INFLUENCE OF EDUCATION ON POST-TRANSITIONAL FERTILITY IN SRILANKA: AN ANALYSIS OF COMPLETED COHORT FERTILITY

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Abstract

This study examines the influence of education on post-transitional fertility in Sri Lanka by analyzing completed cohort fertility among women aged 45–49. The objectives were to assess the impact of education on four intermediate fertility variables: age at marriage, age at first birth, spacing between births, and age at last birth. Data from 3,020 ever-married women in the Sri Lanka Demographic and Health Survey 2016 were analyzed using ANOVA and linear regression. Results from the ANOVA indicated statistically significant relationships ($p < 0.001$) between education level and all intermediate fertility variables. Regression analysis showed that higher-educated women tend to marry later, have their first and last births at older ages, and exhibit shorter birth intervals compared to less-educated women. Specifically, higher-educated women marry at 29 years, have their first birth at 32, and last birth at 36, with an average birth interval of 4 years; in contrast, less-educated women marry at 20, have their first birth at 23, last birth at 30, with a birth interval of 5 years. These findings highlight the strong influence of education on fertility patterns and timing, with implications for reproductive health policies and family planning programs in Sri Lanka.

Keywords: Age at First Birth; Age at Last Birth; Age at Marriage; Education; Spacing Between Births

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Introduction

The influence of education on fertility has attracted wide interest in scholarly literature and other domains. Fertility has a direct relationship with the health dynamics of women who are in the reproductive age span. Universal education is a key strategy to enhance the well-being of individuals and improve the economic and social development of societies (Sheikh & Loney 2018). Education plays a crucial role as a socioeconomic determinant of fertility, determines the population's age distribution, which in turn determines its social, economic, and demographic traits (Lal et al. 2021).

The most researched topics in fertility research are differences between educational groups (Balbo et al., 2012). These differences are driven by factors such as shifting cohort and period fertility, women's increasing educational attainment, and shifting roles in the labor market (Oppenheimer, 1994; Rindfuss et al., 1996).

In the latter half of the 20th century, delaying parenthood spread throughout Europe and other Western nations (Gustafsson & Kalwij, 2006).Given that a greater percentage of the population spends more of their childhood and early adulthood in education, the increased educational attainment of women in particular is thought to be a major contributing element to this trend (Mills et al., 2011; Ní Bhrolcháin & Beaujouan, 2012). As a long-term consequence, global population growth is decreasing because of falling fertility rates (Wormald, 2022). Over the past few decades, global fertility rates have been falling and between 2015 and 2020, it hit a record low of 2.47 births per woman (United Nations, 2022). This trend is anticipated to continue until relatively few countries have high fertility rates (United Nations, 2017).

In most civilizations, marriage marks the beginning of a socially acceptable period for having children, and in many nations, it is the most common setting for having children (Ikamari, 2005). Considering marriage patterns between the countries in South Asia, Sri Lanka is dissimilar to other countries within the region in marriage patterns (De Silva, 1997). Fertility in the South Asian countries except Sri Lanka is largely influenced by cultural, religious, and ethnicity-related factors; therefore, the age at marriage of females in such countries is low. However, the sole country in South Asia with a higher average age at marriage is Sri Lanka (De Silva,

1997). Since age at marriage, in most countries, signifies the entry into adulthood and becomes a critical indicator of exposure to the risk of pregnancy, it becomes an intriguing turning point in life. Women who marry early will have a longer period of exposure to the risk of pregnancy than women who marry in their later ages. Variations in age at marriage in populations describe fertility differentials across countries and fertility trends in a particular population (United Nations, 1990).

Mass education which is the main component of the Wealth Flow Theory, formulated by John Caldwell in the 1980s, examines its impact on the onset of the fertility transition (Caldwell, 1996). Mass education is fifty percent of children in a family receive the opportunity to study in a school which creates economic costs for their parents (Boli et al., 1985).The ultimate goal of mass education is to address value systems through attitudinal changes (Caldwell, 1980). On the other hand, universal education ensures that ninety-five percent of all children and ninety percent of girls study in a school (Dissanayake, 2011).Universal education provides more educational opportunities for girls compared to mass education. Accordingly, the value systems gained through education began to spread and pass within generations causing a fertility transition globally.

