Marriage Before 16 or 18 years: The Effect of Marital Age on Women's Educational Attainment in Bangladesh

Mohammad Mainul Islam[1], Md. Kamrul Islam[2], Mohammad Sazzad Hasan[2]
and Md. Aminul Haque[2]

Abstract

In spite of the high prevalence of child marriage in Bangladesh, studies of its effect on the educational attainment of women are limited. We sought to answer the following questions: To what extent does the effect of child marriage on educational attainment vary for women married below 16 and below 18 years of age? Secondly, how does age at first marriage affect a woman's length of participation in school? Bivariate and multivariate analyses were conducted by using the 2011 Bangladesh Demographic and Health Survey, which included 17,749 respondents who were ever-married women aged 15-49. Child marriage before age 16 (as compared with 18) leads to a higher rate of incomplete secondary education, and a lower rate of educational attainment for women. A one-year decrease in age at first marriage leads to six months loss of education for women. For this reason, we recommend that the government refrain from fixing the legal age of marriage at age 16 for women.

Keywords

Child marriage; marital age; educational attainment; Bangladesh

Introduction

Lower educational attainment for girls is common in the developing world. Here, a lost opportunity for education is not only harmful for girls, but also has wide-reaching implications (ICRW, 2006). Considering education as the best contraceptive, many governments now support women's education not only to accelerate economic growth but to promote other social advancement, including prevention of child marriage (Population Reference Bureau, 2000). As we know, forced child marriage constitutes a violation of the rights of girls, and deeply affects their lives through considerably lower educational opportunities, health complications, higher risk of violence at home, and social exclusion (Nguyen & Wodon, 2014a).

Concerning these negative consequences, the literature shows that child marriage is an important factor leading girls to curtail their education, even if it may not be the key factor. There is clear evidence that the more educated young girls marry later, especially if they reach secondary school (Brown, 2012). Here it can be noted that Bangladesh has made

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[1] Department of Population Sciences, University of Dhaka, Bangladesh. E-mail: mainul@du.ac.bd

[2] Department of Population Sciences, University of Dhaka, Bangladesh.

remarkable progress on primary educational enrollment. The net percent of primary school-age children is 98% for females whereas it is 94% for males (UNFPA, 2014). However, despite these improvements in primary education there are still significant differences between males and females in secondary school enrollment (UNFPA, 2014). Thus, combatting child marriage must incorporate the challenge of ensuring the progression from primary to secondary education for girls. Studies on early marriage suggest that a number of socioeconomic factors (e.g. unemployment, poverty, social insecurity, and social pressure) are associated with child marriage. Moreover, these socioeconomic factors also compound the vulnerability of child brides, further hampering their ability to achieve higher individual educational attainment and thus lessening their access to employment opportunities and improved socioeconomic status (Bhabha & Kelly, 2004; Ikamari, 2005; Islam & Gagnon, 2014; Jensen & Thornton, 2003; Kamal, Hassan, Alam & Ying, 2014).

Studies that assess the consequences of child marriage have found serious negative impacts on girls' education and health, as well as that of their children. By analyzing the Demographic and Health Survey data of more than two dozen (27) sub-Saharan African countries, Nguyen and Wodon (2014b) showed that each additional year of early marriage reduces the probability of literacy by 5.7 percentage points, the probability of having at least some secondary schooling by 5.6 points, and the probability of secondary school completion by 3.5 points. However a study by Omoeva, Hatch and Sylla (2014) addressing the question of how the effect of early marriage on school participation varies by relative household wealth, age, and urban residence has less clear findings. Their analysis of household survey data from a group of Southern and Eastern African countries (Burundi, Kenya, Madagascar, Malawi, Mozambique, Rwanda, Tanzania, Uganda, and Zimbabwe) for 2008-2011 finds that the differences in attendance associated with marriage are less pronounced for older girls (in the 14–17 age range). Younger girls (below aged 14), however, are more likely to attend school in general, and therefore marriage exerts a stronger pull on their attendance, with the probability of attending increasing by 4.4% at age 14 in comparison to the older age group (aged 14-17) (Omoeva, Hatch & Sylla, 2014). However, an ethnographic study (Emirie, 2005) on early marriage in rural Ethiopia shows harmful consequences on girls' overall development, including their participation in formal schooling in particular. In Bangladesh, Field and Ambrus (2008) explored the hypothesis that women attain less schooling as a result of social and financial pressure to marry at younger ages in rural locations. They found that each additional year that marriage was delayed was associated with 0.22 additional years of schooling and 5.6% higher literacy (Field & Ambrus, 2008). In addition, a single year of primary schooling increases women's wages later in life from 10-12%, while the boost from secondary education is 15 to 25% (Psacharopoulos & Patrinos, 2004). The families of girls who have married later also benefit from their added income and are more likely to invest in their families and children (Lloyd, 2006; World Bank, 2007).

