EFFECTS OF SON PREFERENCE AND SOCIO-DEMOGRAPHIC DETERMINANTS ON PARITY PROGRESSION IN BANGLADESH

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ABSTRACT: *This study aims to determine whether son preference exists in Bangladesh and to identify the different socio-demographic factors that have affected women's movement from one parity to another. The analysis was carried out on 17,006 women selected from the Bangladesh Demographic and Health Survey of 2017/18 who at the time of interview met the criteria of being married and had at least one living child. The probability of women's movement from parity to parity was assessed using the binary logistic regression method. The effect of variables such as the education of women and their partner's education, work status of woman, partner's profession, age at first marriage, place of residence, religion, access to mass media, wealth index, and the administrative division were important determinants of the parity progression of women. The study found that parity movement is also associated with the number of living sons. At parity 2 and parity 3, women with no sons were more likely to move to the next parity than those with at least one son. Moreover, having a higher-level education, living in an urban area, and having access to mass media were found to be significant factors in terms of decreasing the odds of women's movement from parity to next parity. Additionally, respondents from the Chittagong and Sylhet divisions were more likely to have subsequent births than those from other divisions.*

KEYWORDS: *son preference, socioeconomic factors, demographic factors, fertility, and parity progression, Bangladesh*

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INTRODUCTION

Population growth is reported to be very strong in Bangladesh, so many of the strategies and requirements of the country are related to the growth of the population – for example, the country is worried about meeting basic needs and sustaining other facets of the economy as well as social needs. The total population of Bangladesh is 168.2 million, and the density of population is 1,140 per square kilometer. The economy is at risk owing to the unprecedented size of the population and population growth rate (1.37), whereas the sex ratio of male to female is 100.2 (BBS 2021). Bangladesh witnessed a rise in fertility and a change in the ratio of females to males but is now experiencing a decrease in fertility and improvement in the ratio of males to females, although fertility has remained static over the last decade (NIPORT 2019; Kabeer et al. 2014). According to the statistics, the fertility rate was 6.3 births per woman in 1975, but this figure had fallen to 2.3 births per woman by 2019 (BBS–UNICEF 2019).

One of the factors why the rise in population has not slowed in Bangladesh is son preference and prejudice against females. Because of the preference for boys, there are many underemployed and unemployed male youths, which has contributed to a spike in crime and violence against women. In a survey by the Bangladesh Bureau of Statistics, almost two-thirds (72.6%) of women who were or had been married had experienced violence at least once from their husband at some point in their lifetime. Rates of lifetime partner violence were 74.8% in rural areas and 71.1% in urban areas (BBS 2016). Another factor that has hinders a lower population growth rate in Bangladesh is unfair social, economic, and gender-related factors; this is also why the sex ratio at birth is comparatively higher in India, although the ratio is comparatively equal in Bangladesh (Bhalotra et al. 2010; Bhat–Zavier 2005). Due to a preference for smaller families and the increase in expenses associated with handling unwanted pregnancies people turn to sex-selective abortion as a form of family planning. The most popular explanation for why people turn to abortion is because they are scared of having so many infants (Bhuiya et al. 2001; Huq et al. 2012). Although abortion in Bangladesh is prohibited, it is legal when the woman's life is in danger. However, a woman may use menstrual regulation (MR) to quietly terminate an early pregnancy under the pretense of contraceptive failure leading to a missing period.

Bangladesh has achieved tremendous progress in poverty reduction, which has been aided by continuous economic development in the country. It was upgraded to lower-middle-income status in 2015 and is on track to be removed from the United Nations' Least Developed Countries (LDC) list by the year 2026. The adult literacy rate in Bangladesh is 73.9% (the male literacy rate is

76.7%; for females, 71.2%).[2] Enrollment in secondary school for females has made significant strides in recent years. Dropout rates decreased from around 64.9% in 2009 to 40.2% in 2018 (BANBEIS 2018). In 2016–17, the overall labor force participation rate in Bangladesh was 58.2%. Women's labor force participation was 36.3%, while men's was 80.5%. Greatest time spent in paid work was associated with men (6.9 hours) followed by women (5.2 hours). On the other hand, women spent more time on household work (3.6 hours) compared to men (1.4 hours). There are no significant differences in time spent on leisure and other work between men and women. Women participate less than males in both personal and social activities (BBS 2019).