When considering the fertility rate within the context of Sri Lanka, the Total Fertility Rate (TFR) fell below replacement level fertility in 2000, going from 5 children per woman in 1963 to 1.9 children per woman in 2000. Fertility in the post-transitional fertility period relatively stabilizes with slight fluctuations except in the unpredicted scenarios. According to data from the Department of Census and Statistics, higher birth rates during the post-tsunami period led to an increase in the Total Fertility Rate (TFR) to 2.3 children per woman in 2006. However, the TFR fluctuated between 2.3 and 2.2 following 2006. The most significant factor influencing Sri Lanka's fertility disparities is education (Department of Census and Statistics, 2017).

Women's health is directly correlated with intermediate fertility variables, such as age at marriage, age at first birth, age at final birth, and spacing between births. Females in South Asian nations like Bangladesh, India, Nepal, and Pakistan marry and experience childbearing at lower levels of age and subsequently, have negative health effects on mothers and their children, including high rates of morbidity and mortality and malnutrition

(Marphatia et al., 2017). In Sri Lanka, females' educational attainment has grown over time, contributing to the country's success in delaying marriageable age relative to other South Asian nations.

More focus has to be placed on how women's health and the timing of first pregnancies are influenced by marital status. Adolescent childbearing is associated with worse midlife health compared to young adults and later ages, in addition, births in young adulthood are linked to worse health than later births (Williams et al., 2015). Moreover, a plethora of research has been conducted to examine the correlation between a woman's age during her first delivery and her overall health in later life. According to these research, having children early raises a woman's risk of ill health and mortality in later life (Wolfe et al., 2023).

The impact of short and long intervals between pregnancies on maternal, perinatal, baby, and child health can vary when birth spacing is taken into account. There is a strong correlation between short intervals and negative results. These include inadequate nutrition for the mother, low folate depletion, cervical insufficiency, vertical infection transmission, inadequate lactation due to breastfeeding and pregnancy overlap, sibling rivalry, infectious disease transmission between siblings, incomplete healing of the uterine scar from a prior cesarean delivery, and aberrant remodeling of the endometrial blood vessels (Conde-Agudelo et al., 2012).

Objectives

The four main objectives of this study are to: (1) investigate the influence of education level on age at marriage; (2) investigate the influence of education level on age at first birth; (3) investigate the influence of education level on spacing between births; and (4) investigate the influence of education level on age at last birth.

Data and Methods

This study was based on the secondary data, obtained from the Sri Lanka Demographic and Health Survey, 2016 which was conducted by the Department of Census and Statistics. The survey collected data on ever-married women who were aged 15-49 at the time of the survey. The survey was conducted from a sample of 27,210 households, and 18,302

ever-married women, aged 15-49 years, were chosen using a multistage and stratified sampling design. Accordingly, the study population of this chapter was ever-married females between the ages of 45 and 49 which is known as the completed cohort fertility, and data from 3,020 females was used for this study.

Bivariate analysis is mostly used as the analysis method of this chapter. Accordingly, One-Way Analysis of Variance (ANOVA) was tested to find out whether the differences between groups (levels of education and four intermediate fertility variables) of data are statistically significant. In addition, Simple Linear Regression analysis was performed to check and identify the direction of the relationship between education level and four intermediate fertility variables. In the regression analysis, four intermediate fertility variables (age at marriage, age at first birth, spacing between births, and age at last birth) were used as the dependent variables whilst education level was used as the independent variable.