Considering social as well as physiological factors, Dixon-Mueller (2008) suggests that the cut-off point of 18 years is an appropriate minimum age for marriage, although legal reforms of age at marriage are often ineffective in curbing the practice of child marriage. In Bangladesh, the legal age of marriage is 18 years for females and 21 years for males (Government of Bangladesh, 2010). Despite this legal age barrier, the prevalence of marriage before attaining 18 years of age in Bangladesh has led young females to become more susceptible to poverty, violence, abuse, and sexual exploitation (Islam & Mahmud, 1996; Kamal & Hassan, 2013; Sarkar, 2009).

Recently the government of Bangladesh has put forth an initiative to make age 16 the legal age of marriage with permission either from the girl's parents or from the court

(Government of Bangladesh, 2014). While research from throughout the globe indicates that this will negatively affect socioeconomic enhancement and empowerment of women, studies on the impact of different married age groups on educational attainment, and particularly of the differences between marrying below age 16 and below age 18, are not available for Bangladesh.

Thus, the research questions examined in our study are (a) to what extent does the effect of child marriage on educational attainment vary by whether women are married below age 16 or 18 years?; and (b) how does age at first marriage of a woman affect her length of participation in school? These research questions are guided by the objective of examining the difference between the two different age groups of women married as children in gaining educational attainment and the degree of the effect of age at marriage. The specific objectives of our study are:

(1) to examine the effects of child marriage on leaving secondary school before completion and on obtaining higher educational attainment for women married before 16 and below 18 years of age ; and

(2) to examine the effect of child marriage on total years of schooling of women who were married before age 16 and before age 18 years.

We did not include the effect of child marriage on leaving primary school before completion in our analysis because the median age at first marriage for women in Bangladesh is 15.8 years, higher than the age needed to complete primary education (National Institute of Population Research and Training (NIPORT), Mitra and Associates & Macro International, 2013). In examining the reasons for dropout at the primary level, Khan and Samadder (2010) found that less than one percent of primary incomplete education was due to child marriage. In earlier research, primary incomplete education has been mainly attributed to poverty, lack of awareness, lack of literacy among parents, large families with few earning members, direct and indirect costs of schooling, unsupportive school environment and social insecurity (Chowdhury, Nath, Choudhury & Ahmed, 2002; IRIN, 2009; Khan & Samadder, 2010).

Data and Methods

Data

We used the most recent available data of the *2011 Bangladesh Demographic and Health Survey* (BDHS), which includes 17,749 respondents who were ever-married women age 15-49 years old (NIPORT, Mitra and associates, and Macro International, 2013). The BDHS contains a wide range of information on individuals' education, employment, wealth, age at cohabitation, geographical division, region of residence and religion. These variables are particularly important to carry out multivariate analysis regarding the effect of child marriage on educational attainment while controlling for a host of socio-demographic and cultural factors.

Methods

Independent variables

Status of child marriage, the main independent variable in this study, was derived based on respondents' *age at first cohabitation*. The *status of child marriage* was coded into two categories: a) child marriage (first cohabitation before age 18), and b) adult marriage (first cohabitation at age 18 or above). The category of *child marriage* was further divided into two categories: a) married before age 16, and b) married before age 18. These two categories are not mutually exclusive: in other words, those who were married before age 16 are also included in the latter category of married before age 18. For this reason, separate analyses were carried out for both categories instead of keeping them in the same regression model. More specifically, the different contrasts of child marriage include: 1) married before age 16 versus married at age 16 and above, and 2) married before age 18 versus married at age 18 and above. Moreover, for subsequent analysis of the effect of age at first marriage on the years of schooling the *age at first cohabitation* (in years) has been used directly in the analysis as continuous variable. Here it can be noted that we chose the age category of less than 16 years due to the proposed lowering of the legal age of child marriage and of less than age 18 as the current legal age of marriage in Bangladesh. However, we did not analyze the age category of 16-17 separately due to the very low sample size.