Most of the Bangladeshi population (89%) identify as Muslim, with Hinduism being the second most prevalent religion (10%). The remaining 0.9% of the population claim affiliation with a different religion. Gender preferences for children are established through cultural and religious traditions as well as social perceptions, which influence individual attitudes and behavior. Children of a certain sex are often sought as they are believed to offer certain utilities or to reduce financial or psychological expenses. In terms of reproductive behavior, each religion has its own set of religious norms and ideologies that are distinct from others. Fertility varies from one religious tradition to another within a nation. Muslim women in Bangladesh have a strong desire to have sons, which is one of the reasons why Bangladesh has a higher fertility rate than other countries (Hoq 2019b). Another motivation for Muslim women to have more children is because they think that having more children is a sign of the strength of a married woman's family. Women's status in Muslim society is not seen as equal to men's, and they are required to practice purdah (Kirk 1976). Because Islam forbids the use of contraception, the practice of family planning is virtually unthinkable among this population, particularly among illiterate rural women who live in rural areas (BBS 2015). Moreover, inheritance under Muslim law states that sons should receive double what daughters get.[3]

The literature on son preference and women's parity progression does not consider the effect of socioeconomic factors. This study begins to redress the gap in the literature on parity progression in Bangladesh through an examination of how socio-demographic determinants affect parity movement. Given the scarcity of research on parental son preferences in Bangladesh in relation to socio-demographic determinants, the study formulates three research questions to explore son preferences: (1) how do socio-demographic determinants and the preference for sons affect the transition from first child to second child

2 https://countryeconomy.com/demography/literacy-rate/Bangladesh

3 Sahih al-Bukhari, 6239 CD

birth in Bangladesh; (2) how does the preference for sons affect the transition from second child to third birth for women in Bangladesh; and (3) how does the preference for sons affect the transition from third child to fourth birth for women in Bangladesh?

I believe this analysis to be especially useful because the dataset that is used includes a special subsample of the Bangladeshi population, therefore allows useful insights to be generated not only into son preferences but also the determinants of parity progression processes.

The rest of this paper is organized as follows. The next section summarizes related research work. The section on methodology describes the survey technique and methods of analysis of data in this study. This is followed by a section that characterizes the fertility trends in Bangladesh. The next section reports the results of the study, which is followed by discussion and conclusion sections.

PREVIOUS EMPIRICAL RESULTS

In Bangladesh, the desire for sons is still seen in the lives of mothers. Women may choose to continue carrying children until they have the optimal number of baby boys. The mean ideal number of children among ever-married women was 2.4 in 2004 and 2.3 in 2017 (NIPORT 2019). Among all the different factors that affect females, we see that even during early infancy due to starvation and neglect women face more significant discrimination than men.

The problem of son choice is due to different economic factors. Parents assign sons high priority, considering them much more important than daughters. According to economic theory, parents will educate their children if they believe they will get a financial return (Kingdon 2005). Some parents assume that daughters are a financial burden. Some mothers and fathers expect that their sons will provide financial support for them in their old age, while some may expect more support, which translates into a desire for more sons (Sekher–Hatti 2010; Larsen 2011). It is taken as a starting point that sons can take up jobs when they become adults. Over the last few decades, the world has seen a large increase in female school attendance and greater economic opportunities and legal rights for women. Yet even after many females have dominated the field of innovation, son preference remains strong in many Asian countries. The repercussions of such measures have been broad reaching, contributing to an excess preference for males (Hoq 2020; Sabharwal 2016). The education of mothers reduces the impact of son preference and prejudice against girls. Also,

societies with strong maternal son preference and poor status for women have greater gender disparity in schooling (Bose 2012; Madhavan 2001; Bigombe–Khadiagala 2003). Women who have been in education for at least five years have a lower fertility level (Rahman et al. 2002).

Previous studies have shown that a more significant predicted income is likely to inspire higher capital investment in a daughter. Also, intra-household equality fostered by a mother working outside the home leads to the equalization of expenditure on sons and daughters, both of which are essential for development (Hoq 2019a; Kingdon 2005). The rules and practices affiliated with various sects and castes legitimize son choice. Research suggests that Muslim spouses have a stronger preference for son(s) relative to non-Muslim couples (Hoq 2019a).

Concerning the urban-rural divide, where there is substantial disparity in birth control metrics, this has been of major concern to policymakers. Women in rural areas who are not knowledgeable regarding childbearing, or who have a strong desire to have sons rather than daughters, or who do not or cannot use contraceptives due to their living in a patriarchal environment are those woman who do not have the empowerment or the skills that will help them to control their fertility (NIPORT 2016; Rahman et al. 2014).

