynamics, and population growth.

Result and Discussion

Sikkim's first population census was conducted in 1891, when it was a British protectorate. Initially, the population of Sikkim and West Bengal were counted together. Over the past 12 decades, Sikkim's population has shown a steady growth trend. The census data provides valuable insights into the state's demographic evolution and growth patterns over the years.

Table No 1: Temporal variation of population growth rate from 1891-2011.

Census Year	Total Growth Rate	Male (GR)	Female (GR)
1891	-	-	-
1901	93.76	95.62	91.76
1911	48.98	46.32	51.89
1921	-7.05	-7.92	-6.14
1931	34.37	34.54	34.37
1941	10.67	13.37	7.87
1951	13.34	14.1	12.51
1961	17.76	17.98	17.52
1971	29.38	32.24	26.22
1981	50.77	53.06	48.12
1991	28.47	25.51	32.02
2001	33.06	33.29	32.8
2011	12.89	11.95	13.92

Source: Census of India (1891-2011)

Sikkim's decadal population growth rate from 1891 to 2011 reveals significant fluctuations as seen in table no 1. The state recorded an absolute growth of 577,230 during this period. The highest population growth rate of 93.76% was observed between 1901-1911. However, the subsequent decade (1911-1921) witnessed a decline in population with a negative variation of -7.05%, largely due to the devastating influenza pandemic of 1918-1919 and partly to the death of Gurkha soldiers from Sikkim in World War I (Lama, 2001) . The 1931 census showed a positive growth rate of 34.37%. A notable surge in growth rate was observed between 1971-1981, with a rate of 50.77%, the second-highest after the 1901, there was a substantial increase (at a rate of 5.07 per cent per annum), especially in the urban areas. This could be attributed to the merger of Sikkim with the Indian Union and the subsequent in-migration triggered off by

large-scale development activities in the State (Lama, 2001). The growth rate slowed down to 28.47% between 1981-1991, followed by a slight increase to 33.06% between 1991-2001 (Gazetteer, 2013).

In the last decade (2001-2011), the growth rate further declined to 12.89%. An interesting trend emerges when analyzing male-female growth rates. Until 1981, male growth rates dominated, but since 1991, female growth rates have surpassed those of males. This shift indicates an improvement in the status of women in Sikkimese society, reflecting positively on the state's social development. The increased growth rate of the female population suggests a more equitable and empowered society.

Literacy and population growth rate in Sikkim

According to Demographic Transition Theory, literacy rates tend to increase as a society transition from a traditional agrarian economy to a highly developed one. However, various factors beyond demographic transition influence literacy levels. These include political ideology, technological advancement, type of economy, standard of living, transportation and communication development, public policy, educational institutions, cost of education, women's status, and degree of urbanization. For instance, socialist ideologies often prioritize affordable education, while a higher standard of living and better infrastructure can also facilitate increased literacy rates. These factors interact to shape a society's literacy.

Literacy rate of male and female population in Sikkim from 1971 to 2011 is in increasing trend. Male literacy rose from 25.3% to 87.3%, a 62% increase, while female literacy surged from 8.9% to 76.43%, a 68% increase. The remarkable growth in female literacy is a positive indicator of women's status in the community. However, despite this progress, a gender gap in education persists. The significant increase in female literacy rates over the four decades is a notable achievement, reflecting positively on Sikkim's educational development.