Dependent variables

There are three specific outcome variables of interest in our study: higher education, incomplete secondary education, and total years of schooling. The first dependent variable, *higher education,* was coded into two categories: a) those with less than completed secondary schooling, and b) those who completed the secondary level and above. All respondents are included in this analysis; more specifically, the less than secondary category includes four categories of respondents: those with no education, with primary incomplete, with primary complete and with secondary incomplete.

The second dependent variable *incomplete secondary education* includes only the sub-sample of women who have some secondary education after completing primary education. The variable was coded into two categories: a) some secondary schooling, and b) completed secondary and above. Thus, three categories of women are excluded from this analysis: no education, primary incomplete and primary complete.

The third dependent variable of *total years of schooling* was used as continuous variable and the analysis includes all women. The 2011 BDHS also contains respondents' *education in single years.* We took this variable for our analysis to assess the years of lost education because of child marriage.

Control variables

Socio-demographic, economic and cultural variables were taken into account while examining the impact of child marriage on educational attainment through multivariate analysis. The control variables included respondents' current age, employment status, geographical division, religion and economic status. Respondents' *age* was coded into seven categories: 15-19, 20-24, 25-29, 30-34, 35-39, 40-44 and 45-49. Inclusion of age in the regression model would also capture the cohort differences in child marriage. *Employment* status was coded into two categories: employed and not employed. *Economic status* was coded into two categories: poor and not poor. *Religion* was coded into two categories: Islam and others. Currently, there are seven divisions in Bangladesh: Barisal, Chittagong, Dhaka, Khulna, Rajshahi, Rangpur, and Sylhet. All were included in the analysis.

Analytical Approach

The effect of child marriage on educational attainment was examined through a combination of bivariate and multivariate analysis. Bivariate analyses were conducted between age at first marriage (<16 and <18) and two categories of educational attainment – higher education and secondary incomplete. The multivariate analysis included logistic regression for the two categorical variables and Ordinary Least Squares (OLS) regression for the third outcome variable of interest: *total years of schooling*.

Ethical Considerations

The 2011 BDHS was conducted under the authority of the National Institute of Population Research and Training (NIPORT) of the Ministry of Health and Family Welfare. The survey was implemented by Mitra and Associates, a Bangladeshi research firm located in Dhaka. ICF International of Calverton, Maryland, USA, provided technical assistance to the project as part of its international Demographic and Health Surveys program (MEASURE DHS). An interview was conducted only if the respondent provided their verbal consent in response to being read an informed consent statement by the interviewer. Permission was obtained to use the BDHS data set and user instructions were strictly followed (all BDHS data should be treated as confidential, and no effort should be made to identify any household or individual respondent interviewed in the survey).[3]

Sample Characteristics

The socioeconomic and demographic characteristics of the respondents are reported in Table 1. Approximately one-third (27.7%) had no formal education, while only 12.0% had complete secondary education or higher. The vast majority of the respondents are Muslim (90.0%). More than 32.0% of women were from Dhaka division, followed by Rajshahi, Chittagong, Khulna, Sylhet and Barisal. Most of the respondents were unemployed (87.0%).