Results

The Relationship between Education Level and Four Intermediate Fertility Variables in Post-transitional Fertility in Sri Lanka

Education serves as a vital socioeconomic factor in determining fertility in a country. Higher levels of education often correlate with delayed marriage and childbearing, leading to lower overall fertility rates. Whilst lower levels of education portray completely the opposite scenario. The relationship between education and four intermediate fertility variables among Sri Lankan females is tested by using One-way Analysis of Variance (ANOVA). The ANOVA test examines the possible relationship between education level and changes in age at marriage, age at first birth, age at last birth, and spacing between births.

Table 1: The Association between Education Level and Four Intermediate Fertility Variables by Using ANOVA

Intermediate Fertility Variable		Sum of Squares	df	Mean Square	F	Sig.
Age at Marriage	Between Groups	12933.504	5	2586.701	106.680	.000
	Within Groups	73081.122	3014	24.247		
	Total	86014.626	3019			
Age at First Birth	Between Groups	12434.607	5	2486.921	85.709	.000
	Within Groups	87454.019	3014	29.016		
	Total	99888.626	3019			
Age at Last Birth	Between Groups	3898.570	5	779.714	24.198	.000
	Within Groups	97116.218	3014	32.222		
	Total	101014.788	3019			
Birth Space	Between Groups	409.534	5	81.907	12.448	.000
	Within Groups	19831.771	3014	6.580		
	Total	20241.304	3019			

Source: Authors' calculations based on data obtained from the Sri Lanka Demographic and Health Survey, 2016

According to the above ANOVA table, there were statistically significant differences between education levels (groups) of age at marriage, age at first birth, spacing between births, and age at last birth among the Sri Lankan women in the post-transitional fertility period as the p-value equals 0.000 ($p< 0.05$).

Since the above ANOVA test fails to provide the direction of the relationship between education level and four intermediate fertility variables, Simple Linear Regression analysis was performed to quantify the said relationship. Firstly, the following table of regression coefficients

confirms that there is a direct relationship between education level and age at marriage of the completed cohort fertility in the post-transitional fertility in Sri Lanka.

Table 2: Coefficients Table of Education Level and Age at Marriage by Using Simple Linear Regression Analysis

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	29.080	.525		55.398	.000
No Education Dummy	-8.857	.675	-.343	-13.129	.000
Grade 1-5 Dummy	-8.447	.568	-.593	-14.864	.000
Grade 6-10 Dummy	-6.668	.543	-.617	-12.287	.000
G.C.E. O/L or Equ Dummy	-5.572	.579	-.358	-9.632	.000
G.C.E. A/L or Equ Dummy	-3.123	.562	-.233	-5.555	.000

Dependent Variable: Age at Marriage

Source: Authors' calculations based on data obtained from the Sri Lanka Demographic and Health Survey, 2016

In this coefficients table, the constant of the model refers to the baseline category of 'Degree & Above' which means how age at marriage deviates to other levels of education from that particular category. According to this table, the mean differences in age at marriage are statistically significant for all categories since the p-value is 0.000 (<0.05). This table of coefficients further proves that the age at marriage of a female with the degree and above in the completed cohort fertility in the post-transitional fertility in Sri Lanka is 29.1 which is denoted by the B-value in unstandardized coefficients. Furthermore, age at marriage gradually decreases with the decrease in education level and vice versa.

An accurate understanding of the direction of the link between education and age at marriage, as shown by this model, can be obtained by utilizing the regression equation.

Table 3: The Direction of the Relationship between Education Level and Age at Marriage

Y	a	b	X*	Y = a + bX
Age at Marriage	29.080	-8.857	No Education	20.223
		-8.447	Grade 1-5	20.633
		-6.668	Grade 6-10	22.412
		-5.572	G.C.E. O/L or Equ	23.508
		-3.123	G.C.E. A/L or Equ	25.957

**.Independent (dummy) variables are valued as 1 and 0, where 1 represents the particular category and 0 represents other categories. X always equals to 1 since other categories are not represented in the regression test therefore, the slope always multiplies by 1.*

Source: Authors' calculations based on data obtained from the Sri Lanka Demographic and Health Survey, 2016

Table 3 shows the age at marriage of a female by her education level. Accordingly, it indicates when a female's education level gets higher, her age at marriage increases. The regression equation proves that the age at marriage of a no or less-educated female ranges between 20 and 21 years. Moreover, the age at marriage of a female with higher levels of education ranges between 26 and 29 years. Accordingly, the regression analysis depicts that there is a direct relationship between education level and age at marriage, indicating a 9-year difference in post-transitional fertility in Sri Lanka.

