

DETERMINANTS OF AGE AT FIRST MARRIAGE AMONG WOMEN IN BANGLADESH: A BINARY LOGISTIC REGRESSION APPROACH

MASHFIQUL HUQ CHOWDHURY¹, MD. DELUAR JAHAN MOLOY^{*1}
MD. BINYAMIN¹ and MD. AZIZUR RAHMAN¹

¹Department of Statistics, Mawlana Bhashani Science and Technology University,
Santosh, Tangail-1902, Bangladesh

Abstract

The present study tries to examine the factors that influence age at first marriage of ever-married Bangladeshi women aged 15-49 years. This study utilized data from the 2014 Bangladesh Demographic and Health Survey. The current study reveals that the median age at first marriage is only 15 years and 75% Bangladeshi women married before reaching legal age at marriage. Chi-square test is performed to investigate the association between socio-demographic factors and age at first marriage status of a respondent. Based on the bivariate analysis, variables which show statistically significant association with age at first marriage are simultaneously entered into the binary logistic regression model. The findings of the study reflect that respondent's education level, division, place of residence, media exposure, religion, wealth index, and partner's education level has a significant association with age at first marriage of ever-married Bangladeshi women. The findings of this study would help planners and policymakers of the government to take appropriate policies regarding age at first marriage of the female population in Bangladesh.

Keywords: Chi-square Test, Bi-variate Analysis, Logistic Regression, Age at First Marriage

Introduction

Marriage in Bangladesh marks the point in a women's life when childbearing becomes acceptable. Early age at marriage has a major effect on childbearing because women who marry early have, on average, a longer period of exposure to the risk of becoming pregnant and a greater number of lifetimes births. Several studies reveal that the females age at first marriage in Bangladesh is still one of the lowest in the world. Traditionally, Bangladesh has one of the highest rates of child marriage worldwide (Barkat and Majid, 2003) and age at first birth remain relatively low (Bosch *et al.*, 2008). In a study conducted on 43 developing countries, the median age at first marriage of Bangladeshi women was reported to be 14.1 years, the lowest amongst the study countries (Sing and Samara, 1996).

* Corresponding author: deluarmoloy@gmail.com

Bangladesh has achieved a noteworthy demographic transition during the last two decades. Bangladesh has witnessed an accelerating population growth in the past; a slowdown in growth rate has occurred recently. Moreover, Bangladesh is lagging behind neighboring countries concerning its economic development. The large population size resulting from past high levels of fertility is considered to be one of the main factors responsible for that.

In the second half of the twentieth century, population growth was rapid. This increase resulted from a combination of high birth rates. Among various factors, female early age at first marriage is directly related to fertility behavior in this country (World Bank Report, 2014).

Women's access to education and employment has emerged as one of the most important issues in studies of development. Caldwell (1980) and Handwerker (1986) have shown clearly the importance of the third world of women's education in fertility decline. Several studies (Caldwell (1979), Levine *et al.*, (1991) and Cleland and Van Ginneken (1988) have shown the relationship between women's education and the lowering of infant mortality.

The legal age of marriage for women in Bangladesh is 18 years, but a large proportion of marriages still take place before the woman reaches her legal age. The BDHS 2014 found that 59% of women age 20-24 were married before age 18. Between 2011 and 2014 this proportion declined from 65% to 59%. Over the past two decades, the proportion of women marrying before the legal age has decreased by 14 percentage points overall from 73 percent in 1993-'94 to 59 percent in 2014 (Mitra *et al.*, 2014).

The present study tried to identify some of the dominant factor associated with early age at marriage of women in Bangladesh. As far as it is known that such type of research has not been conducted using BDHS 2014 data yet. The main aim of this study is to identify the social and economic determinants of the female age at first marriage in Bangladesh. The specific objectives of this research were— to estimate the mean age at first marriage of female respondent's of Bangladesh according to demographic, socio-economic, and cultural characteristics; to identify the demographic, cultural, socio-economic and other factors affecting women's age at first marriage, drawing some policy implications and to recommendations with the aim of achieving a further increase age at first marriage in Bangladesh.

Materials and Methods

Data Source and Study Variables

The data utilized for this study extracted from Bangladesh Demographic and Health Survey (BDHS) 2014. The 2014 Bangladesh Demographic and Health Survey (BDHS) is the seventh DHS undertaken in Bangladesh. This survey was implemented through a

collaborative effort of the National Institute of Population Research and Training (NIPORT), ICF International, USA, and Mitra & Associates. A total of 18,245 ever-married women age 15-49 were identified in 2014 BDHS survey, and 17,863 were interviewed. This study focuses on 17,863 ever-married women of Bangladesh.

