

# Relationship Between Age at Marriage, Education and Fertility Among Residence of Bangladesh

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## Abstract

In Bangladesh, fertility is still high than the replacement levels according to the study released by BDHS 2014. This paper examines the association between age at marriage, education and fertility among urban and rural women of Bangladesh, using the 2014 Bangladesh Demographic and Health Survey (BDHS) data. The One way ANOVA test is applied to assess the differences between children ever born and women's age at marriage, education status of women in both areas of Bangladesh. Pearson correlation was used to assess the degree and nature of the relationship between fertility and age at marriage, education status of women in both areas of Bangladesh. To know the net effect of each of covariates, a popular a multiple regression model was considered. From finding of the study indicate that average number of children ever born in the rural areas is comparatively higher than the urban areas of Bangladesh. Early marriage is very common especially in rural areas of Bangladesh. The estimated results showed that an increase in age at marriage significantly reduced the total fertility of women in both areas of Bangladesh. Again the analyses showed negative association between mean fertility and educational level of the respondents. Government should accord on women education especially in rural areas of Bangladesh and strongly prohibited early marriage in both areas of Bangladesh.

## Keywords

Reproductive Performance, Child Marriage, Children Ever Born, ANOVA, Women Education Status

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## 1. Introduction

Fertility is one of the three most foremost determinants of population changes because its determine the size and structure of the population of a country [1]. Fertility levels are one of the most important factors that determine the size and structure of the population of a country. The 2014 Bangladesh Demographic and Health Survey (BDHS) showed that the total fertility rate (TFR) has declined from a high level of 6.3 births per woman in 1975 to 2.3 births per woman in 2014 [2]. The total fertility rate (TFR) in urban areas is nearly half a child lower than in rural areas (2.0 and 2.4 births per woman respectively) [2]. Also, the 2014 BDHS showed that childbearing begins early in Bangladesh with

almost half of a woman age 25-29 years, giving birth by age 18 and nearly 70 percent giving birth by age 20 years [2].

Child marriage is defined by UNICEF as marriage before 18 years of age. Worldwide, more than 700 million women alive today were married before their 18<sup>th</sup> birthday [3]. More than one in three (about 250 million) entered into the union before age 15 [4]. Marriage is the worldwide in most of the community as like Bangladesh & Bangladeshi women were received early marriage which is still prevailing [5].

Researcher [6, 7] noted that there is significant negative relationship between age at first marriage and fertility. Marriage has played a considerable role in the recent fertility declining in Bangladesh. Both delay marriage couples contribute held down fertility and static population growth

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change. In rural areas of Bangladesh mean age at marriage was observed to be  $15.5 \pm 1.5$ , which was beneath the women age at first marriage according to the Bangladesh Government ordinance [8]. Although there is a slightly increasing trend in early marriage and this rise is very slow occurred in this study and with total fertility rate was estimated to be 2.6 per woman. [9] Investigated the association between age of marriage and fertility. He noted that lower the age of marriage the higher is the fertility. Researcher [10, 11] noted that the initial fertility reduction was instigated by the woman with higher socioeconomic status i.e; higher education, employed, higher wealth index and living in urban areas. There is a negative relationship between education and fertility.

In many countries, women education status has been significant factor in the reduction of fertility [12]. There is a linear, significant negative effect of education on fertility observed by [13]. The education of women emerged as the most significant factor influencing the use of contraception [14]. From [15] study showed significant negative direct and indirect effects of education of women with children ever born in both rural and urban areas. The onset of fertility reduction in Bangladesh was by dint of the level above the primary level [16]. However, the greatest impact of education on fertility occurs when women received secondary education [17]. The present paper examines the association between mean age at marriage, education and fertility among residence of Bangladesh, using the 2014 Bangladesh Demographic and Health Survey data.

## 2. Material and Methods

### 2.1. Source of Data

The analysis is based on secondary data obtained from the 2014 Bangladesh Demographic and Health Survey (BDHS). The Bangladesh Demographic and Health Survey (BDHS) were covered 17989 residential households from 2014 [2]. In this study, data are restricted to ever-married women aged 15-49. Based on these criteria, sample sizes for this study from the BDHS were 5047 ever married in urban and 12816 ever married women in rural areas of Bangladesh [2]. Data were weighted to represent the structure of the Bangladeshi population using weighting factors according to the BDHS [2].

