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Female Age at Marriage of Rural-Urban Areas in Bangladesh : An Evaluation

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Abstract : The main aim of the study is to find out those factors that are influencing the female age at marriage in Bangladesh both in rural and urban areas, so as to manipulate to rise age at marriage and thereby to control fertility and population growth. Data was collected by Bangladesh Demographic and Health Survey (BDHS) in 2007.Statistical techniques are used to analysis the data whenever warranted. Chi-square test was performed to find the association between age at marriage and background factors of Bangladeshi females. Logistic regression analysis was used to identify the factors which were responsible for the age at marriage among ever-married females.

Keywords: Age at marriage, Female, Background factors, Rural-Urban Area, Differentials, Bangladesh.

1. Introduction

One of the most burning problems of world today is that of controlling the population explosion. Bangladesh is one of the most densely populated countries of the world. The area of Bangladesh is only 56,977 sq. miles or 1, 47,570 sq. kilometer (Census 2011). It lies in the north-eastern part of south Asia between 2034 and 2638 north latitude and 8801 and 9241 east longitude. The country is bounded by India on the west, the north and the north -east and Burma on the south-east and the Bay of Bengal on the south. Bangladesh enjoys generally a sub-tropical monsoon climate.

The population of Bangladesh stood at 146.888 million; Density is 1,015 /km^2 or 2,676.8/sq miles (Census 2011). The population of the country is growing at approximately the rate of 1.37 percent per annum (Census 2011). The percentage of urban residing population is 28.1 while that of rural is 71.9. The literacy rate of the country obtained from 2011 census is 51.8 percent for population ten years and above. The increasing pressure of rising population on agriculture has resulted insignificant changes in agrarian structure of agro-based Bangladesh.[1]

Low age at marriage is a common feature in country and considered as one of the main causes of larger size of population. Actually, there is a strong

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association between population growth, fertility, mortality, mother and child health, use of contraception and low age at marriage. Obviously, it affects population growth rate by changing the number of births and the mean length of generation.[2,3]

Marriage entails a change from any other marital status to the status of married. In accordance with the recommendation made in Principles for a Vital Statistics System (1953), "the legal union of persons of opposite sex.[4]. The legality of the union may be established by civil, religious or other means as recognized by the laws of each country." Asia was historically identified with very early marriage having been part of what Hajnal (1965) described as an 'eastern marriage pattern' with early and universal marriage, in contrast to the pattern of Western Europe characterized by a late marriage with a significant proportion of the population never marrying.[5]. In much of Asia, in particular, in East and Southeast Asia, age at marriage for women has risen by several years, and more recently evidence has appeared indicating that a substantial section of the population who will never marry (Jones 2004, Xenos and Gultiano 1992).[6,7]. Marriage patterns in South Asia have also changed, but with the exception of Sri Lanka much less radically than in East and Southeast Asia. Age at marriage for females, but much less for males, has risen from a much lower base. Historically, women in South Asia, with the exception of Sri Lanka, married around or before menarche.[8]. The singulate mean age at marriage (SMAM) in British India (including modern India, Pakistan and Bangladesh) was still below 15 years in the 1931 census before slowly edging up there after. This process only started in Bangladesh after the 1961 census. In contrast to female age at marriage, the male marriage age has risen only a little and inconsistently. This indicates that very different factors have been driving it. While the female marriage age has been rising slowly in South Asia, in contrast to East and Southeast Asia, there is little firm evidence outside Sri Lanka that a sizable proportion of the population will not marry. This is in part because age at marriage remains much earlier than in East and Southeast Asia and there is more time to marry. It is also because arranged marriage remains dominant and is used to ensure marriage.[9]. Marriage is almost universal in Bangladesh. The universality of marriage and low age at marriage is related to the religious affiliation and lower status of females in the society. In 1984, through a government order, the legislative age at marriage in Bangladesh was fixed at 18 years for female and 21 years for males. However, in the countryside, such requirements are hardly known and among those who do not about them, they have little impact on behavior. A large proportion of marriages still take place before the legal age.[10]

2. Objectives of the Study

Age at marriage is a most important factor in population dynamics as it affects fertility tremendously and mortality and migration to a lesser extent. In Bangladesh, where marriage is nearly universal, age at marriage has a strong influence on a variety of demographic, social and economic factors. This study

will be able to pay a greater attention to find out those factors that are influencing the female age at marriage in Bangladesh both in rural and urban areas, so as to manipulate to rise age at marriage and thereby to control fertility and population growth by the year 2020. The purpose of the present study was to identify the most influential factors that are contributing in female age at marriage both in rural and urban areas of Bangladesh.

3. Data and Methodology

The present study was conducted among the ever-married women in their reproductive age group (15-49) years in Bangladesh. The required data and necessary information were taken from Bangladesh Demographic and Health Survey (BDHS), 2007.[11] It was the fifth survey in a series of national-level population and health survey utilized a multistage cluster sample, based on the Bangladesh Census, 2011. Here we consider total sample size 11440 in which 7536 for rural areas and 3904 for urban areas. Also consider female age at marriage in rural-urban areas as a dependent variable and Geographic region, Respondent's education, Working status, Husband's education, Watching TV, Husband's occupation are consider as Independent variables. Chi-square test was used to find the association between ages at marriage with background factors of Bangladeshi females. Also binary Logistic regression analysis was applied to identify the risk factors and to predict the probability of success.[12]

3.1 Chi-square test

A chi-square test is a statistical test commonly used for testing independence and goodness of fit. Testing independence determines whether two or more observations across two populations are dependent on each other (that is, whether one variable helps to estimate the other). Testing for goodness of fit determines if an observed frequency distribution matches a theoretical frequency distribution. In both cases the equation to calculate the chi-square statistic is

$$\mathrm{X}^2 = \sum_{i=1}^{n} \frac{(O_i - E_i)^2}{E_i}$$

The effect of Yates' correction is to prevent overestimation of statistical significance when at least one cell of the table has an expected count smaller than 5. The following is Yates' corrected version of Pearson's chi-squared statistic:

$$\chi^2_{\text{Yates}} = \sum_{i=1}^{N} \frac{(|O_i - E_i| - 0.5)^2}{E_i}$$

3.2 Linear Logistic regression model

Linear Logistic regression model is useful to find the best fitting and most parsimonious, yet biologically reasonable model to describe the relationship between an outcome (dependent or response variable) and a set of independent (predictor or explanatory) variables. This is a multivariate technique for

estimating the probability that an event occur. In a linear logistic regression model, dependent variable is a dichotomous one. The independent variable may be either dummy or categorical.