The variables those used in this study are respondent's age, partner's education, division, place of residence, respondent's education, religion, wealth index, mass media exposure, sex of the household head and first marriage age of the respondents. Respondent's age was categorized as 15-24, 25-39, and 40-49. The division represents seven administrative divisions: Dhaka, Barisal, Chittagong, Khulna, Rajshahi, Rangpur, and Sylhet. It was expected that women in rural areas would have a lower age at first marriage than their urban sisters for some reasons. The attitudes of educated urban women have been modified through modernization. Rural women, on the other hand, still adhere to the traditional norms, value, beliefs, and practices, which attach a lot of importance to marriage and reproduction. Therefore the place of residence has two categories rural and urban.

It is known to all that education opens the eyes, and educated people are more concern about their legal age at marriage. Education, particularly partner's education, has a significant interaction effect on marriage. For family health awareness, it is necessary to have education not only for the respondent's own but also her partner. The categories of respondent's and partner's education are no education, primary, secondary, and higher. Religion is coded into two categories— Muslim and Non-muslim. An important factor for age at first marriage is wealth index. The wealth index is categorized into poor, middle, and rich. Sex of household head was categorized into male and female. The 2014 BDHS assessed exposure to media by asking respondents if they listened to the radio, watched television, or read newspapers or magazines at least once a week. It is coded as no access to media and having access to media. Marriage is a primary indication of the exposure of women to the risk of pregnancy and therefore, is important for the understanding of fertility. The first marriage age of the respondents is divided into two categories: early marriage (marriage before 18) and not early marriage.

Analytical Techniques

The age at first marriage is the dependent variable in this study. The age at first marriage of the respondents are divided into two categories marriage before legal age (< 18 years) and marriage after legal age (≥ 18 years).

$$Y = \begin{cases} 1, & \text{If the } i^{\text{th}} \text{ respondent was married before legal age at marriage (Early Marriage)} \\ 0, & \text{If the } i^{\text{th}} \text{ respondent was married after legal age at marriage (not early Marriage)} \end{cases}$$

Firstly univariate analysis is employed to estimate the mean age at first marriage. Chi-square tests for independence were performed to investigate the association between

socio-demographic factors and age at first marriage of respondents of Bangladesh. Based on the bivariate analysis results, variables which show statistically significant association with women's age at first marriage were simultaneously entered into the multivariate logistic regression model. Hence we examine the net effect of each explanatory variable. Finally, the Wald test is performed to test the significance of the parameters.

Results and Discussion

The analysis shows that the median age at first marriage of Bangladeshi ever-married women is 15 years. According to table 1, 75% of Bangladeshi women married before reaching age 20.

Table 1. Descriptive Statistics of Age at First Marriage

Mean		15.86
Median		15.00
Std. Deviation		2.963
Minimum		10
Maximum		49
Percentiles	25	14.00
	50	15.00
	75	17.00

Background Characteristics of the Respondents

Table 2 shows that 29%, 48.7% and 22.3% respondents are in 15-24, 25-39 and 40-49 age groups respectively. Table 2 illustrates that 65.5% of respondents live in rural areas, and 34.5% live in urban areas. 46.8% of respondents have no access to any media (TV, radio, or newspaper), and 53.2% have access to media. The highest percentage of respondents was found Muslim (90%). Data show that the highest percentages (37.6%) of women have secondary education, and only 9.6% of woman have higher education. Moreover, 23.5% of the woman has no education, which is shocking as it is believed that education is an important factor of age at marriage. It is observed that the uneducated father (28.3%) is greater than the uneducated mother (23.5%). On the other hand, the percentage of partners completed primary and secondary education are 27.2 % and 29.5% respectively. Among the respondents, 20.3 percent comes from a middle-class family, 37.0% and 42.7% are poor and rich respectively. The data presents that 17.3%, 16.0%, 12.0%, 14.4%, 14.1%, 14.4% and 12.0% respondents belongs to Dhaka division, Chittagong division, Barisal division, Khulna division, Rajshahi division, Rangpur division and Sylhet division respectively. According to the household head, the males and females are 88.5% and 11.5% respectively. It is to be noted that 62.7% household size is less than 6 persons, 33.2% household size is 6-10 persons and 4.1% respondent's household size is 12 or more persons.