### 2.2. Dependent Variable

The children ever born women aged 15-49 were analyzed as a measure of fertility. The Dependent variable of this study is Children ever born were analyzed separately as a measure of

fertility in both areas of Bangladesh.

### 2.3. Independent Variables

Beside the dependent two independent variables (age at marriage and Women education status) were consider as potential factors for fertility change in both areas of Bangladesh. For statistical analysis purposes, age at marriage broken into two categories: child marriage (marriage before 18 years of age) and marriage was took place at age 18 years or above. Similarly level of education were categorized into three categories (no education, primary, secondary and above).

### 2.4. Statistical Methods

Frequency distribution was used to describe the background characteristics of the respondents in both areas of Bangladesh. Descriptive statistics such as mean and standard deviation (SD) were used. One way ANOVA test can assess the differences between children ever born and women's age at marriage, education status of women in both areas of Bangladesh. Pearson correlation was used to assess the degree and nature of the relationship between fertility and age at marriage, education status of women in both areas of Bangladesh. Finally a multiple regression model was used to predict and net effect of each predictor variables on the dependent variable (CEB) after controlling for the effect of other predictors. The Statistical Package for Social Science (SPSS v20.0) software was used for data analysis.

## 3. Results

Table 1 shows that percentage distribution of ever-married women age 15-49 according to the age at marriage and education in residence of Bangladesh. Of the respondent, almost 69 percent women were got married before their 18<sup>th</sup> birthday in urban areas of Bangladesh. While almost 80 percent women were got married before their 18<sup>th</sup> birthday in rural areas of Bangladesh. This indicates that urban women were fewer amounts of married before their 18<sup>th</sup> birthday than the rural women in Bangladesh.

In the urban areas, slightly over half (55 percent) respondent have completed secondary or higher level of education whereas, in rural areas 42.1 percent respondent have completed their secondary or higher-level of education in 2014 BDHS. This figure revealed that urban women have completed their higher education comparatively more than women who reside in rural areas of Bangladesh.

**Table 1.** Shows that percentage distribution of ever-married women age 15-49 according to the age at marriage and education among Urban and Rural areas of Bangladesh.

Variables	Urban (2014 BDHS)		Rural (2014 BDHS)	
	Number of women	%	Number of women	%
Age at marriage				
<18	3463	68.6	10194	79.5
18+	1584	31.4	2622	20.5
Education				
No education	972	19.3	3483	27.2
Primary	1274	25.2	393	30.7
Secondary+	2801	55.5	5398	42.1
Total	5047	100.0	12816	100.0

Association between age at marriage, women's education status and fertility among Urban and Rural Women in Bangladesh

Table 2 and Figure 1 show that mean fertility of the sample of women in residence of Bangladesh according to the age at first marriage and women's education status, BDHS 2014. The average fertility of the ever-married women was 2.15 (SD 1.53) in urban areas of Bangladesh (Figure 1). There are significant differences between ages at marriage in relation to the fertility. The F-value shows that age at marriage of women has a highly significant effect on fertility ( $P < 0.001$ ) in urban areas of Bangladesh. The Table 2 shows that CEB declined as the age at marriage increases, which suggested an inverse relationship between age at marriage and fertility. The average number of children ever born per ever-married women is more when a girl married at a younger age in both areas of Bangladesh. Those women who got married before age 18 years have 2.38 average children per woman, higher by 0.72 than among those who are married at the age 18 years or above in urban areas of Bangladesh. Clearly, In urban areas women who are married before age 18 have a higher mean fertility than those married at the age 18 years and above [2.38 (SD 1.58) versus 1.66 (SD 1.27) respectively,

$p < 0.001$ ].

A similar trend was found when the rural areas were considered. An increase in age at marriage significantly reduces the total fertility of a woman. In rural areas, those women who got married before age 18 years have 2.72 average children per woman, higher by 0.71 than among those who are married at the age 18 years or above. The F-ratio was 331.263, which was statistically significant at 0.1 percent level.