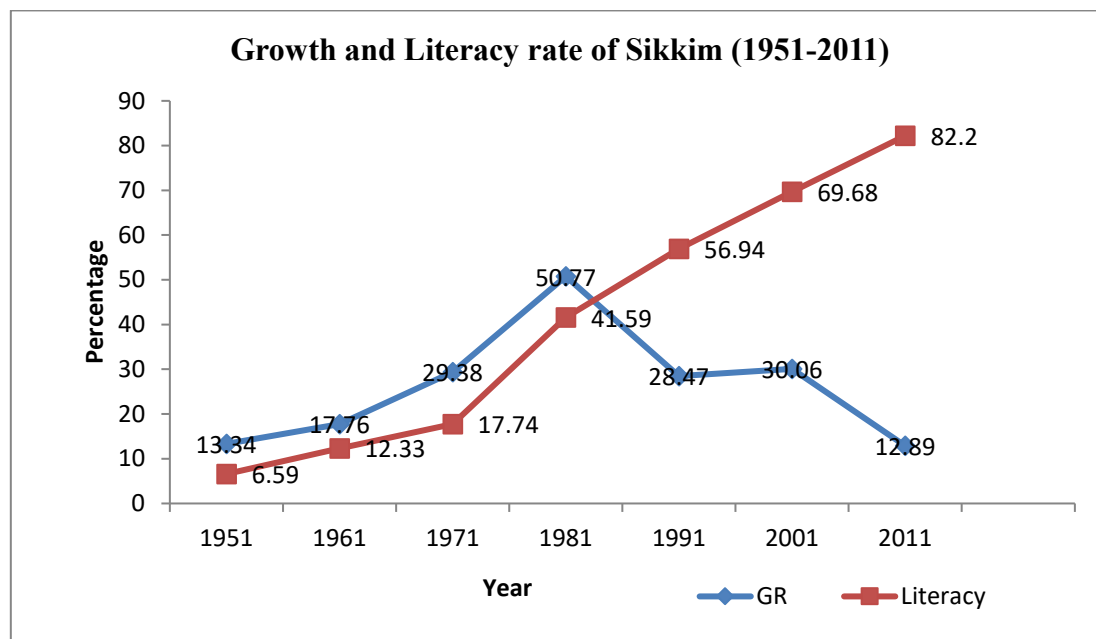
If we look into the figure no.1 it is depicting the literacy and growth rate of Sikkim from 1951 to 2011, reveals a general positive trend between literacy and growth rate. Initially, in 1951, literacy was just 6.59% and growth rate was 13.34%, over the decades, literacy rates consistently increased, while population growth rates showed a turning point in 1991, after which literacy continued to rise i.e 82.2% (2011) and population growth rate decline to 12.89% in 2011 Census.

Table No.2. Percentage of female literacy in Sikkim

Year	1951	1961	1971	1981	1991	2001	2011
Avg. Literacy Rate	6.59	12.33	17.74	41.59	56.94	69.68	82.2
Male	-	-	25.3	53.01	65.7	76.73	87.3
Female	-	-	8.9	27.4	46.7	61.46	76.43

Source: Census of India(1951-2011), Gazetteer of Sikkim (2013), Education in Sikkim (Dick. B. Dewan, 2012).

Figure: 1. Trend of Population Growth rate and Literacy rate of Sikkim



Source: Census of India (1951-2011)

Education Department Government of Sikkim, Dick B Dewan, (Education in Sikkim, 2012)

The above data (Table.no.2) reflects that in 1951 census, the average literacy rate was just 6.59% and the literacy rate grown sluggishly till 1971 (17.74%) but it was jumped to 41.59% in 1981 and continuously increased to 82.2% in 2011. The population growth rate was 50.77% in 1981 to 28.47% in 1991, 30.06 in 2001 and 12.89% in 2011 respectively. When there was low level of literacy, they were unaware of medical facilities and family planning as there was increased in educational and medical infrastructure led to awareness regarding family planning and medical facilities which ultimately led to decline in population growth rate. In nutshell we can say education has played an important role to decreased in population growth.

Another important factor led to the decline in the population growth rate in Sikkim might be implementation of the family planning scheme of the Central Government which was launched in 1952 with the famous slogan “Hum Do Hamare Do”. This slogan, adopted by the Government of India, primarily aimed to increase the marriageable age for both males and females, promote family planning, encourage immunization, and foster economic growth. In earlier times, when the level of education was low, people often gave birth to 7–10 childrens. The introduction of permanent contraceptive methods, such as tubal ligation (tubectomy) and vasectomy, might have contributed to the decline in population growth rate of Sikkim.

