

Trends and Socio-Economic Differentials in Fertility in Nepal

Shanta Upadhya Adhikari

Mahendra Ratna Campus,

<https://orcid.org/0009-0009-2160-216X>

adhikarishanta010@gmail.com

Abstract

Fertility is defined as the actual reproductive performance of a woman during her reproductive periods. The purpose of this study is to examine the trends of socio-economic differentials of fertility in Nepal, based on secondary sources of data. These data were obtained from the Nepal Demographic and Health Survey, the Central Bureau of Statistics, and the Population Reference Bureau, and other related peer-reviewed journals, academic texts, online sources and related reports. The results of the study reflect that the trends of fertility in Nepal have gradually declined. Including the total fertility rate in Nepal have declined from 6.3 children per women to 2.1 per women over the period of 1971 to NDHS report 2022. Similarly, the Crude Birth Rate (CBR) is also declined from 41.3 per thousand population in the census 1971 census to 20 per thousand in 2021 Census. The results of the study further show that; education play significant role for decrease fertility. Women with no formal education had a TFR of 3.3 per woman, whereas those with more than secondary education had a TFR of only 1.6 per woman. The Gandaki and Bagmati provinces have relatively better socio-economic condition and higher level of education, which are associated with delayed marriage, and the lowest fertility levels, compared to Madhesh and Karnali provinces. This decline reflects improvements in various socio-economic and demographic indicators, including women's education, urbanization, healthcare services and facilities, and access to family planning methods, and government policies play a central role in shaping fertility behavior in Nepal.

Keyword: Demographic transition, Fertility trend, Reproductive life, Replacement-level

Indroduction

Fertility refers to the actual reproductive performance of women during their reproductive life span. In recent decades, global demographic discourse has shifted from high fertility to the challenges associated with very low, sub-replacement fertility levels. Global demographic concerns have shifted from high level of fertility and rapid population growth to lower level of fertility or replacement level of fertility. The previous study explored that nearly half of the world's population now lives in countries at or below replacement level and also projections suggest that most developing countries will also reach this stage by the mid-twenty-first century (Morgan & Taylor, 2006). These patterns of fertility were previously considered characteristic of Europe and other industrialized nations. Low level of fertility rate has become a recent global phenomenon, including developed and developing countries (Morgan & Taylor, 2006).

In the period of 1950, the global total fertility rate (TFR) rose to approximately five children per woman, reflecting a high level of reproductive behavior during the childbearing years. However, fertility rates have been declining gradually for decades and have now reached historically low levels in many parts of the world. The global population has above the 8 billion, and projections indicate a potential rise to 10 billion by 2050 AD. The rate of population growth is slowing down due to a determined reduction in fertility (Population Reference Bureau, 2022). Over the next 25 years, East Asia, Europe, and Russia are projected to experience substantial population declines, primarily determined by sustained below-replacement level fertility and increasing life expectancy. These demographic shifts reduce the size of the working age population and create a more ageing population, which creates long-term pressure on jobs and the economy, and the social protection system (Bloom et al., 2025).

It was long expected that poorer people in societies would naturally desire large family sizes and would only begin to reduce fertility when economic conditions improved. However, with the availability of modern contraceptive devices, many couples wanted to control their fertility and determined a small family size (Campbell et al., 2013). In the absence of reliable methods of contraceptive devices, women's capacity to make informed reproductive choices remained limited.

The decline in fertility has been most noticeable in developed nations, determined by those important factors such as greater access to contraception, urbanization, delayed marriage, higher educational attainment among women, and increased female participation in the labor force.

In many developed and developing countries, fertility rates have declined below the replacement level, which leads to shrinking populations and an increasing aging population. This demographic shift is largely attributed to expanding social awareness, the prevalence of nuclear family structures, and lifestyle changes such as increased divorce rates and delayed marriage (Harbison & Robinson, 2015). Moreover, rising participation of women in the labor market and increasing rate of education enrollment have contributed to postponed childbearing, and perceptions of ideal family size reduce fertility. Additionally, other influenced factors such as economic conditions, cultural traditions, access to healthcare, societal expectations, and increasing education play central role in decreasing fertility (Fauser et al., 2024).