Table 2 also shows that women's education is inversely associated with a mean number of children ever born. Mean fertility was also seen varied between 1.69 to 3.26 in urban areas and 1.76 to 3.59 among in rural areas of Bangladesh (Figure 1). Mean fertility was higher among uneducated women who reside in both urban and rural areas of Bangladesh that is, 3.26 and 3.59. In urban areas, mean fertility was lowest in case of wives who were having educational level up to secondary that is, 1.69 likewise in rural areas that is, 1.76. In urban areas, secondary and higher educated women have only half CEB than does uneducated women [1.69 (SD 1.19) versus 3.26 (SD 1.76) respectively,  $P < 0.001$ ]. Thus, the education of women has a negative impact on fertility.

**Table 2.** Mean fertility of the sample of women in residence of Bangladesh according to the age at first marriage and level of education, BDHS 2014.

Variables	Urban (2014 BDHS)		Rural (2014 BDHS)	
	Mean±SD	F-value	Mean±SD	F-value
Age at marriage				
<18	2.38±1.58	254.815***	2.72±1.81	331.263***
18+	1.66±1.27		2.01±1.58	
Education				
No education	3.26±1.76	458.674***	3.59±1.90	1397.059***
Primary	2.32±1.54		2.79±1.72	
Secondary+	1.69±1.19		1.76±1.31	
Total	2.15±1.53		2.57±1.78	