Regarding fertility expectations in South Asian countries, studies indicate a substantial correlation between more decision making in the household and smaller ideal family size (Kabeer 1999). As the demographic transformation has advanced, the association between women's autonomy and fertility desires can now be studied in the context of the demographic transition hypothesis. Any hypotheses about the triggers of population changes identify female labor force involvement and reproduction preferences as among the causes of real decreases in fertility (Kabeer 1999; Jejeebhoy–Sathar 2001). In addition, less wealth disparity reduces fertility and variability, whereas macro-level patterns of inequality are usually replicated at the community level (Colleran et al. 2015).

There is a lack of studies about women's autonomy, age of marriage before legal age, and fertility preferences, which variables are responsible for parity movement in Bangladesh. This study considers the variable women's attitude towards their husbands as a proxy variable for women's autonomy. Women's reproductive success and social status vary depending on whether they enter into marriage or cohabitation directly after completing their studies. This study uses the variable age at first marriage to understand whether marital age affects the parity movement of women.

Sons are considered essential in many Bangladeshi families, and there is a great desire for sons among those who are blessed with daughter(s). This desire is perceived to translate into gender inequality, which has an impact on the present and future fertility of an individual or a couple, and it is for this reason

that this topic ought to be discussed and considered important in relation to its policy implications. The goal of this study was to identify different socio-demographic factors which affect the parity progression of women in Bangladesh by comparing the movement of women from parity to parity.

DATA AND METHODS

The analysis used data from the *Bangladesh Demographic and Health Survey 2017/2018*. The sample of people who were surveyed is nationally representative and comprises the entire population of people who live in non-institutional dwellings in the region. This study used a list of enumeration areas (EAs) of the 2011 census of the people's republic of Bangladesh, issued by the Bangladesh Bureau of Statistics (BBS). For a reliable survey, 20,376 ever-married women in Bangladesh were listed as part of the sample, and 20,127 were interviewed with a 99% response rate. Among the surveyed women respondents, 18,984 were married at the time of the survey.

To predict women's parity progression, the number of living children is used as a proxy variable of fertility. To make a fruitful analysis, the study used those respondents who were currently married at the time of the survey, with at least one living child. A total of 17,006 currently married respondents fulfilled the conditions of having at least one living child. The dependent variable of this study is four binary dichotomous variables. Respondents may move from parity 1 to parity 2, parity 2 to parity 3, parity 3 to parity 4, and parity 4 to parity 5 or greater.

The parity progression of a pair is an essential component of fertility dynamics and the marriage process. It may be one instrument or method of assessing family planning, and one that is defined by the variables that affect fertility. The parity progression ratio is simply the proportion of women with a certain number of children who go on to have another child. Different socioeconomic and demographic factors drive women's parity progression (Chaudhuri 2012; Hoq 2019a). On the other hand, son preference is an essential determinant of the parity movement in Bangladesh.

The study identified the crucial predictors of parity progression from various studies discussed in the literature section of this study. The predictors are education, occupation, residence, religion, access to mass media, and the wealth index, which were obtained from the literature review. Moreover, the study used the predictors of age at first marriage of women, women's attitudes towards beating by her husband, and administrative division, which have not

been discussed earlier in any research in terms of their effect on the parity progression of women in Bangladesh. Note that the study considered age at first marriage of women instead of age of mother at first birth, which is an important factor as early marriage influences early parity movement. The variable age at first marriage of women is categorized as one of two values – married before or at the legal age of 18 years, or those married after legal age. Although the legal age of marriage for women is 18, a survey found that 59% of Bangladeshi women aged 20–24 had married before the age of 18 (NIPORT 2019). In the questionnaire, woman's attitudes towards husbands beating their wives were obtained in the presence of female interviewers. To avoid bias in the responses, no other person except the interviewer was present at this time. In the BDHS dataset, the wealth index is calculated using household ownership of televisions and bicycles; materials used for housing construction; and type of water access and sanitation facilities (NIPORT 2019).

The study utilized binary logistic regression to predict categorical independent variables. Binomial logistic regression predicts the likelihood of a case based on the independent variables (predictors). Logistic regression examines the relationship between independent (categorical or continuous) variables and one dichotomous dependent variable. Logistic regression is effective for predicting the presence or absence of a characteristic or result from a collection of predictor variables. It is comparable to linear regression but is suitable for models with dichotomous dependent variables.

The odds are the chance of a particular occurrence or outcome, divided by the probability of an incident or outcome not being the case. Logistic regression analysis is used to identify the autonomous impact of every factor by controlling for others.