Table 1: Percentage Distribution of Women's Background Characteristics, BDHS 2011

Characteristics	Proportion (%)	Number of women
15-19	11.1	1,970
20-24	19.8	3,514
25-29	19.1	3,394
30-34	15.0	2,654
35-39	12.7	2,246
40-44	12.1	2,152
45-49	10.3	1,820
Divisions		
Barisal	5.6	1,002
Chittagong	18.2	3,222
Dhaka	32.3	5,736
Khulna	12.0	2,139
Rajshahi	14.9	2,646

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[3] Available from https://dhsprogram.com/data

Characteristics	Proportion (%)	Number of women
Rangpur	11.5	2,039
Sylhet	5.4	967
Place of residence		
Urban	26.0	4,619
Rural	74.0	13,130
Women's education		
No education	27.7	4,912
Primary incomplete	18.4	3,264
Primary complete	11.6	2,062
Secondary incomplete	30.3	5,383
Secondary complete	4.7	827
Higher	7.3	1,300
Religion		
Islam	90.0	15,980
Others	10.0	1,769
Wealth index (quintiles)		
Poorest	18.3	3,250
Poorer	19.6	3,487
Middle	20.1	3,567
Richer	20.6	3,664
Richest	21.3	3,781
Employment Status		
Employed	13.2	2,335
Not employed	86.8	15,414
Total	100.0	17,749

Results

To investigate the effect of child marriage on the education of women for different definitions (ages) of child marriage, we considered four logistic regression models. The models are paired in two different tables (Tables 2-3) for child marriage defined 'below 16 years' and 'below 18 years'. Model 1 and Model 3 (both in Table 2 and Table 3) are the basic models that include only child marriage as the predictor of educational attainment. Model 2 and Model 4 in both tables include child marriage, age, geographical division, religion, economic status, and employment status. The logistic regression estimates are presented in the form of odds ratios. An odds ratio of greater than 1.0 indicates that the group has a higher risk of the outcome variable of interest (e.g., secondary incomplete or higher education).

It should be mentioned that we also included rural/urban residence in the models but the variable was not statistically significant, and so it was subsequently excluded In connection with this it is worthwhile to mention that rural-urban variations in educational attainment are partly due to their differences in employment and economic status. Both of these variables were included in the models.

In addition, another variable based on the administrative region, or division was included in the models because previous research shows that there are substantial differences in socioeconomic development across divisions in Bangladesh. There are seven administrative divisions in Bangladesh: Barisal, Chittagong, Dhaka, Khulna, Rajshahi, Rangpur and Sylhet. Concerning the substantial variations in socioeconomic development across divisions, it was

found that the percentage of women who had completed secondary and above education in 2014 was the highest in Barisal division (19.3%) which was followed by Chittagong (16.0%), Dhaka (14.8%), Rajshahi (13.4%), Rangpur (13.1%), Khulna (12.9%), and Sylhet (9.4%). Similarly, the percentage of women who were not employed in 2014 was the highest in Sylhet division (80.5%), followed by Chittagong (72.8%), Barisal (70.8%), Khulna (62.9%), Dhaka (62.0%), Rangpur (57.1%), and Rajshahi (54.0%) (NIPORT, Mitra and Associates, & ICF International, 2016). Similarly, the highest rate of poverty in 2014 was in Rangpur division (42.0%) followed by Barisal (38.3%), Khulna (31.9%), Dhaka (30.5%), Rajshahi (27.4%), Chittagong (26.1%), and Sylhet (25.1%) (World Bank, Bangladesh Bureau of Statistics & World Food Program, 2014). There are also variations in exposure to media among women across divisions. For example, in Sylhet division, 80.5 percent of women do not have access to radio, TV or newspaper at least once a week compared to 54.0 percent in Rajshahi division. Mostly due to these differences in socioeconomic development, substantial differences in child marriage across divisions were found in previous research conducted by Islam, Haque, and Hossain (2016). They found that women living in Rangpur division had 4.6 times higher risk of child marriage compared to their counterparts living in Sylhet division even after adjusting for the socioeconomic factors. This was also true in the case of other divisions. These findings clearly suggest that geographic variations by division should be taken into account in examining the effect of child marriage on educational attainment of women. It is particularly important for policy interventions through allocation of resources to programs (e.g., to prevent child marriage, increasing school enrollment of children) for the Government to consider differences by division.