In Nepal, traditionally, fertility has been highly valued, resulting in a large level of fertility being considered a source of socio-cultural fulfillment, old age security, and socio-economic prestige. Many parents tend to view their children as blessings and future caregivers, supporting societal norms that encourage high fertility (Adhikari, 2010). However, in recent years, the fertility rate has started to decline during the second half of the twentieth century, particularly from the 1960s to the 1980s. The previous studies and census reports have explored that the Total Fertility Rate (TFR) declined from 6 children per woman to 5 children per woman by the 1990s. Further it gradually decreased to 2.8 per woman during the time from 2001 AD to 2005 AD and 2.2 per woman during the time 2006 AD and 2010 AD. The TFR is further continued

drop and reached near to the replacement level between the time of 2011 AD to and 2015 AD.

Nepal, the fertility change to decline began in the 1980s and gradually declined in the 1990s (Shakya & Gubhaju, 2016). Education and fertility have a negative relationship. Educated women generally have fewer children than uneducated women in both developed and developing countries. Higher the level of education empowers women to make informed reproductive decisions, delayed marriage, use of family planning, leads to lower fertility rates (Jungho, 2023). In recent decades, in Nepal, the total fertility rate (TFR) has approximately declined to 2.1 children per woman due to the higher levels of female education, they tend to delay marriage, demonstrate more effective use of contraceptives, and give birth to fewer children (Adhikari & Adhikari, 2025). Similarly the scholar explored like Bhandari (2023) in her article fertility rates have gradually in decreased 1971, accelerating during the 1990s (CBS, 2014). The TFR dropped from 5 per woman in 1991 to 3.25 per woman in 2001 AD, also dropped in 2.5 per women in 2011 AD, and reached replacement level of about 2.1 per women in 2021 AD.

The TFR, which reflects the average number of children a woman would bear over her lifetime if current age-specific fertility rates prevailed, serves as a key to population growth. TFR is below the replacement level of approximately 2.1 children per woman could lead to a long-term population decline in Nepal (Eslami, 2016). The Crude Birth Rate (CBR) refers to the number of live births per thousand mid-year population. The CBR is essential for every nation because it helps to measure the fertility level of population. Furthermore, it is also useful for policymakers and the government to plan for health, education, population management, and sustainable development (Rahman & Shiddike, 2020). Fertility is a key indicator of the determinants of the size and composition of the population. Fertility decline has been a primary determinant of population aging, and projected levels of fertility have important implications for the age structure of future populations, including the pace of population aging.

Fertility is one of the most important indicators of population changes. High levels of fertility lead to rapid population increase, while low fertility creates population decline (Salvati et al., 2020). Fertility is a central determinant of population size and structure. Declining fertility is one of the most important factors in population ageing. The total fertility rate is especially important in population predictions, as it denotes the average number of children a woman would bear in their reproductive ages of 15 and 49 (Alkema et al., 2011). The socio-economic determinant is one of the most important determinants of fertility is which includes education, urbanization, and household wealth, which are strongly associated with fertility outcomes, influencing reproductive preferences and access to family planning services (Devkota et al., 2025). This study aims to explore the trends of fertility and the socio-economic determinants in Nepal. The implication of this study is to replicate how key factors like, women education, access to health services and facilities, and delayed marriage affect fertility in the country. The study delivers valuable information for policymakers to develop plans for the future and also improve reproductive health and manage population changes effectively.

Research Methods

This article is based on descriptive and analytical methods applied to secondary sources of data. These data and information were taken from the Central Bureau of Statistics (CBS) and Nepal Health Demographic Survey (NDHS) reports and world population data sheets, scholarly articles, research reports, population monographs, books and related reports.

Results

Table 1

Trends of Crude Birth Rate (CBR) in Nepal

Census (AD)	Year	CBR
1971		41.3
1981	39.6	
1991	41.6	
2001	32.6	
2006	28.4	
2011	22.4	
2022	20	

Sources: CBS 1995, 2003, NDHS 2006, 2014 and PRB Report 2022

Table 1 shows the level and trends of crude birth rate (CBR) in Nepal over the data from census r 1971 AD to 2022 AD. The trend of Crude Birth Rate (CBR) is gradually decreasing from 1971 AD 41.3 per thousand to 20 per thousand in Population Reference Bureau (PRB) 2022 AD. the results of the data reflect the downwards trend and effects Nepal's demographic transition, driven by increased access to education, increasing age of marriage, family planning servises, and reproductive health services.