FERTILITY TRENDS IN BANGLADESH

Despite widespread poverty and underdevelopment, Bangladesh has seen a significant reduction in fertility in the past three decades. However, the fertility decline has stalled in the last decade. Many socioeconomic variables have been linked to the fertility shift. The most well-established and researched socioeconomic fertility determinants are educational ones (Jejeebhoy 1995). In addition, this decrease in TFR is frequently credited to an effective family planning program that targets women. Currently, the TFR of Bangladesh has stalled at 2.3 births per woman calculated using ever-born children, which is near to replacement level fertility (2.1 children per woman). One of the reasons

for this stalled fertility is that the decision about the ideal number of children in Bangladesh mainly depends on the husband or household head in Bangladesh. The BDHS data show a TFR of 2.3 for all women, whereas the present study found the average number of living children is 2.25–2.51 (by place of residence) of currently married women with at least one living child (Table 2). On the other hand, infant and child mortality rates are crucial indicators of a country's socioeconomic growth and demographic evaluation. In Bangladesh, mortality rates for infants and children were 38 per 1,000 live births and 7 per 1,000 children, respectively (NIPORT 2019).

A woman's total fertility rate (TFR) is the estimated number of children she will have if she survives her childbearing years and bears children according to the current age-specific fertility rates. Furthermore, this is the number of children a woman would have if her childbearing corresponds to the prevalent pregnancy statistics for each age from a particular specified year, assuming no miscarriages or child mortality during her reproductive career.

Comparing the fertility rate from 1975 and 2017 from the Bangladesh Fertility and Health Study, we can obtain some details regarding our fertility and fertility rate patterns. To observe the dynamics of total fertility rate at a glance, the calculated values are shown in Table 1.

Table 1. *Fertility rates among women in Bangladesh from 1975 to 2017*

Age group	BFS 1975	BFS 1989	BDHS 1993–1994	BDHS 1996–1997	BDHS 1999–2000	BDHS 2004	BDHS 2007	BDHS 2011	BDHS 2014	BDHS 2017–2018
15–19	109	182	140	147	144	135	126	118	113	108
20–24	289	260	196	192	188	192	173	153	143	143
25–29	291	225	158	150	165	135	127	107	110	114
30–34	250	169	105	96	99	83	70	56	57	61
35–39	185	114	56	44	44	41	34	21	25	18
40–44	107	56	19	18	18	16	10	6	4	5
45–49	35	18	14	6	3	3	1	3	4	1
TFR	*6.3*	*5.1*	*3.4*	*3.3*	*3.3*	*3.0*	*2.7*	*2.3*	*2.3*	*2.3*

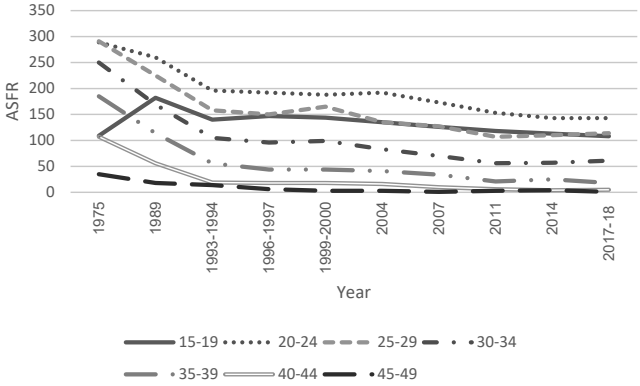
Source: Different demographic survey reports in Bangladesh, BFS = Bangladesh Fertility Survey, BDHS = Bangladesh Demographic and Health Survey.

At present, the total fertility rate has dropped dramatically. In Bangladesh, the total fertility rate was 6.3 births per woman in 1975, but had fallen to 2.7 births per woman by 2007, and 2.3 births by 2017. This indicates a marked drop in fertility over the past three-and-a-half decades.

A look at the shift in the specific age groups and the most significant changes in the fertility rate shows that the top childbearing period remained age 20–24,

and the most crucial overall change in the fertility rate occurred in that group. There's been a significant decrease in the number of births in the age group 20–24 in Bangladesh in the past 42 years, down from 289 births in the 1975 BFS to 143 births per thousand women in BDHS 2017/18.

Figure 1. *Age-specific fertility rate (ASFR) among women aged 15–49 years in Bangladesh, 1975–2017/18*



Source: Reports of different demographic surveys in Bangladesh.

The figure indicates that the sharpest decrease in fertility occurred in the significant age group 20–24 and a small decline among the age group younger than 49. When longitudinal research is used to assess the degree of difference in the overall fertility rate among all age groups from 1993 to 2017, it is estimated that the fertility rate decreased by nearly half between 1993 and 2017 in the age group 30–34 compared with the age group 20–24. This drop in the fertility decrease among women married before the legal age began to happen not only because of the impact of economic growth that occurred in Bangladesh, but also due to the use of modern technology that has created new workplaces.