Child marriage and higher education

Table 2 presents the odds ratios (both adjusted and unadjusted) of the effect of child marriage on higher education of women. We found that child marriage (whether before 16 or before 18 years) exerts a strong negative effect on the higher educational attainment of women. Child marriage before age 18 led to 86.0% lower odds of completing higher level of education compared to adult marriage after controlling for current age of the women, division, religion, economic condition, and women's employment status (OR=0.14, 95% CI=0.12, 0.15]). These odds increase to 88.0% (OR=0.12, 95% CI=0.10, 0.13] when child marriage is defined as 'marriage before age 16', indicating a higher likelihood of incompletion of higher education due to marriage before age 16 compared to marriage before age 18.

Table 2 also shows that there are significant differences in completion of secondary and higher education across the divisions. For instance, Model 2 (married before age 16) women living in Sylhet division have a 70.0% lower chance of completing secondary and above education compared to their counterparts living in Barisal division. Similarly, women living in Chittagong division have lower chance of completing secondary and higher education than women living Barisal division (36.0%). It is worthwhile to mention that Sylhet and Chittagong divisions are more conservative than Barisal division in terms of religiosity, which is reflected through their higher total fertility rates and lower rates of contraception use as compared to Barisal (NIPORT, Mitra and Associates, & ICF International, 2016). In addition, poor women have a 93.0% lower chance of completing secondary and higher education than their counterparts who are not poor. Not employed women also have a lower chance of completing secondary and above education than employed women (42.0%). These differentials are also similar for women married before age 18 as shown in Model 4.

Table 2: Odds ratios of the effect of child marriage on completion of secondary education and higher (All women sample)

Characteristics	Age at marriage <16 years				Age at marriage <18 years			
	Model 1		Model 2		Model 3		Model 4	
	Unadjusted OR	(95% CI)	Adjusted OR	(95% CI)	Unadjusted OR	(95% CI)	Adjusted OR	(95% CI)
Child marriage								
No	[REF]		[REF]		[REF]		[REF]	
Yes	0.11**	(0.10, 0.13)	0.12**	(0.10, 0.13)	0.13**	(0.12, 0.15)	0.14**	(0.12, 0.15)
Age (years)								
15-19			[REF]				[REF]	
20-24			1.08	(0.89, 1.30)			0.75*	(0.64, 0.93)
25-29			1.44**	(1.12, 1.64)			0.98	(0.77, 1.13)
30-34			1.45**	(1.20, 1.77)			0.94	(0.80, 1.18)
35-39			1.20	(0.86, 1.31)			0.75*	(0.55, 0.84)
40-44			0.78*	(0.57, 0.89)			0.51**	(0.38, 0.59)
45-49			0.50**	(0.34, 0.57)			0.31**	(0.21, 0.36)
Divisions								
Barisal			[REF]				[REF]	
Chittagong			0.64**	(0.54, 0.65)			0.62**	(0.44, 0.63)
Dhaka			0.86	(0.60, 0.86)			0.74*	(0.53, 0.75)
Khulna			0.79	(0.59, 0.86)			0.73*	(0.55, 0.81)
Rajshahi			0.83	(0.66, 0.97)			0.70*	(0.56, 0.81)
Rangpur			1.19	(0.84, 1.24)			1.14	(0.79, 1.18)
Sylhet			0.30**	(0.26, 0.39)			0.25**	(0.22, 0.34)
Religion								
Islam			[REF]				[REF]	
Others			1.16	(0.96, 1.27)			1.14	(0.95, 1.28)
Economic Status								
Not poor			[REF]				[REF]	
Poor†			0.07**	(0.05, 0.08)			0.07**	(0.05, 0.08)
Employment Status								
Employed			[REF]				[REF]	
Not employed			0.58**	(0.51, 0.66)			0.61**	(0.54, 0.71)
-2Loglikelihood	11235.513		9712.08		11233.623		9752.874	
2Log*Likelihood*								
N	17,749		17,749		17,749		17,749	

*p value < 0.05, **p value <0.001
†belong to poorest and 2nd quintile

Child marriage and secondary incomplete education

Table 3 presents the odds ratios of the effect of child marriage on the sub-set of women who entered secondary school, looking at the factors influencing whether they complete secondary education. The significantly higher risk of secondary incomplete for child marriage is evident both for women married before age 16 or 18. For instance, the unadjusted model (Model 3) shows that women married before age 18 had much lower odds of completing secondary education than those who were married at age 18 or above. After adjusting for the control variables we found that women married before age 18 had 5.02 [95% CI=4.46, 5.65] times higher odds of secondary level incompletion compared to women married after 18 years of age. On the other hand, the likelihood of secondary dropouts had increased to 5.72 times the risk [95% CI=4.98, 6.57] for women married before age 16 than those married after age 16 after controlling for socio-demographic characteristics.