Table 2

Trends of Total Fertility Rate (TFR) in Nepal

TFR	1971	1981	1991	2001	2006	2011	2022
Children per Woman	6.3	5.3	5.1	4.1	3.1	2.5	2.1

Source: CBS 1995, 2003 NDHS, 2006, 2014, and PRB Report 2022

Table 2 indicates the trend of Total Fertility Rate (TFR) in Nepal from the census 1971AD to 2022 AD. The data shows significant decline the trends of total fertility over the five decades. The TFR 6.3 per thousand to 5.3 per thousand women in the census 1981, and further declined to 5.1 in the 1991 census. The decline accelerated in the 21st century, reaching 4.1 in the 2001 census and dropping sharply to 2.1 per woman by the NDHS 2022. This decreasing trend explored that leading causes of decline fertility is improvements in family planning, women's education, health services, changing socio-economic conditions, and equal preference on sons and daughters.

Table 3*Trends of Age-Specific Fertility Rate 2001-2022*

Year AD	15–19	20–24	25–29	30–34	35–39	40–44	45–49	TFR
2001	110	248	205	136	81	34	7	4.11
2006	98	234	144	84	48	16	2	3.13
2011	81	187	126	71	36	14	5	2.6
2016	88	172	124	59	18	6	2	2.3
2022	71	160	110	57	17	5	1	2.1

Source: MOH 1997 CBS 2011, NDHS 2016, and NDHS 2022

Table 3 revealed the trends of the age-specific fertility rate (ASFR) in Nepal over the past five periods of census periods. The table presents the ages of 15 to 49 years, which is considered the fertility life span. Here are seven age groups. Each census period shows that there was a decline in fertility across all reproductive age groups from the 2001 AD to the 2022 census periods. The highest fertility rates have consistently been among those aged 20–24 years, decreasing from 248 births per thousand women in 2001AD to 160 in 2022 AD. The age group of 15–19 years has also shown a notable reduction in fertility declining from 110 births per thousand to 71 births per thousand, indicating delayed marriage and childbearing. Fertility rates for the age groups (30–49 years) declined significantly as well. The 35–39 age group also showed a decline in fertility from 81 per thousand to 17 per thousand women. Furthermore, the Total Fertility Rate (TFR) also declined from 4.11 per woman in 2001 AD to 2.1 per woman in the NDHS 2022.

Table 4*Fertility Differential by Education*

Educational status	TFR
Illiterate	3.3
Basic education (1-8)	2.3
Lower basic education (1-5)	2.5
Upper basic education (6-8)	2.2
Secondary education (9-12)	1.8
Lower secondary education (9-12)	2
Higher secondary education (9-12)	1.7
More than secondary education	1.6

Sources: Nepal Demographic Health Survey 2022

Table 4 indicates the fertility differentials by education in Nepal, reflecting a clear inverse relationship between women's education and level of fertility. The data reflects that education play significant role for decrease total fertility. The data indicate that the increasing the level of education reflect decrease Total Fertility Rate. Illiterate women have 3.3 children per woman, while women with more than secondary education have the lower level of TFR at 1.6 per woman. Likewise, women with a basic level of education have an overall TFR of 2.3 per woman, with a further breakdown showing 2.5 per woman for those with lower basic education and 2.2 for upper basic education.

Furthermore, women who have in secondary level of education, indicates lower TFR ranges from 2.0 at the lower level to 1.7 at the higher level.

Table 5

Level and Trends of TFR by Ecological Region

Year	Mountain	Hill	Terai	TFR
2006	4.1	3	3.1	3.1
2011	3.4	2.6	2.5	2.6
2016	3	2.1	2.5	2.3
2022	2.7	1.8	2.2	2.1

Sources: MOH 1997, CBS 2011, NDHS 2016, and NDHS 2022

Table 5 indicate that level and trend of total fertility rate by ecological region. The data shows that

The Mountain region has the highest TFR 4.1 per woman in 2006 and it gradually declined from 4.1 per woman in 2006 to 2.7 per woman in NDHS 2022 AD. Similarly, in Hill region experienced the most significant decline, from TFR 3.0 per woman to 1.8 per woman, while the Terai region maintained relatively higher fertility levels, with the TFR falling from 3.1 to 2.2 during the same period. At the national level, the TFR decreased from 3.1 per woman in 2006 to 2.1 per woman in 2022 AD. These trends indicate overall progress in access to female education, family planning, education, and reproductive health services.