Mean number of living children

This segment gives an idea of the mean number of living children with the dispersion of the level of fertility by number of living children per woman. For this, only surviving children were considered. This is important step when calculating the parity movement of the women. A total of 17,006 currently married women with at least one living child were considered in this study.

Table 2 shows that women who had highest number of living children had the highest dispersion of fertility. Women with no formal education had the highest mean number of living children (3.30) with a standard deviation of 1.5, followed by primary educated women (2.71). Respondents who had a job at the time of the survey had the highest average number of living children (2.59) than those who were not working at the time of survey (2.29). The highest mean number of living children was found with respondents whose husbands were illiterate (2.97) and jobless or in the religious profession (3.14). On the other hand, rural and Muslim respondents had a higher mean number of children (2.51 and 2.47, respectively) than their non-Muslim counterparts.

Table 2. *Mean number of living children of respondents in Bangladesh, 2017*

Background characteristics	Number of respondents	Mean number of living children	Standard deviation
Level of respondent's education			
No education	2844	3.30	1.50
Primary education	5584	2.71	1.31
Secondary education	6705	2.06	0.99
Higher education	1874	1.65	0.77
Respondent currently working			
No	8636	2.29	1.25
Yes	8370	2.59	1.31
Husband's education			
No education	3955	2.97	1.40
Primary education	5538	2.53	1.31
Secondary education	4948	2.16	1.15
Higher education	2565	1.92	0.94
Husband's occupation			
Agriculture	4267	2.79	1.35
Service	8440	2.21	1.19
Business	3867	2.45	1.28
Other	432	3.14	1.53
Place of residence			
Urban	4762	2.25	1.20
Rural	12244	2.51	1.32
Religion of respondent			
Muslim	15371	2.47	1.31
Non-Muslim	1635	2.12	1.00
Age at first marriage			
> 18 years	13095	2.55	1.32
≤ 18 years	3911	2.05	1.11

Attitude of woman towards husband beating			
Not justified	13451	2.40	1.27
Justified	3555	2.58	1.36
Access to mass media			
No access	5900	2.79	1.45
Have access	11106	2.25	1.15
Wealth index			
Poor	6596	2.63	1.37
Middle	6959	2.39	1.27
Rich	3451	2.15	1.08
Division			
Barisal	960	2.55	1.36
Chittagong	3066	2.68	1.42
Dhaka	4267	2.35	1.25
Khulna	1979	2.18	1.01
Mymensingh	1310	2.54	1.35
Rajshahi	2391	2.23	1.08
Rangpur	2055	2.40	1.21
Sylhet	978	2.88	1.68
Overall	*17006*	*2.43*	*1.29*

Source: Author's elaboration using BDHS 2017/18 survey dataset.

Women who marry at an early age appear to have early pregnancies, early motherhood, and early puberty, and are more likely to have many children during adolescence. The study also found that the average number of living children of those women who married before legal age (18 years) was 2.55, whereas those married after legal age had an average of 2.05 living children. On the other hand, women whose perception that being beaten by a husband is justified had an average of 2.58 living children, whereas the mean number of living children of those women who rejected this was 2.40. Women who have no access to any type of mass media had an average of 2.79 average living children, whereas respondents from the low economic strata had an average of 2.63 living children.

The parity progression of a country's fertility depends on the power and failures of its various sectors (such as the health sector), the complexities of the industrial structure, and regional factors. Besides this, the average number of children also varies from region to region. This study identified that the highest mean number of living children per woman is associated with Sylhet (2.88), followed by Chittagong (2.68), and the lowest mean number of living children was found in Khulna (2.18).

RESULTS

In this segment, the parity movement of women and logistic regression analysis are discussed, which is the core part of the study.

Parity progression

The effect of son preference on parity movement is measured by the number of living sons of women, corresponding to their tendency to move from one parity to the next parity.

The population for this analysis is classified into four categories – members of the first group (see Table 3) have 0 or 1 son(s), the second group have 0, 1 or 2 sons, the third group have 0, 1, 2, 3, or 4 sons, and the fourth group includes members with up to 4 sons (0, 1, 2, 3 or 4 sons). In this analysis, 'sex composition' refers to the various potential variations of sons and daughters at a specified parity, without recognizing birth order in different parities.

Table 3. *Proportion (%) of women who continued childbearing, Bangladesh, 2017*

Parity	Number of women	Parity progression
Parity 1	16,824	76.6
0 son		76.5
1 son		76.8
Parity 2	12,835	57.9
0 son		60.9
1 son		57.0
2 sons		57.4
Parity 3	7378	50.5
0 son		52.9
1 son		49.9
2 sons		50.5
3 sons		49.8
Parity 4	3702	46.9
0 son		49.4
1 son		47.6
2 sons		46.6
3 sons		46.2
4 sons		46.2

Source: Author's elaboration using BDHS 2017/18 survey dataset.