“Sano Pariwar Sukhi Pariwar¹” Higher income and education levels often lead to a preference for smaller families. As living standards improve, the cost of raising children rises

¹ Sano Pariwar Sukhi Pariwar means small family a happy family.

significantly due to increased expenses on education, healthcare, and lifestyle needs. People begin to prioritize quality of life over the number of children, valuing better opportunities and resources for each child. Additionally, economic security and aspirations for social mobility encourage individuals to focus more on careers and personal development rather than maintaining large families, making the concept of a small family more desirable.

Birth Rate and Death Rate in Sikkim

According to Demographic Transition Theory (DTT), both the birth rate and death rate declines, due to improvement in public health and sanitation, advancement in medical health and immunization, better nutrition and hygiene, increased in literacy and educational level especially of women, urbanization and changing lifestyle, family planning and access to contraceptives, changing social values, preference for small families, rising cost of raising childrens, economic development and shift from agrarian to industrial/ service sector. Since the Sikkim has gone through all the above-mentioned changes rapidly after the merger with the Indian Union in 1975, as the data also reveals that there were significant changes over the 3-4 decades. The below table no.3. reflects that birth and death rate has declined from 22.5 and 6.9 in 1995 to 15.6 and 4.1 in 2020 respectively. It is indicative that population growth rate of Sikkim is declining.

Table 3. Birth Rate and Death Rate of Sikkim, 1995-2020

Year	1995	2000	2005	2010	2015	2020
Birth Rate	22.5	21.8	19.9	17.8	17	15.6
Death Rate	6.9	5.7	7.6	5.6	5	4.1

Source: India's Vital Statistics Report, 2020, Office of the Registrar General & Census Commissioner, India, Family and health welfare Department Government of Sikkim.

Medical Infrastructure and population growth rate in Sikkim

Health is one of the important indicators of human development. Health infrastructure and its optimum utilization play an important role to ensure the good health of the population. Health infrastructure has significantly grown after the state merge with the mainland India in 1975.

Table No.4 Medical Infrastructure and Population growth in Sikkim (1901-2011)

Year	1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001	2011
No of. Medical Infrastructure	0	0	1	1	1	1	2	5	30	110	127	154

Population Growth Rate	93.76	48.98	-7.05	34.37	10.67	13.34	17.76	29.38	50.77	28.47	33.06	12.89
-------------------------------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------	-------

Source: Health and Family Welfare Department, Government of Sikkim.

Census of India, (1901-2011)

Table no 4. reveals that Sikkim had no medical infrastructure until 1916, with the establishment of Sir Thutob Namgyal Memorial (STNM) Hospital in Gangtok in 1917 marking the beginning of healthcare development in the state. By 1971, only five medical facilities existed, including the District Hospital at Namchi, established in 1962, along with a few Primary Health Centres (PHCs). However, after Sikkim's merger with the Indian Union in 1975, medical infrastructure expanded rapidly, with numerous PHCs and Primary Health Sub-Centres (PHSCs) set up across the state. The data indicates that this growth in healthcare facilities coincided with a notable decline in birth and death rate which ultimately affected population growth rate, suggesting an inverse relationship between improved medical access and population growth rate.

Findings and Recommendations

- ❖ Sikkim has experienced a consistent decline in population growth rate, with the growth rate recorded 12.89% during the 2011 Census. The data also reveals a downward trend in both the birth and death rates of the state which ultimately led to decline in population growth rate in Sikkim.
- ❖ Sikkim's literacy rate increased notably from 6.59 in 1951 and it continued to rise, reaching 82.2 in 2011 Census. The data also indicates a narrowing gender gap in literacy from 1951-2011. Furthermore, the data suggests an inverse relationship between literacy and population growth since 1981 onwards, as literacy rates—particularly among women—increased, the population growth rate steadily declined.
- ❖ The rise in female literacy has also led to greater participation of women in the workforce, both in the government and private sectors. This increased workforce participation has contributed to a decline in the birth rate, as many women find it challenging to balance professional responsibilities with family life.
- ❖ Late marriage is a major factor contributing to the decline in fertility rates worldwide, and Sikkim is no exception. Many educated women in Sikkim are choosing to marry later in life. It is biologically proven that fertility declines significantly after the age of 35. Late marriage often results in couples having only one or two children, with little possibility of having a third.
- ❖ Since Sikkim's merger with the Indian Union, medical facilities have improved significantly, contributing to notable advancements in public health. The data indicates that after 1971, the state witnessed a substantial rise in medical infrastructure but there are declining trends of birth and death rates.