Table 2. Percentage Distribution of Respondents Background Characteristics

Variables	Categories	No. of Respondents	Percentage
Age	15-24	5184	29
	25-39	8695	48.7
	40-49	3984	22.3
Division	Dhaka	3093	17.3
	Chittagong	2865	16.0
	Barisal	2142	12.0
	Khulna	2581	14.4
	Rajshahi	2512	14.1
	Rangpur	2531	14.2
	Sylhet	2139	12.0
Place of Residence	Rural	11696	65.5
	Urban	6167	34.5
Religion	Muslim	16135	90.3
	Non-Muslim	1727	9.7
Household Size	< 6	11197	62.7
	6-10 person	5923	33.2
	11+ person	743	4.1
Mass Media Exposure	Yes	9490	53.2
	No	8373	46.8
Wealth Index	Poor	6611	37.0
	Middle	3621	20.3
	Rich	7631	42.7
Education Level	No Education	4204	23.5
	Primary	5226	29.3
	Secondary	6722	37.6
	Higher	1709	9.6
Partners Education	No education	5062	28.3
	Primary	4855	27.2
	Secondary	5266	29.5
	Higher	2677	15.0
Sex of Household Head	Male	15800	88.5
	Female	2063	11.5
Total		17863	100.0

Variation of Age at Marriage According to Background Characteristics

The following table shows the association of age at first marriage with various demographic and socio-economic variables.

Table 3. Bivariate Distribution of Variables

Variables	Categories	Early Marriage		Not Early Marriage		Chi Square	P-value
		Count	Percent	Count	Percent		
Division	Dhaka	2607	84.3	486	15.7	211.53	0.00
	Chittagong	2418	84.4	447	15.6		
	Barisal	1905	89.9	237	11.1		
	Khulna	2314	89.7	267	10.3		
	Rajshahi	2247	89.5	265	10.5		
	Rangpur	2264	89.5	267	10.5		
	Sylhet	1668	78.4	461	21.6		
Place of Residence	Urban	4951	80.3	1216	19.7	299.59	0.00
	Rural	10482	89.6	1214	10.4		
Education Level	No Education	3972	94.4	234	5.6	2823.13	0.00
	Primary	4836	92.5	390	7.5		
	Secondary	5846	87.0	876	13.0		
	Higher	779	45.6	930	54.4		
Mass Media	No	7667	91.8	686	8.2	387.81	0.00
	Yes	7724	81.7	1739	18.3		
Household Size	< 6	9747	87.1	1450	12.9	1.95	0.06
	6-10	5079	85.8	844	14.2		
	> 10	607	81.7	136	18.3		
Wealth Index	Poor	6172	93.4	439	6.6	750.47	0.00
	Middle	3283	90.7	338	9.3		
	Rich	5978	78.3	1653	21.7		
Religion	Muslim	14078	87.3	2057	12.7	102.62	0.00
	Non Muslim	1355	78.5	272	21.5		
Partner's Education	No Education	4435	87.6	627	12.4	1820.40	0.00
	Primary	4252	87.6	603	12.4		
	Secondary	4520	85.8	746	14.2		
	Higher	2223	83.0	454	17.0		
Sex of Household Head	Male	13633	86.3	2167	13.7	1.45	0.12
	Female	1800	87.3	263	12.7		
Respondent's Age Group	15-24	4514	87.1	670	12.9	2.90	0.00
	25-39	7485	86.1	1210	13.9		
	40-49	3434	86.2	550	13.8		

Adopting the chi-square test of independence, it is identified that among the contextual factors respondent's age, place of residence, media exposure, maternal education, partners education, wealth index, and division all had a statistically significant correlation

with respondents first age at marriage of Bangladesh (P-value < 0.05). Other variables are not found significantly associated with age at first marriage (P-value > 0.05).

Determinants of Age at Marriage

The following table shows that the estimated value of the parameters ($\hat{\beta}$), standard errors, odds ratio, and corresponding p-values obtained by binary logistic regression model on the response variable age at first marriage using BDHS 2014 data.

Table 4. Regression Parameter Estimates ($\hat{\beta}$) using Binary Logistic Regression Model

Covariates	Category	$\hat{\beta}$	Wald Statistic	P-value	Odds ratio
Division	Sylhet®				1
	Dhaka	0.882	112.096	0.000	2.415
	Chittagong	0.774	86.591	0.000	2.168
	Barisal	1.395	191.629	0.000	4.036
	Khulna	1.439	230.433	0.000	4.215
	Rajshahi	1.354	200.537	0.000	3.872
	Rangpur	1.378	203.124	0.000	3.968
Place of Residence	Rural®				1
	Urban	-0.173	9.763	0.000	0.841
Education Level	Higher®				1
	No Education	2.579	491.009	0.000	13.185
	Primary	2.223	542.445	0.000	9.233
	Secondary	1.769	601.349	0.000	5.868
Media Exposure	Yes®				1
	No	0.066	1.031	0.310	1.069
Wealth Index	Rich®				1
	Poor	0.188	5.238	0.000	1.207
	Middle	0.219	8.409	0.000	1.244
Religion	Non-Muslim®				1
	Muslim	0.624	70.398	0.000	1.866
Respondents Age Group	40-49®				1
	15-24	0.688	75.662	0.000	1.990
	25-39	0.008	0.013	0.000	1.008
Partners Education	Higher®				1
	No Education	0.927	83.012	0.000	2.526
	Primary	0.838	91.732	0.000	2.312
	Secondary	0.494	50.678	0.000	1.639