Table 3 also shows that divisional variations in the risk of not completing secondary education exist even after adjusting for the socioeconomic, demographic and cultural factors. For example, women living in Sylhet division have 2.29 times higher risk of not completing secondary education compared to the reference category of Barisal division (Model 2). Similarly, women living in Chittagong division have 37.0 % of the risk of not completing secondary education than their counterparts of Barisal division. Furthermore, poor women have a 5.6 times higher risk of not completing secondary education than non-poor women; and not employed women have 2.2 times higher risk of not completing secondary education than the reference category of employed women. These differentials in not completing secondary education across divisions are also consistent in the case of Model 4 in Table 3 (women married before age 18).

Table 3: Odds ratios of the effect of child marriage on not completing secondary education for those who enter secondary school

Characteristics	Age at marriage <16 years					Age at marriage <18 years			
	Model 1		Model 2			Model 3		Model 4	
	Unadjusted OR	(95 % CI)	Adjusted OR	(95 % CI)		Unadjusted OR	(95 % CI)	Adjusted OR	(95 % CI)
Child marriage									
No	[REF]		[REF]			[REF]		[REF]	
Yes	5.94**	(5.21, 6.77)	5.72**	(4.98, 6.57)		5.46**	(4.90, 6.09)	5.02**	(4.46, 5.65)
Age (years)									
15-19			[REF]					[REF]	
20-24			0.92	(0.75, 1.12)				1.15	(0.94, 1.40)
25-29			0.56**	(0.46, 0.69)				0.73*	(0.60, 0.89)
30-34			0.42**	(0.34, 0.52)				0.56**	(0.45, 0.69)
35-39			0.45**	(0.35, 0.57)				0.58**	(0.46, 0.74)
40-44			0.50**	(0.38, 0.65)				0.65*	(0.50, 0.85)
45-49			0.69*	(0.51, 0.95)				0.9	(0.66, 1.23)
Divisions									
Barisal			[REF]					[REF]	
Chittagong			1.37*	(1.05, 1.78)				1.41*	(1.08, 1.84)
Dhaka			0.96	(0.74, 1.23)				1.10	(0.85, 1.41)
Khulna			1.25	(0.94, 1.65)				1.33*	(1.00, 1.77)
Rajshahi			1.03	(0.78, 1.37)				1.21	(0.92, 1.60)
Rangpur			0.75	(0.56, 1.00)				0.75	(0.56, 1.00)
Sylhet			2.27**	(1.57, 3.27)				2.79**	(1.92, 4.06)
Religion									
Islam			[REF]					[REF]	
Others			0.98	(0.82, 1.16)				1.02	(0.85, 1.21)
Economic Status									
Not poor			[REF]					[REF]	
Poor†			5.61**	(4.48, 7.03)				5.71**	(4.56, 7.17)
Employment Status									
Employed			[REF]					[REF]	
Not employed			2.21**	(1.88, 2.59)				2.00**	(1.71, 2.35)
-2Loglikelihood	8057.545		7352.88			7960.918		7352.417	
N	7,510		7,510			7,510		7,510	
*p value < 0.05, **p value <0.001*									
†belong to poorest and 2nd quintile									

Age at first marriage and years of schooling

Another objective of our study was to assess the extent to which women's years of schooling increase due to each year of postponement of marriage. Alternatively, this would allow us to report the years of schooling lost for each year of younger age at marriage. Table 4 presents the findings related to the effect of age at first marriage on years of schooling. Model 1 in Table 4 is the basic model with no control variables which shows that increasing age at first marriage has a positive impact on years of schooling.