Secondly, Table 4 of regression coefficients confirms that there is a direct relationship between education level and age at first birth of the completed cohort fertility in the post-transitional fertility in Sri Lanka.

Table 4: Coefficients Table of Education Level and Age at First Birth by Using Simple Linear Regression Analysis

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	31.602	.574		55.035	.000
No Education Dummy	-8.743	.738	-.314	-11.847	.000
Grade 1-5 Dummy	-8.319	.622	-.542	-13.380	.000
Grade 6-10 Dummy	-6.778	.594	-.582	-11.417	.000
GCE OL or Equ Dummy	-5.449	.633	-.325	-8.610	.000
GCE AL or Equ Dummy	-3.225	.615	-.224	-5.244	.000

Dependent Variable: Age at First Birth

Source: Author's calculations based on data obtained from the Sri Lanka Demographic and Health Survey, 2016

In this coefficients table (Table 5), the constant of the model refers to the baseline category of 'Degree & Above' which means how age at first birth deviates to other levels of education from that particular category. According to this table, the mean differences in age at first birth are statistically significant for all categories since the p-value is 0.000 (<0.05). This table of coefficients further proves that age at first birth of a female with degree and above in the completed cohort fertility in the post-transitional fertility in Sri Lanka is 31.6 which is denoted by B-value in unstandardized coefficients. Furthermore, age at first birth gradually decreases with the decrease in education level and vice versa.

The regression equation can be used to clearly identify the direction of the association that this model depicts between education and age at first birth.

Table 5: The Direction of the Relationship between Education Level and Age at First Birth

Y	a	b	X*	Y = a + bX
Age at First Birth	31.602	-8.743	No Education	22.859
		-8.319	Grade 1-5	23.283
		-6.778	Grade 6-10	24.824
		-5.449	G.C.E. O/L or Equ	26.153
		-3.225	G.C.E. A/L or Equ	28.377

**. Independent (dummy) variables are valued as 1 and 0, where 1 represents the particular category and 0 represents other categories. X always equals to 1 since other categories are not represented in the regression test therefore, the slope always multiplies by 1.*

Source: Authors' calculations based on data obtained from the Sri Lanka Demographic and Health Survey, 2016

Table 5 shows the age at first birth of a female by her education level. Accordingly, it indicates when a female's education level gets higher, her age at first birth increases. The regression equation proves that the age at first birth of a no or less-educated female ranges between 22 and 23 years. Moreover, the age at first birth of a female with higher levels of education ranges between 24 and 32 years. Accordingly, the regression analysis depicts that there is a direct relationship between education level and age at first birth, indicating a nearly 10-year difference in post-transitional fertility in Sri Lanka.

Thirdly, in Table 6, regression coefficients confirms that there is an inverse relationship between education level and spacing between births of the completed cohort fertility in the post-transitional fertility in Sri Lanka.

Table 6: Coefficients Table of Education Level and Spacing between Births by Using Simple Linear Regression Analysis

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.795	.273		13.880	.000
No Education Dummy	1.168	.351	.093	3.322	.001
Grade 1-5 Dummy	1.520	.296	.220	5.133	.000
Grade 6-10 Dummy	1.566	.283	.299	5.540	.000
GCE OL or Equ Dummy	1.309	.301	.173	4.345	.000
GCE AL or Equ Dummy	.811	.293	.125	2.768	.006

Dependent Variable: Average Spacing between Births

Source: Authors' calculations based on data obtained from the Sri Lanka Demographic and Health Survey, 2016