- ❖ Although the government has introduced an increment policy for government employees with more than three children, this benefit should also be extended to women who are not employed in government services. Such a policy would encourage more couples to have larger families.
- ❖ Additionally, the government should provide quality healthcare and education facilities, especially to the marginalized to ease the financial burden on parents. Many parents today believe that having more children increases their financial responsibilities. As a result, they opt for smaller families. To counter this perception, the government should implement policies that help parents view children as valuable assets. These could include free or subsidized quality education, financial incentives for academic achievement, child savings schemes, internships and apprenticeships, community engagement programs, volunteer opportunities, financial support for low-income families, and subsidized childcare services.
- ❖ Many working mothers consider childcare a major concern, as they feel unable to rely on others. Therefore, all workplaces in Sikkim—whether government or private—should be required to provide childcare facilities. Such facilities would allow parents to check on their children during work hours, reducing stress and enhancing their sense of security. Employers should also provide professional caregivers to support working women, making it easier for them to maintain a healthy work-life balance.
- ❖ Government interventions such as the Vatsalya Scheme, "Vatsalya" is a women-centric scheme where an amount of Rs 3 lakhs to Sikkimese couples without children is provided as financial assistance for treating infertility through In-vitro Fertilisation (IVF) treatment. The Vatsalya scheme addresses the pressing social concern of declining infertility in Sikkim.
- ❖ According to Notification No. 87/GEN/DOP issued by the Department of Personnel, Government of Sikkim, dated 16/08/2022, female government employees who had already availed 180 days of maternity leave prior to the extension to 365 days—or who were on leave at the time of the rule's implementation—are also eligible for the extended 365-day maternity leave. Additionally, Notification No. 07/GEN/DOP, dated 13/01/2023, grants 30 days of paternity leave to male government employees following the birth of a child. These policies have significantly benefited working couples by allowing them to care for their newborns more effectively.
- ❖ Dietary habits play a crucial role in female fertility, affecting various aspects of reproductive health. Poor nutrition, alcohol consumption, smoking, and processed foods can significantly reduce fertility. On the other hand, maintaining a balanced diet, exercising regularly, and avoiding harmful substances can help improve fertility in women.

Conclusion

The study on Sikkim's declining population growth rate provides a comprehensive analysis of the factors contributing to this trend, including increased literacy, improved healthcare

infrastructure, and greater workforce participation among women. The inverse relationship between literacy rates and population growth is a crucial finding of this study, underscoring the importance of education in shaping reproductive choices and fertility rates. The study also highlights the critical role of healthcare infrastructure in influencing population growth rates. The expansion of medical facilities and services has not only improved public health outcomes but also contributed to a decline in birth and death rates. To address the challenges posed by a declining population, policymakers must develop targeted strategies to encourage larger families, provide support systems for working women, and prioritize quality healthcare and education facilities. Incentives for larger families, affordable quality healthcare, and support systems for working women are essential to promote sustainable development.