Note: significant at \*\*\* $P < 0.001$

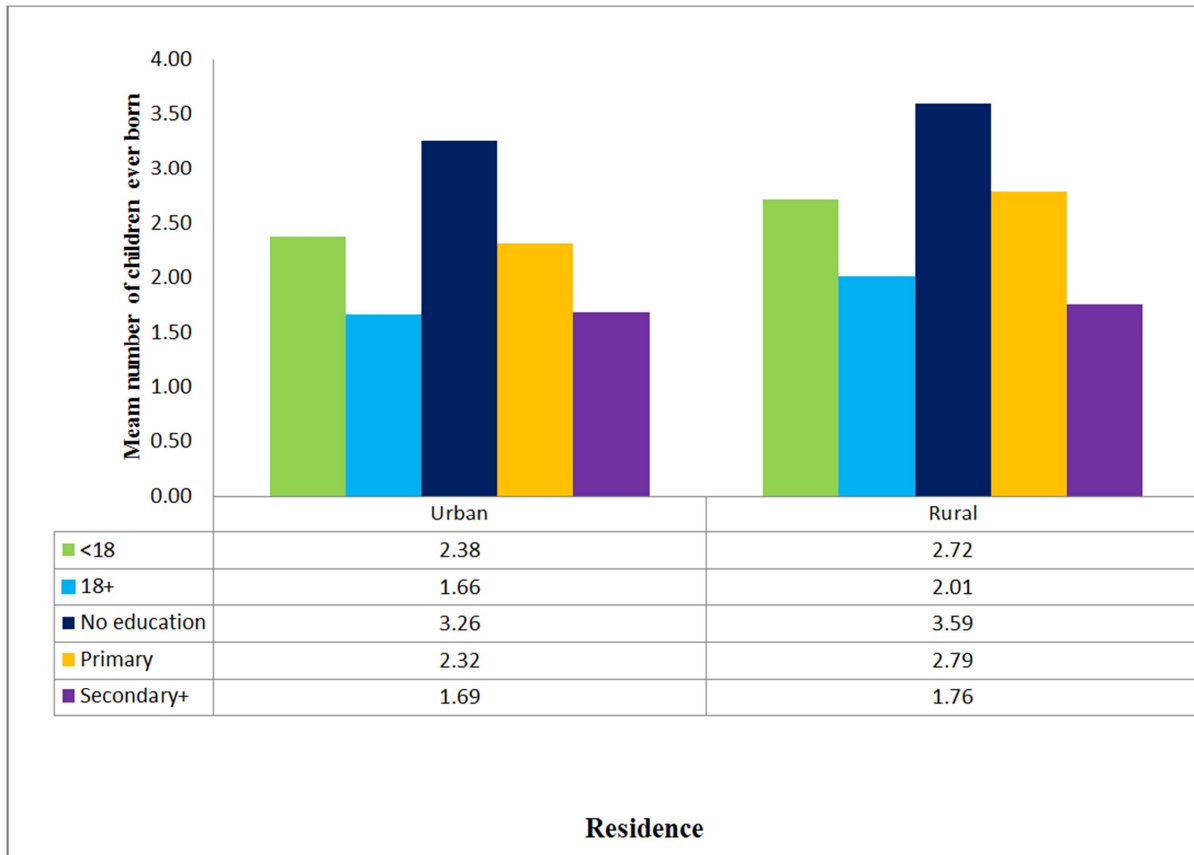


Figure 1. Relationship between age at marriage, education and fertility among residence of Bangladesh.

Table 3 illustrates this correlation between the fertility rate and selected socio-demographic variables. The data show that there were significant relationships between fertility and all of the selected socio-demographic variables both areas of Bangladesh. There is a significantly negative relationship between fertility and the age at marriage of a woman in both urban and rural areas of Bangladesh ( $P < 0.001$ ). Again Table 3 observed that there is a significantly negative association between fertility and respondents education level in both areas of Bangladesh.

Table 3. Correlation of fertility of ever-married women with age at marriage, education among residence of Bangladesh.

Variables	Urban (2014 BDHS)	Rural (2014 BDHS)
	Correlation coefficient (r)	Correlation coefficient (r)
Age at marriage	-0.282***	-0.234***
Education	-0.396***	-0.431***

Note: significant at \*\*\* $P < 0.001$

To assess the net effect of each predictor variables on the dependent variable (CEB) after controlling for the effect of other predictors is also measured via multivariate analysis (multiple regression analysis). The dependent variable of this study is children ever born (CEB). The independent variables of the study are age at marriage and education status (Table 4).

The multiple regression analysis revealed that (Table 4), age at marriage and education status are significant predictors of fertility in both areas of Bangladesh ( $P < 0.001$ ). From the Table 4, the R-squared is 0.173 for the women’s age group 15-49 in urban areas of Bangladesh indicating that 17.3 percent ( $P < 0.001$ ) of the variations in women’s children ever born in urban areas of Bangladesh is explained by the independent variables considered in model (Table 4). Age at marriage is also playing a significant role on fertility in both areas of Bangladesh. Women who reside in urban areas and got married at age 18 years or above have 0.466 fewer children than women who were married before age 18 years. Table 4 also shows that the highest education level of women significantly & negatively affected the number of children ever born in both urban and rural areas of (at .1 percent significance level) Bangladesh. Primary educated women who reside in urban areas tended to have fewer children than does uneducated women ( $P < 0.001$ ). Again, Secondary and higher education of women who reside in rural areas tended to have 1.450 fewer children than uneducated women. This similar figure occurs when we consider rural areas of Bangladesh. Clearly in rural areas, the magnitude of the effect in 2014 BDHS where women with secondary and higher levels of education have on average 1.761 children less than women with no education.

In Urban areas, an increase in 1 Standard Deviation (SD) in the women age at marriage 18 years or above was associated with a 0.142 SD decrease in the number of children. As expected also, an increase of 1 SD in the secondary and higher educational level of the respondents was associated with a 0.472 SD decrease the number of children in urban

areas of Bangladesh. Similar figure occur when we consider rural women in Bangladesh. Simply an increase of 1 SD in the secondary and higher educational level of the women who reside in rural areas of Bangladesh was associated with a 0.488 SD decrease the number of children.