The key finding of this analysis is that a total of 16,824 individuals have successfully had at least one child (multiple births excluded in the analysis). Frequency distribution in Table 3 indicates that out of the 16,824 women with a first birth, 76.8% of those with a son and 76.5% of those with a daughter had at least one further delivery. Regarding parity 2, 57.9% of women moved to parity 3; however, the proportion of movement decreased as the number of sons the women had increased. This trend was most typical of women with just a single son. More precisely, at parity 2, 60.9% of women with no sons shifted to parity 3, and 57% of women with one son, whereas the proportion of women with two sons moving to parity 3 or greater dropped to 57.4%.

Of all the women who had no sons at parity 3, 52.9% moved on to the next parity, while the proportions for those who had one son, two sons, or three sons were 49.9%, 50.5%, and 49.8%, respectively. At parity 4, women who had no sons accounted for 49.4%; women who had one son 47.6%; women who had two sons 46.6%; and 46.2% of women who had three sons moved to the next parity.

Logistic regression analysis

In this segment we describe how logistic regression analysis was applied to identify how different categorical and continuous independent variables (socio-demographic factors) accelerate parity movement.

Logistic regression is an incredibly effective mathematical method for modeling a binomial outcome where the effect is the dependent variable and counts for two categorical variables. This analysis tests a collection of variables to see how they influence the grouping of particular variables, thus in essence can be used to assess better the relative influence of the multiple categories of variables concerned (Table 4).

A clear desire for sons may be a barrier to fertility decline if couples begin having children after achieving their total family size target because the parents are not happy with their children's sex composition. At parity 2, for respondents who had a son, the odds ratio of having another child was 0.77, which suggests a 23.0% decrease in the odds of having another child (moving to parity 3) compared to respondents who had no sons, while the odds ratio of those who had a son at parity 3 was 0.82 which indicates an 18.0% decrease in the odds of moving to parity 4 than those who had no sons. The findings of this survey show that a strong preference for sons in Bangladeshi society is present.

The chances of having another child decline for each woman who had a male child. For women with two sons, the odds of having a child were 0.80, which was lower than women with no sons (all daughters). At parity 3, the chance of advancement from parity 3 to 4 was smaller among women with three sons than among women with no sons, and a similar result was found for women with two sons (0.82). Women who had at least one son were less likely to have offspring, but those who had a daughter were more likely to have another child.

Chaudhuri (2012) conducted a multivariate analysis and found that women without sons were more likely to move to the next parity than women with son(s) in the first to fourth parity; additionally, there was a higher likelihood of getting pregnant for those women with a low number of girls. These analyses report on an extraordinary component of parity progression using the parity benchmark for sons using systematic, parity-specific multivariate regression.

Those women who did not have a formal education were more likely to advance to the next parity than women with greater formal education. Table 4 indicates that at parity 1–4 better educated women had lower odds (0.05–0.2) of moving to the next parity. It was observed that the findings were identical for partners' schooling. Women who had careers at the time of the study had a higher chance (1.18–1.54) of moving to the next parity than those who did not hold a job at the time of the survey, while husbands in industry and service occupations had lower odds of moving to the next parity than those in the agricultural sector.

Analysis of the essential demographic factor place of residence shows at parity 1 that rural respondents were 20% more likely to have succeeding births than their municipal (urban) equivalents. Clark (2000) observed that less educated, rural, and Muslim couples in India appear to have the largest proportion of sons. The above report also led to the same conclusion for Bangladesh. This research shows that while access to mass media increases healthcare knowledge and information, there is a direct association between access to mass media and the tendency to pursue fertility treatment. Compared to those who had no access to media (i.e., mainstream media), those who had access to the media saw an estimated 29% decrease in the odds of having a child in parity 2, and those who had access to the media were 19% less likely to have a child at parity 3. The expected value for parity progression of women who married after legal age (18 years) in Bangladesh suggests that they had lower odds of moving to the next parity (0.61–0.79).

Remarkably, women's attitudes towards 'wife beating' were connected to their parity advancement. Women who believe that wife-beating is justified had 6% higher odds of moving to the next parity than those who did not in parity 2 and parity 4.