In Table 7 (Coefficient table), the constant of the model refers to the baseline category of 'Degree & Above' which means how spacing between births deviates to other levels of education from that particular category. According to this table, the mean differences in spacing between births are statistically significant for all categories since the p-value is less than 0.05 (<0.05). This table of coefficients further proves that average spacing between births of a female with degree and above in the completed cohort fertility in the post-transitional fertility in Sri Lanka is 3.8 years which is denoted by B-value in unstandardized coefficients. Furthermore, spacing between births gradually increases with the decrease in education level.

A clear grasp of the direction of the link between education and spacing between births, as shown by this model, can be obtained by utilizing the regression equation.

Table 7: The Direction of the Relationship between Education Level and Spacing between Births

Y	a	b	X*	Y = a + bX
Spacing Between Births	3.795	1.168	No Education	4.963
		1.520	Grade 1-5	5.315
		1.566	Grade 6-10	5.361
		1.309	G.C.E. O/L or Equ	5.104
		0.811	G.C.E. A/L or Equ	4.606

**. Independent (dummy) variables are valued as 1 and 0, where 1 represents the particular category and 0 represents other categories. X always equals to 1 since other categories are not represented in the regression test therefore, the slope always multiplies by 1.*

Source: Authors' calculations based on data obtained from the Sri Lanka Demographic and Health Survey, 2016

Table 7 shows the spacing between births of a female by her education level. Accordingly, it indicates when a female's education level gets higher, her spacing between births decreases. The regression equation proves that the average spacing between births of a no or less-educated female ranges between 4 and 5 years. Moreover, the average spacing between births of a female with higher levels of education ranges between 3 and 5 years. Accordingly, the regression analysis depicts that there is an inverse relationship between education level and spacing between births, indicating no significant difference in post-transitional fertility in Sri Lanka.

Finally, and fourthly, in Table 8, regression coefficients confirms that there is a direct relationship between education level and age at the last birth of the completed cohort fertility in the post-transitional fertility in Sri Lanka.

Table 8: Coefficients Table of Education Level and Age at Last Birth by Using Simple Linear Regression Analysis

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	35.909	.605		59.343	.000
No Education Dummy	-6.168	.778	-.220	-7.931	.000
Grade 1-5 Dummy	-4.895	.655	-.317	-7.472	.000
Grade 6-10 Dummy	-4.082	.626	-.349	-6.525	.000
GCE OL or Equ Dummy	-3.794	.667	-.225	-5.690	.000
GCE AL or Equ Dummy	-2.410	.648	-.166	-3.719	.000

Dependent Variable: Age at Last Birth

Source: Authors' calculations based on data obtained from the Sri Lanka Demographic and Health Survey, 2016

In Table 8 (coefficients table), the constant of the model refers to the baseline category of 'Degree & Above' which means how age at last birth deviates to other levels of education from that particular category. According to this table, the mean differences in age at last birth are statistically significant for all categories since the p-value is 0.000 (<0.05). This table of coefficients further proves that age at last birth of a female with degree and above in the completed cohort fertility in the post-transitional fertility in Sri Lanka is 35.9 which is denoted by B-value in unstandardized coefficients. Furthermore, age at last birth gradually decreases with the decrease in education level.

The regression equation can be used to clearly comprehend the direction of the association that this model depicts between education and age at last birth.