**Table 4.** Effect of selected socio-demographic variable on fertility (multiple regression analysis).

Variable	Urban (2014 BDHS)			Rural (2014 BDHS)		
	Unstandardized Coefficients (B)	Standardized Coefficients (β)	t-value	Unstandardized Coefficients (B)	Standardized Coefficients (β)	t-value
Constant	3.341	-	73.84***	3.639	-	131.62***
Age at marriage						
<18 (ref.)	-	-	-	-	-	-11.45***
18+	-0.466	-0.142	-10.67***	-0.409	-0.092	
Education						
No education (ref.)	-	-	-	-	-	-
Primary	-0.939	-0.267	-15.88***	-0.784	-0.203	-20.95***
Secondary+	-1.450	-0.472	-27.47***	-1.761	-0.488	-49.80***
R-square	0.173			0.187		
F-ratio	350.58***			984.48***		

Note: significant at \*\*\*P<0.001

## 4. Discussion

The present paper examines the association between mean age at marriage, education and fertility among residence of Bangladesh, using the 2014 Bangladesh Demographic and Health Survey data. Bangladesh is one of high populated country in the world & still above the replacement level of fertility (2.3) [2]. Many factors contribute to fertility decline in Bangladesh. Findings of the current study imply that age at which a woman marries and enters the reproductive period of life has a great impact on fertility. Thus, the age of a woman at marriage is one of the most important proximate determinants of the aggregate level of fertility in both areas of Bangladesh. The incidence of early marriage is higher among respondents from the rural areas (79.5%) as compared to the women from urban areas (68.6%) in Bangladesh. This indicate that early marriage occur in rural areas is still high than urban areas of Bangladesh. Researcher [8, 18-21] also found same result which is consistent in this study. The present study observed that The TFR in rural areas is comparatively higher than the urban areas of Bangladesh. This present study is consistent to many other studies [22-27].

The current study shows that age at marriage has a negative impact on fertility in both areas of Bangladesh. The lower the age at marriage, the higher was the fertility. This finding of this study is consistent with earlier studies conducted in Bangladesh [9, 19, 28] and elsewhere [6-7, 22, 29-34]. Researchers [35-36] noted that late marriage increases the probability that women remain childless. The lower reproductive span by due to higher age marriage which

directly the fertility rate was observed by [37]. According to the study conducted Matlab areas of Bangladesh [38] examined documented that age at marriage was steadily rising in rural areas of Bangladesh, and the increase was strongly associated with increased female education. According to study of Nepal [22] identified that increase age at first marriage has an adverse effect of fertility. Many researchers [39-41] found that older age at first marriage played an important role in reduction in fertility. Many studies clearly exhibited that age at marriage was an important social factor; it has been observed that increase in age at marriage there was decline in fertility [29, 37, 42-44].

The current study revealed that women education with secondary and above is still high in urban areas compared to the women who reside areas in Bangladesh. The number of higher educational institution is more in urban areas compare to the rural areas of Bangladesh. For that reason Women who reside in urban areas are easily going to university than women who reside in rural areas of Bangladesh. The present study results showed negative association between mean fertility and educational level in both urban and rural respondents in Bangladesh. These results are also in similar to regional studies conducted in Bangladesh [9, 13] and elsewhere [22, 32, 40, 45-48]. In urban areas the indirect influence of age on women's education was stronger than in rural areas [15]. The increased education of female increased the age at marriage and lowered the total fertility rate was observed [33, 49-50].

Women's education dispenses a strong negative effect on fertility [51]. In a metropolitan urban area of Bangladesh



(Dhaka) [14] found that the education of women emerged as the most significant factor influencing the use of contraception.

## 5. Conclusion

In summary, it is observed that average number of children ever born in the rural areas is comparatively higher than the urban areas of Bangladesh. Fertility in urban areas already has achieved replacement level in fertility. On the other hand fertility in rural areas has not plummeted to below the replacement level in fertility. Rural is characterized as a high fertility area in Bangladesh. Despite the legal restrictions against marrying at a young age, early marriage is common especially in rural areas of Bangladesh. An increase in age at marriage significantly reduces total fertility of women in rural areas of Bangladesh. Therefore, programs should focus on creating awareness of the marriage law and the disadvantages of early marriage in both areas of Bangladesh. Furthermore, long-running programs focusing on increasing education. Government should accord a significant priority to female education, which significantly increased age at marriage and has a strong effect on fertility in rural areas of Bangladesh.

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I have no potential conflicts of interest with respect to the research and/or publication of this article.

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