Table 4. *Odds ratio for the analysis of parity progression movement using binary logistic regression, Bangladesh 2017*

Background characteristics	Odds ratio			
	Parity 1	Parity 2	Parity 3	Parity 4
Number of sons				
0 (RC)	1.00	1.00	1.00	1.00
1	0.98	0.77***	0.82**	0.82
2	na	0.80***	0.82**	0.75**
3	na	na	0.80**	0.71**
4	na	na	na	0.78
Level of respondent's education				
No education (RC)	1.00	1.00	1.00	1.00
Primary education	0.50***	0.52***	0.58***	0.58***
Secondary education	0.21***	0.23***	0.31***	0.30***
Higher education	0.09***	0.18***	0.20***	0.05***
Respondent currently working				
No (RC)	1.00	1.00	1.00	1.00
Yes	1.54***	1.22***	1.18***	1.06
Husband's education				
No education (RC)	1.00	1.00	1.00	1.00
Primary education	0.70***	0.80***	0.99	1.17*
Secondary education	0.56***	0.70***	0.80***	1.07
Higher education	0.89	0.77***	0.73**	1.48*
Husband's occupation				
Agriculture (RC)	1.00	1.00	1.00	1.00
Service	0.55***	0.64***	0.79***	0.82**
Business	0.87**	0.82***	0.92	0.89
Others	1.61***	1.40**	1.56***	0.87
Place of residence				
Urban (RC)	1.00	1.00	1.00	1.00
Rural	1.20***	1.14***	1.02	1.03
Religion				
Muslim (RC)	1.00	1.00	1.00	1.00
Non-Muslim	0.90	0.65***	0.62***	0.78
Age at first marriage				
> 18 years (RC)	1.00	1.00	1.00	1.00
≤ 18 years	0.76***	0.61***	0.73***	0.79**
Access to mass media				
No access (RC)	1.00	1.00	1.00	1.00
Have access	0.88***	0.71***	0.81***	0.75***

Background characteristics	Odds ratio			
	Parity 1	Parity 2	Parity 3	Parity 4
Attitude of Woman towards wife beating				
Not justified	1.00	1.00	1.00	1.00
Justified	0.96	1.06*	1.01	1.06*
Wealth index				
Poor (RC)	1.00	1.00	1.00	1.00
Middle	1.19***	1.29***	0.99	1.11
Rich	1.77***	1.43***	0.84*	0.73**
Division				
Barisal	1.00	1.00	1.00	1.00
Chittagong	1.16	1.50***	1.42***	1.27
Dhaka	0.76***	0.85*	0.95	0.89
Khulna	0.71***	0.59***	0.47***	0.53***
Mymensingh	0.76**	0.92	0.99	0.92
Rajshahi	0.67***	0.58***	0.62***	0.47***
Rangpur	0.81**	0.66***	0.74**	0.58***
Sylhet	0.95	1.39***	1.66***	1.65***
Constant	19.62***	7.52***	3.20***	2.40***
Nagelkerke R Square	*0.185*	*0.198*	*0.150*	*0.115*

Source: Author's elaboration using BDHS 2017/18 survey dataset.
*Note: RC = reference category, *p<0.10, **p<0.05; ***p<0.01;*
(---) indicates insignificant in bivariate analysis and 'na' indicates not applicable.

Indicators of economic and social growth, such as the income index, significantly correlate with fertility, influencing parity movement. The result shows that the more likely it is that a woman's household is wealthy, the less likely it is that they will have a subsequent birth after parity 2. It was observed that respondents from Chittagong and Sylhet divisions were more likely to move to the next parity than respondents from the Barisal division, whereas respondents from Dhaka, Khulna, Mymensingh, and Rajshahi divisions were less likely to have a subsequent birth than Barisal respondents.

DISCUSSION

Using data from BDHS 2017/18 about Bangladesh, we examined the parity progression of women by considering the socioeconomic and demographic factors and analyzing transitions from first birth to second, second birth to third, and third birth to fourth. The analysis highlights how the gender of existing children affects parity progression. Our results yield several interesting findings.The population/

demographic transition in Bangladesh has undergone a typical change in terms of mortality and fertility rates, which have declined over the years. Bangladesh is now at the beginning of a third phase of its population transition (Islam 2016). In Bangladesh, the total fertility rate was 6.3 births per woman in 1975, but the figure had fallen to 2.3 births by 2017. This indicates a marked drop in fertility over the past three-and-a-half decades. Moreover, the infant mortality rate dropped from 87 infant deaths per 1000 births in 1993–1994 to 38 per 1,000 live births (NIPORT 2019). Fertility and infant mortality reduction can be driven by different factors, such as female education and labor participation, mass media, economic development, and urbanization (Mohanty et al. 2016). These factors in this study were also responsible for parity movement up to parity 3, after which some of these factors had a less significant effect on parity movement (Table 4).