Table 9: The Direction of the Relationship between Education Level and Age at Last Birth

Y	a	b	X*	Y = a + bX
Age at Last Birth	35.909	-6.168	No Education	29.741
		-4.895	Grade 1-5	31.014
		-4.082	Grade 6-10	31.827
		-3.379	G.C.E. O/L or Equ	32.530
		-2.410	G.C.E. A/L or Equ	33.499

**. Independent (dummy) variables are valued as 1 and 0, where 1 represents the particular category and 0 represents other categories. X always equals to 1 since other categories are not represented in the regression test therefore, the slope always multiplies by 1.*

Source: Authors' calculations based on data obtained from the Sri Lanka Demographic and Health Survey, 2016

Table 9 shows the age at the last birth of a female by her education level. Accordingly, it indicates when a female's education level gets higher, her age at last birth increases. The regression equation proves that the age at the last birth of a no or less-educated female ranges between 29 and 31 years. Moreover, the age at the last birth of a female with higher levels of education ranges between 32 and 36 years. Accordingly, the regression analysis depicts that there is a direct relationship between education level and age at last birth, indicating a nearly 6-year difference in post-transitional fertility in Sri Lanka.

Discussion and Conclusion

It is important to consider the birth cohorts to which females in the completed cohort fertility belong when examining the influence of education on post-transitional fertility in Sri Lanka. They belong to birth cohorts between 1966-67 and 1970-71. Sri Lanka experienced a social development in the 1940s and the establishment of free education happened in 1945, as a result of the effects of major social

transformations in the country, fertility began to decline after the 1960s (Dissanayake, 1995). Females in the completed cohort fertility started their schooling in the 1970s which is nearly 28-30 years after the establishment of the free education scheme. During that period, Sri Lanka's formal education system was developed largely and females in the completed cohort fertility were able to take that advantage. In addition, their parents might have experienced the onset of mass education and become the first generation with mass schooling; the persons who were born during the period 1940 and 1954 [18]. Accordingly, motivation for education through family might be received by the females in the completed cohort fertility.

In the post-transitional fertility period, the country already experienced family transition and change in the direction of wealth flows from parents to children which is the downward flow of wealth. Education speeds up cultural changes and creates new values (Dissanayake, 2011). During post-transitional fertility, education takes away the priority of marriage from females and draws their attention to employment and economic independence. That may be a result of social transformations that occurred in the country after the 1940s. In addition, since there are many opportunities with attractive value for females in the labor market, they engage in paid employment and their labor force participation increases. Becker's model presented in 1960, describes fertility based on the conventional economic theory of consumer behavior. He uses the term "taste" for the preferences of children. According to his model, an increase in taste would increase the demand for children (Becker, 1960). If females prefer to have children, they need to enter into marriage since birth is considered within marriage in Sri Lanka. But preference for children among females in post-transitional fertility declines with an increase in their level of education which causes delays in their marriage.

Age at marriage of females, accordingly, is affected by their education level. Educated females prefer to engage in paid employment rather than get married at young and marriage becomes less priority to them (De Silva, 1997). As a result of changes in attitudes, the age at marriage of educated females has increased comparatively to uneducated or less educated females in the post-transitional fertility in Sri Lanka. Since the age at marriage is high among higher-educated females, their age at first

birth also increases. In addition, their preference for children is low and they tend not to have their first birth immediately after marriage.

Schooling increases the costs of children and creates dependency within the family (Dissanayake, 2011). Educated parents have fewer children since they consider about quality of their children (Caldwell, 1980).Specifically, the value of children is less in the post-transitional fertility regime thus, educated parents delay their first child. The value of children approach aims to discuss the factors affecting fertility in terms of positive and negative such as satisfaction and cost respectively and the net value of children is formed by investigating both positive and negative values (Dissanayake, 2011).The net value of children is low in the post-transitional fertility among educated females. Accordingly, their age at first birth increases comparatively to uneducated or less educated females. Furthermore, educated women are more likely to know about and utilize current contraceptive methods, which raises the age at first birth by extending the time between marriage (Axinn & Barber, 2001; Bishai, 2019). Higher ages at marriage and first birth, ultimately, affects fertility reduction in the post-transitional fertility by delaying starting fertility behavior of females.