Table 6

Total Fertility Rate by Province

Provinces	TFR
Koshi	2.2
Madhesh	2.7
Bagmati	1.6
Gandaki	1.4
Lumbini	1.9
Karnali	2.6
Sudurpaschim	2.3

Sources: Nepal Demographic Health Survey 2022

Table 6 explored the Total Fertility Rate (TFR) by Provinces. The data indicates that Madhesh Province has the highest TFR (2.7%), followed by Karnali Province (2.6%), Sudurpaschim Province (2.3%), Koshi province (2.2%) and the lowest TFR is considered to be in Bagmati Province (1.6%), Gandaki province (1.4%), and Lumbini Province (1.9%). determinants factors like socio-economic condition, level of education, access to health care facilities are the different factors of fertility in each province. So this indicates that, socio-economic condition, health facilities, and education of females play positive roles in determining fertility.

Discussion

The study found that the fertility rate in Nepal has been on a decreasing trend compared to the previous decades. The crude birth rate (CBR) declined from 41.3 per thousand live birth in 1971 AD to 20 per thousand live births in 2022 AD. Similarly, the total fertility rate (TFR) declined from 6.3 children per woman in 1971 AD to 2.1 children

per woman in 2022 AD. Likewise, age -specific fertility rate decreased transversely in all reproductive age groups, with the highest rates constantly observed among women aged 20–24 years. However, in recent decades, fertility has gradually decreased. Additionally, female education play an important role in decreasing fertility. This study has found a significant decline in Total Fertility Rate (TFR) from 6.3 in 1971 to 2.1 in 2022 AD. Furthermore, female education play key role to decrease fertility. The data clearly showed that illiterate women reported a TFR of 3.3 per woman compared to 1.6 women with more than secondary education This indicates that education empowers women to delay marriage and decision making on childbearing and informed reproductive choices. Furthermore, provincial inequalities are also apparent; Gandaki and Bagmati provinces display the lowest fertility levels, whereas Madhesh and Karnali provinces continue to have relatively higher fertility levels. Similarly, in the case of ecological region, Mountain region, has higher fertility than hilly regions, reflecting differences in socio-economic development, urbanization, and access to reproductive health services.

Nepal demonstrates the country's progress in demographic transition that has a great impact on the improvement of women's education. Women attaining higher-level education constantly report lower fertility rates, supporting global findings that educated women make informed reproductive decisions and delay childbearing (Cheng et al., 2022). The trend of fertility is nearly close to that of the neighboring country Sri Lanka, where the TFR is 2.2 per woman (Adhikari & Adhikari, 2025). However, in the case of developed countries, like Japan, Sweden, and Germany, the fertility rate is different, which is very low, TFR is between 1.3 and 1.7 is per woman. This situation was created in those countries due to the high female literacy rate, which create decision making role in female regarding choice of marriage and give birth to child. This study reflects that provincial and geographical disparities in fertility rates unfold uneven development in Nepal. overall results show that, Provinces with greater urbanization and better socio-economic advancement, such as Gandaki and Bagmati, have lower TFRs compared to Madhesh and Karnali provinces, where fertility is relatively high. These provincial differences support the understanding that fertility decline is often slower in rural or less developed regions than. Scholars like Osborne et al. (2024) claimed that fertility remains higher in rural areas due to limited access to education, healthcare services, and traditional norms. compare urban areas.

The fertility shifts to decline in Nepal started in the 1980s. However, the decline was relatively slow until the early 1990s. Increased use of contraceptives, socio-economic changes, and urbanization are the main reasons for the decline of the fertility rate (Shakya & Gubhaju, 2016). It was also greatly impacted due to delayed marriage, higher education of women, and migration of women for work.

Conclusion

This study concludes that women's educational status is directly associated with lower fertility. The study demonstrates that women with higher education are more likely to delay marriage and childbirth, exercise greater decision-making power in reproductive choices, and use contraceptive methods effectively. Fertility rates are lower in Gandaki

and Bagmati provinces compared to Madhesh and Karnali provinces. This reflects that socially and economically advanced province have lower fertility than province with poorer socio-economic status conditions. Furthermore, this study makes an important contribution to the understanding of fertility trends, including regional and geographical inequalities in access to education, reproductive health care services and family norms. This study also provides new insights into the factors contributing to decline fertility trends, including delayed marriage, female education, changing family norms equal preference for son and daughter. In the case of Madhesh and Karnali provinces, it is essential to provide awareness and information about delayed marriage, girls' education, women's empowerment and importance of small family size. These indicators can promote equal preference for sons and daughters, which encourage smaller family sizes and improve the overall quality of life.

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