[Here ® indicate reference category]

From table 4, it is shown that respondent's age, division, place of residence, education level, religion, wealth index, and partner's education level all have a significant effect on age at first marriage. Median age at first marriage among women by age 25 - 49 and 20 - 49 is highest in Sylhet (Mitra *et al.*, 2014). Multivariate analysis also reveals that women of Sylhet have a significant tendency to marry at later age compared to Dhaka division. It is noticed that the Dhaka division respondent's early marriage occurs 2.4 times more likely than Sylhet division respondent's. Barisal, Chittagong, Rangpur, Rajshahi, and Khulna division's respondents are likely to marry early 4.0, 2.4, 3.9, 3.8, and 4.2 times more than Sylhet Division respondents, respectively.

The odds ratio indicated that respondent's higher level of education had a strong positive association with age at first marriage. Respondents who have no education are found to have early marriage 13.18 times more likely compared with those who have higher education. Similarly, respondents who studied up to primary and secondary education are 9.2 and 5.8 times more likely to early marriage than women having higher education. Place of residence also exhibits a significant effect on the dependent variable, which shows rural women are more preferable to engage in early marriage than the urban respondents. Multivariate analysis shows a negative regression coefficient of urban women. That means urban women are less likely to marry before the legal age at marriage than rural women. Odds ratio indicates that urban women are 16% less likely to marry early. This result also shows significant since $p\text{-value} < 0.05$.

The study demonstrates that religion has a significant association with age at first marriage. The result indicates muslim women are more likely to marry early compared to Non-muslim women. Muslim women showed 1.8 times more likely to get married early than Non-muslim. Wealth status also shows a positive association with age at first marriage. Multivariate analysis indicates that age at first marriage increases with household wealth. Poor and middle-class women are both 1.2 times more likely to marry early than upper-class people. Partner's education is also found as an important indicator of early marriage. Respondent's partners who have no education are found to have early marriage 2.5 times more likely compared with those who have higher education.

Similarly, respondents partner who studied up to primary and secondary education are found to have 2.3 and 1.6 times more likely to have early marriage than women having higher education. That means the partner's education shows a strong positive association with age at first marriage. The result also illustrates that the age of women shows a significant association. Women in the youngest age group 15-24 years are more likely (odds ratio is 1.9) to marry early than 40-49 years age group. The odds value also decreases to 1.008 to women within the age group 25 to 39 years. But this result did not show significant association since $p\text{-value} > 0.05$.

Conclusion and Recommendations

Age at first marriage has a major effect on childbearing because the risk of pregnancy depends primarily on the age at which women first marry. Women who marry early, on average, are more likely to have their first child at a young age and give birth to more children overall, contributing to higher fertility. Among all independent variables that are studied in this study, education plays a vital role in early age at marriage. This study proved that higher educated women have a lower risk of early marriage than lower educated women. Hence, education is being the prime catalyst in this process because the increase in educational attainment is likely to a significant effect on early age at marriage. It is also identified that Muslim women are more likely to marry early compared to their counterparts. Partner's education shows a positive association with age at first marriage. The result shows that the likelihood of the age at first marriage also increases as the level of husband's education increases. Partner's who have completed at least secondary or higher are more likely to be married later compared to those who do not accomplish any level of education. As expected, the occurrence of low age at first marriage is considerably higher in rural areas compared with urban ones. The analysis shows that urban women are 16 percent less likely to be married earlier (i.e. before age 18 years) than rural women. The age at marriage was found to vary significantly according to the region of residence. The wealth index is also an important determinant of early marriage. It is found from the multivariate analysis that women with their wealth index poor and middle classes significantly prefer to marry early than rich classes. Specifically, respondents with the highest wealth index have more tendencies toward late marriage.

The findings of this study may have some policy implications that would help planners and policymakers of the Government to take appropriate policies regarding age at first marriage of the female population in Bangladesh. The study suggests building awareness regarding the demerits of early age at marriage. In the long term, education of women should be increased.

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