Table 4. OLS regression estimates of the effect of age at first marriage on years of schooling

Characteristics	Years of schooling							
	Model 1		Model 2		Model 3		Model 4	
	Beta	(SE)	Beta	(SE)	Beta	(SE)	Beta	(SE)
Age at first marriage	0.576**	(0.009)	0.483**	(0.008)	0.500	(0.008)	0.500**	(0.008)
Age (years)			-0.143**	(0.003)	-0.143**	(0.003)	-0.143**	(0.003)
Employment Status								
Not employed			0.006	(0.070)	0.002	(0.070)	0.008	(0.070)
Employed (ref)								
Economic Status								
Poor			-2.812**	(0.049)	-2.844**	(0.049)	-2.842**	(0.050)
Not Poor (ref)								
Divisions								
Chittagong					-1.019**	(0.113)	-1.019**	(0.113)
Dhaka					-1.092**	(0.107)	-1.087**	(0.107)
Khulna					-0.522**	(0.119)	-0.527**	(0.120)
Rajshahi					-0.943**	(0.116)	-0.939**	(0.116)
Rangpur					-0.604**	(0.120)	-0.617**	(0.121)
Sylhet					-2.145**	(0.141)	-2.154**	(0.141)
Barisal (ref)								
Religion								
Other religion							0.132	(0.080)
Islam (ref)								
Constant	-4.246**	(0.149)	2.676**	(0.175)	3.347**	(0.200)	3.229**	(0.212)
F (df)	3771.846**		2826.364**		1180.582**		1073.609**	
R-squared	17.523		38.904		39.927		39.932	
N	17,749		17,749		17,749		17,749	

*p value < 0.05, **p value <0.001

In Model 2, respondent's employment status and economic status were taken into account. Model 3 includes respondents' division along with all variables included in Model 2. The full model (Model 4) includes respondents' religion along with their age, division, employment status, and economic status. We found that each year delay in the age at first marriage would increase respondents' year of schooling to six months on average (Model 4, Beta=0.50). This leads to the conclusion that if the legal definition of 'child marriage' moved from 'below 18' to 'below 16', girls will tend to sacrifice one complete year of schooling on average. This might lead to severe negative consequences on their employment, health, empowerment, and social participation.

Discussion and conclusions

Evidence shows that early marriage as a multi-dimensional issue with negative consequences for education and particularly girls' education efforts (Lloyd & Mensch, 2008; UNFPA, 2012). Women who marry early tend to have less education and begin childrearing earlier, and have less decision-making power in the household (Jensen & Thornton, 2003). Other studies in different country settings show that child marriage is an important factor leading girls to curtail their education, even if it is not necessarily the main factor explaining dropout (Lloyd & Mensch, 2008; Nguyen & Wodon, 2014c). Lloyd and Mensch (2008) find that for girls aged 15 to 24, child marriage and pregnancies directly account for between 5% and 33% of dropouts, depending on the country in Africa.

The objective of this study was to assess the impact of child marriage on not completing secondary education, on completing higher education, and on total years of schooling for women in Bangladesh. We arrived at four basic conclusions. Firstly, child marriage (whether married before 16 or before 18 years) leads to a higher rate of incomplete secondary education for women compared to their respective reference category even after adjusting for their age, employment status, economic condition, religion and division. The higher rate of incomplete secondary levels among women who are married as children would exert a wide range of consequences both at the individual and national levels. At the individual level, women will have lower participation in the labor market and consequently would experience a higher incidence of poverty during their lifetime. Due to lower education, many of them would have unintended pregnancies and a higher number of children at a younger age, which would pave the way for many health complications. At the national level, increasing the number of people with less than secondary education will certainly have negative social effects on the community in terms of higher gender inequality, discrimination, discouragement towards active participation in social activities and social disparity (Axinn, 1993; Brown, 2012; Hadden & London, 1996; Hannum & Buchmann, 2003). Secondly, the higher education attainment rate is lower for women who were married as children (whether before 16 or 18 years) after adjusting for the selected socio-demographic characteristics. This finding is consistent with the findings of some earlier research (Brown, 2012; ICDDR,B & Plan International, 2013; Kamal, 2012). In connection with the negative consequences of child marriage on education, Brown (2012) mentions that "one of the gravest injustices suffered by child brides is the denial of education" (p.6). In the case of higher education, we found that the denial of education was much higher for women who were married before age 16 than those who were married before age 18. The lower rate of higher educational attainment is a matter of great concern because achieving higher education can make huge changes in the lives of millions of young females. Completing higher education would open doors for many jobs which could bring substantial benefit in terms of social, economic, demographic and psychological conditions (UNESCO, 2002; UNICEF, 1995; World Bank, 2002). In accordance with this the World Bank (2002, p. 5) argues that "education increases individual income; that it is positively correlated with macroeconomic growth; that it is strongly correlated with reductions in poverty, illiteracy and income inequality; and that it has strong complementary effects on the achievement of lower infant and child mortality, better nutrition, and the construction of democratic societies." If Bangladesh wants to harvest the benefits of education, effective strategies should be taken to prevent child marriage instead of lowering the legal age of marriage to 16 years for females.