Education limits the amount of time a female can spend her reproductive years being active. If a female marries at the age of 20, she has approximately 30 years to spend her reproductive years actively. If a female marries at the age of 30, she has approximately 20 years to spend her reproductive years actively. Therefore, spacing between births of educated and uneducated females responds to their spacing fertility behavior differently. An inverse relationship between education and spacing between births can be identified in post-transitional fertility in Sri Lanka. The current Total Fertility Rate (TFR) in the country is 2.2 which means a woman bears a total of 2–3 children by the end of her reproductive age span. Accordingly, uneducated or less educated females have enough time to have children as their preference since their age at marriage is lower than educated females, thus their birth intervals are higher than educated females. Since the active years of the reproductive age span of educated females are limited, their birth intervals are shorter than uneducated females. In addition, uneducated females are encouraged to use long-term contraceptive methods by the government

to increase spacing between births (Department of Census and Statistics, 2017).

Age at the last birth of a female increases with the increase in her level of education in the post-transitional fertility in Sri Lanka. The aforementioned factors such as the direction of the flow of wealth, quality of children, value of children's approach, knowledge and use of contraceptive methods, the effect of the Total Fertility Rate (TFR), and cultural changes can be identified as causes of increasing in the age at last birth of educated females. However, the age at the last birth is low among uneducated females as they are encouraged to permanent sterilization after their second or third birth. A higher age at last birth can be misinterpreted as the impact of a higher age at last birth is larger than a lower age at last birth to ultimate fertility. Therefore, it is important to examine the starting fertility behavior of a sample before jumping to conclusions. Even though educated females have a higher age at last birth, they have a higher starting fertility behavior which is not impacting largely on fertility by reducing the gap between starting and stopping fertility behaviors.

The study on the influence of education on post-transitional fertility in Sri Lanka can be further strengthened by integrating fertility transition theories, particularly those proposed by John Bongaarts and Ronald Freedman. Bongaarts' (1978) model of proximate determinants of fertility identifies key biological and behavioral factors such as marriage patterns, contraceptive use, postpartum infecundability, and abortion that directly influence fertility levels (Bongaarts, 1978). In post-transitional societies like Sri Lanka, education plays a critical role in modifying these determinants, particularly through increased contraceptive prevalence and delayed childbearing. Freedman (1979) emphasized the role of social diffusion in fertility transitions, suggesting that education facilitates the spread of knowledge about reproductive health and modern contraceptive methods, thereby accelerating fertility declines (Freedman, 1979). By incorporating these perspectives, the study is providing a more structured explanation of how education affects completed cohort fertility, not just through individual decision-making but also through broader societal shifts in reproductive norms and behaviors.

Furthermore, education is a key driver of women's empowerment, influencing fertility choices through multiple pathways, including

economic independence, access to healthcare, and shifts in family size preferences. Studies have shown that higher levels of female education are strongly associated with lower fertility rates, as educated women are more likely to delay marriage and childbirth, pursue career opportunities, and make informed contraceptive choices (Lesthaeghe, 1995; Caldwell, 1980). In Sri Lanka, where fertility rates have already declined to post-transitional levels, education may continue to influence cohort fertility by reinforcing lower desired family sizes and increasing participation in the formal labor market. Accordingly, the discussion on these factors enhances the study's depth, aligning Sri Lanka's fertility patterns with broader global demographic trends. Moreover, considering the second demographic transition (SDT) theory (Lesthaeghe & van de Kaa, 1986), which suggests that individual autonomy and self-fulfillment drive fertility decisions in later stages of demographic change, adds further explanatory power. Integrating these theoretical perspectives and their empirical validations strengthens the study's contributions to the understanding of education's long-term impact on fertility in Sri Lanka.

In Sri Lanka, there is a clearer correlation between women's health and fertility. In particular, Sri Lanka's Maternal and Newborn Health Strategic Plan (2017–2025) seeks to guarantee a nation in which all pregnancies are planned and desired, all births are joyfully celebrated, and all mothers, fetuses, and newborns survive, thrive, and fulfill their potential. The initiatives carried out under this strategy, which address issues connected to fertility and sexual and reproductive health, significantly contribute to the maintenance of improved health among women in the nation.

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