The study shows that son preference is an essential indicator of fertility activity, as with prior research (Visaria 2015; Jayaraman et al. 2009). In general, women with more sons than daughters were less likely to move to the next parity than women with more daughters than son(s). The analysis in Table 3 confirms the above general statement. Asadullah et al. (2020) found that women who had no sons in parity 2 were slightly more likely to have more offspring at a later date than those who had no sons in parity 1.

The study's critical feature is its assessment of how socioeconomic and demographic factors influence parity progression. The level of education is a significant fertility predictor. The highest educated women had fewer living children than illiterate women in Bangladesh. The study finds illiterate women have the largest mean number of living children (3.30), followed by the primary-educated (2.71), and secondary-educated respondents (2.06). This broad study has shown that the fertility of women with a higher education level is lower than women with a lower education level (Rahman et al. 2002). Husband's educational attainment has a similar impact.

In studies about wages, prosperity, and relationships, the husband's occupation significantly impacted women's fertility. There is an interesting finding from this study regarding women's working status at the time of survey. The study found that women who had jobs at the time of the survey had a higher number of living children than women who were not engaged in jobs (Muthusamy 2006). The reason for this finding is that many women in Bangladesh marry before the legal age of 18 and most of them are rural women. In rural areas, most women work in agricultural jobs, whereas in slum areas in urban regions women usually work in the garment industry or as part-time domestic workers. In contrast, the average number of children was higher for those whose husbands were not active on the labor market or students at the time of the study, and lowest among those whose husbands were service holders. The probable reason for the higher

fertility may be son preference and desire for support at an older age (Sekher–Hatti 2010; Larsen 2011).

The role of religion's influence on fertility is evident in Bangladesh. Non-Muslim women had lower fertility than Muslim women. The higher fertility of Bangladeshi Muslim women is due to the strength of the community's religious beliefs, whereas the religion of the minority of non-Muslims allows for lower fertility (Chattopadhyay–Goswami 2007; Das–Chattopadhyay 2012; Hoq 2019b). Additionally, even if Muslim women no longer want more children, they are more likely to abstain from using permanent contraceptive devices (Hoq 2020; Morgan et al. 2002; Hoq et al. 2019).

In economically deprived rural places in countries such as Bangladesh and India, high fertility is affected by area of delivery, and early motherhood is driven by cultural reasons (Kulu 2011; Yaya et al. 2019). There are many benefits to having children for both men and women, which is the key reason for getting married early. Many parents accept that children will bring in money to help with family expenses and help them in their older age. Children's emotional reinforcement is thought to significantly support the mental well-being of parents and lessen the impact of the multiple traumatic experiences they are liable to face later in life, such as having a disability (Taylor–Lynch 2004). Women who marry at later age usually have ample time to finish their schooling and build a career. Many who marry before they are of legal age suffer from various social maladies, including gender-based abuse, lower educational achievement, disempowerment, and greater vulnerability and economic instability. This research work also found that women married before legal age and residing in a rural area were more likely to have a child than those married after legal age and from an urban area.

The socio-demographic variable that decides fertility and thus ultimately parity progression in Bangladesh is economic status, which is a discriminating factor regarding son preference. Sons usually become the heads of the household. In South Asian countries, strict ancestral family structures promote son preference, making it challenging for mothers to raise daughters but easy to raise sons. Many women feel the need to bear sons to expand their social and economic status (Gupta et al. 2003). The fundamental reason for son preference in Bangladesh is the economic set-up of society. Sons have potential to be earning heads of households.

The fertility analysis of the Sylhet and Chittagong divisions reveals that the rates are incredibly different from the rest of Bangladesh. They reveal that the chance of a woman in Sylhet or Chittagong who has already had a second birth having another birth is approximately one-and-a-half times greater than that of a woman in Barisal. The parity progression analysis of movement from parity 3 to parity 4 shows a similar pattern (Islam et al. 2010).

CONCLUSION

The low status of women as a result of son preference is the origin of their inferior status. This outcome occurs due to mothers being seen as playing unimportant roles, making them less well respected than men. Their unimportant position results in lower expenditure on women. This study finds that it is believed that the preference for sons is still strong among spouses and is one of the prime barriers to the stalled fertility decline in Bangladesh in the last decade.

From the study of fertility attitudes, it appears that parity movement at certain levels of parity may be demotivated by an increase in the decision-making participation of women or an improvement in socioeconomic status. However, it was observed that in modern cultures attention should be placed on the causes of such status, which involve schooling, marital age, work prospects, and socioeconomic position. Addressing these factors would decrease the parental desire for sons and help improve women's social position. It is also required to address social disparity among the different administrative divisions. The study results thus suggest that managing these factors is essential for creating fruitful demographic policies in Bangladesh.

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