Third, we found that reducing each year of age at first marriage for women would lead to six months reduction in their years of schooling, suggesting that two years decline in age at marriage (e.g., from 18 to 16) would cause one year loss of schooling on average. Young females' access to formal and even non-formal education become extremely limited after marriage due to domestic responsibilities, childbearing and social norms that view marriage and schooling as incompatible (Mathur, Greene & Mahotra, 2003). It should be mentioned that the one year loss in education will potentially throw millions of young females into poverty, exploitation, abuse, and vulnerability. For instance, thousands of young females become married while studying in Grade 11. If they get one additional year of schooling then they can complete higher secondary education. Completing higher secondary education will bring higher employment opportunities compared to those who could not finish higher secondary education. Therefore, the government should consider this evidence rationally while reviewing legal age of marriage.

Finally, in addition to strong effect of child marriage, there are some other factors which exert influence in extent to which girls will be able to complete secondary and above education. For instance, findings suggest that division, religion, employment status, and economic status have significant impact on completion of secondary education. More specifically, those who are not employed and financially poor have lower chance of completing secondary and above education. These findings are also similar for women living in Chittagong and Sylhet divisions as compared to that of Barisal division. Consequently, women who are not employed or poor or live in Chittagong or Sylhet division have high risk of not completing secondary education. These findings suggests that in ensuring secondary and above educational attainment for girls and reducing dropout rate at secondary level emphasis also should be given in addressing employment, poverty, and divisional disparity in socioeconomic advancement along with preventing child marriage in Bangladesh. That means, an integrated approach is needed to prevent child marriage by ensuring employment, reducing poverty and eliminating divisional disparity in socioeconomic advancement, which can ensure completion of secondary and above education for girls in Bangladesh.

The decision by a girl or her parents to marry early is likely to be itself a function of the girl's education potential. Girls with lower educational prospects may be more willing to marry early or their parents may be more inclined to have them marry early than to study further as compared to girls who are academically stronger (Nguyen & Wodon, 2014c). Also, girls less interested in pursuing their education may also marry earlier and might have dropped out of school even in the absence of marriage. As education and marriage decisions are jointly made, it is technically difficult, more specifically, using the proper statistical or econometric methods to assess the impact of child marriage on education attainment. Moreover, due to non-availability of data it was not possible to include parents' education into the analysis to predict the differential impact of child marriage (whether before 16 or 18) on educational attainment of women by parental attainment. Despite this limitation, this study will have at least four key implications. Firstly, the findings will provide better understanding of the extent to which young females cannot complete secondary and higher education due to their marriage as a child compared to those who were married as adults. Secondly, the precise estimate of the years of education lost due to each year decline in age at first marriage would facilitate future research in conducting a rigorous assessment of the loss of females' education for child marriage. Thirdly, this study will generate further interest among researchers in carrying out in-depth studies on the effect of child marriage (disaggregating marriage by <16 and <18 years of age) in other areas such as on employment and economic status. Finally, the findings of this study would draw attention

among policy-makers in creating legal framework of marriage for young females in a way that is conducive for their socioeconomic advancement in general, more particularly for educational development, as it provides strong evidence that the vulnerable situation of millions of young females will be under threat if marriage is sanctioned before age 16.

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