References

1. Bhuyan, K.C. (1986), "Education, Fertility and Family Planning Practices in Rural Area of Bangladesh", The Journal of Family Welfare. Vol.33. No.2, Dec.1986
2. Chauhan BK, Bhutia DT. Decreasing fertility trend in Sikkim: An area of concern. BLDE Univ J Health Sci 2022;7:262-5. https://www.researchgate.net/publication/363450662_Decreasing_fertility_trend_in_Sikkim_An_area_of_concern
3. Chettri (2010). Sikkim Chronicle/ PP. 30
4. Choudhury, Maitreyee. (2006), Sikkim Geographical Perspectives. A Mittal Publication, New Delhi.
5. Dewan, Dick, B. (2012), "Education in Sikkim: An Historical Retrospect Pre-Merger and Post-Merger period.PP.281, 370
6. Gave T. Wang. (2019), "Population Control Policies and Implementations in India" Journal of Sociology and Social Work, December 2019, Vol. 7, No.2, PP. 135-144.
7. Gazetteer of Sikkim 2013. Gangtok: Government of Sikkim, Home Department. PP. 112
8. Government of Sikkim Department of Civil Engineering Cell, Block B, Tashiding Secretariat, Gangtok.
9. Government of Sikkim.Health and Family Welfare Department. Health Status of Sikkim<https://www.sikkim.gov.in/DepartmentsMenu/health-family-welfare-department/State%20Health%20Profile/health-infrastructure>
10. K.Mhadevan (Ed.) Fertility and Mortality. Sage Publications, New/ Delhi,1986 <https://www.thenationalnews.com/world/asia/2023/06/04/indias-population-is-booming-but-the-tiny-sikkim-state-is-bucking-the-trend/> (Retrieved on 11.04.2024 at 12:16 am).
11. Kirk, D. (1996). Demographic transition theory. Population Studies, 50(3), 361–387. <https://doi.org/10.1080/0032472031000149536>
12. Lama.P, (2001).Sikkim Human Development Report 2001 [human_development_report_sikkim_full_report_english_2001.pdf](#)
13. Liu DH, Raftery AE. How do education and family planning accelerate fertility decline? Popul Dev Rev 2020;46: 409–441
14. Malthus,T.R.(1798). "An Essay on the Principle of Population,"

15. Mishra, P.K., Rai, A., Abdelrahman, K., Rai, S.C. and Tiwari, A., 2021. Analyzing Challenges and Strategies in Land Productivity in Sikkim Himalaya, India. *Sustainability* 2021, 13, 11112.
16. Notestein, F. W. (1945). Population—The long view. In T. W. Schultz (Ed.), **Food for the World** (pp. 36–57). Chicago: University of Chicago Press.
17. Ponnappalli, K. M., Raju, S. S., & Sekher, T. V. (2013). Fertility transition in India: Evidence and implications for policy. *Economic and Political Weekly*, 48(43–44), 59–66.
18. Risley, H. H. (Ed.). (1894). *The gazetteer of Sikkim*. Calcutta: Bengal Secretariat Press. Retrieved from <https://catalog.hathitrust.org/Record/001254289>
19. Sikkim Express: (Sunday, Dec 03, 2023). Vatsalaya Yojana Setting A Precedent For Nation. <https://sikkimexpress.com/news-details/vatsalaya-yojana-setting-a-precedent-for-nation>
20. Sikkim: A statistical Profile 2002, Department of Economics, Statistics, Evaluation & Monitoring (Srinivasan, K. (1986), "Modernization and Fertility Change: A Review of Theoretical Developments", in DESME), Govt. of Sikkim.
21. The Telegraph Online (2025) Sikkim registers negative population growth, only state after Nagaland to witness a shrink https://www.telegraphindia.com/west-bengal/sikkim-registers-negative-population-growth-only-state-after-nagaland-to-witness-a-shrink/cid/2082063#goog_rewarded
22. United Nations Issues Study on Women's Education and Fertility (1996)
23. V.Goujon,(2014).Demographic transition and education in developing countries a. https://www.researchgate.net/publication/262308322_Demographic_transition_and_education_in_developing_countries
24. Vital Statistics (2020): death rate per 1000 population : Sikkim <https://www.ceicdata.com/en/india/vital-statistics-death-rate-by-states/vital-statistics-death-rate-per-1000-population-sikkim>
25. World Health Statistics 2023: Monitoring Health For The SDGs, Sustainable Development Goals <https://www.who.int/publications/i/item/9789240074323>