For a single variable, the logistic regression model is of the form

$$\text{Prop (event)} = \frac{1}{1+e^{-(\beta_0+\beta_1 x)}}$$

Where β_0 and β_1 are the regression co-efficient estimated from the data, x is the independent variable and e the base of natural logarithm.

For more than one independent variable, the model assumes the form

$$\text{Prop (event)} = \frac{1}{1+e^{-z}}$$

Where z = $\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots\ldots\ldots + \beta_P X_P$

The model is to be written in terms of the log odds of event occurring. This is called logit;

$$\ln\left(\frac{prob(event)}{prob(noevent)}\right) = \beta_0 + \beta_1 X_1 + \ldots\ldots\ldots + \beta_P X_P$$

$$\frac{prob(event)}{prob(noevent)} = e^{\beta_0}\ e^{\beta_1 X_1} \ldots\ldots\ldots e^{\beta_P X_P}$$

Then e raised to the power β_i is the factor by which the odds changes when the i'th independent variable increases by one-unit. If β_i is positive, this factor will be greater than 1, which means that the odds are increased. If β_i is negative, this will be less than 1 which means that the odds are decreased. When β_i is 0, the factor equals and odds remains unchanged.

In logistic model, the dichotomous response variable was assigned the value 1 for getting married at the age of 18+ years and 0 otherwise.

The explanatory variables are: Geographic region, Respondents and their husbands' education, working status, Religion, watching TV and husband's occupation.

4. Marriages in Bangladesh

Marriage in Bangladesh, as in neighboring North India, was traditionally very early (Maloney et al., 1981; Lindenbaum 1981). Among Hindus, in particular, child marriage – marriage before menarche - was common. It was also widely believed that early marriage for girls made them more malleable and accepting of their new family circumstances, and in particular of the authority of their husbands, and in-laws. Early marriage is perceived particularly by Hindus to be in keeping with the notion of the Joint Family, where ideally property is held jointly with the husband's brothers and father – while he is still alive. Maloney et al., (1981) reported that many of their Hindu respondents believed that it was meritorious if a girl was married by the age of eight years, but a disgrace if she had her first menstruation while still living in her natal household.[13]. Under Muslim law guardians did not have the right to contract marriage for a pre-pubescent girl (Jhabvala 1975; Maloney et al., 1981), but clearly the Hindu example had influenced Bangladesh's Muslims. Apart from protecting family norms, the major pressure for early female marriage was the fear of the consequences of delayed marriage for the girl and her family. For Hindus, it was critical to prevent miscegenation between different castes: this would result in ritual pollution with disastrous consequences for all families involved. For Muslims premarital sexual activity or even 'unchaste' behavior challenges not only the young woman's virtue but also the ijat (or izzat - honour) of her family members (Maloney et al., 1981; Kotalova 1996; White 1992). This was closely linked to the Islamic concept of 'Purdah' (known in Bangladesh as Parda).[14]

Female age at marriage has been rising intermittently since the 1960s. The simulate mean age at marriage (SMAM) was 13.9 years at the 1961 census – an apparent decline from 14.4 in 1951, but it rose to 15.9 by the 1974 census, 16.4 by the 1981 census and 18.1 by the 1991 census (Xenos and Gultiano 1992; United Nations 2000). The Bangladesh Fertility Survey of 1975-76 (Maloney et al., 1981) found that mean age at marriage of women who first married in 1927 was 10.9 years, while for women who married in 1957 it was 13.0 and for the youngest marriage cohort it was about 15. The 1999/2000 Bangladesh Demographic and Health Survey (BDHS) found a median marriage age among all women 15-49 (including both married and unmarried women) of 14.7 years. Older women aged 45-49 years recorded 13.8 years, and those aged 20-24, 16.1 years.[15]. Age at marriage was varied by region, education and urban/rural residence. It was earliest in the two divisions believed to be most influenced by Hindu ideals, Rajshahi and Khulna, even though these areas are said to be those where Purdah is weakest. This was also despite the fact that Hindus now, in general, marry later than Muslims, in part because of higher education rates. For the ages 20-49 years, women with no education married at 14.0 years, primary incomplete 14.4, primary complete 15.0, and secondary plus 17.2 years. Secondary school often means delaying marriage. Women aged 45-49 years with secondary plus schooling married 2.1 years later than women with no education (15.6 years versus 13.5); for women aged 20-24 years the difference was 4.5 years (19.0 versus 14.5 years). Urban women aged 20-49 married at 16.2 years as compared to 13.7 years among rural women, a difference of 2.5 years. The

difference increased from 0.9 years (14.6 years versus 13.7) for women aged 45-49 to 2.6 years (18.3 years versus 15.7) for women 20-24 years. This implies the rural-urban difference was larger than suggested by an uncontrolled comparison, but also that the change over time within the urban population was exaggerated.[16].

5. Results

Table 1 : Background Characteristics of the study sample respondents (Percentage distribution)

Table 1 reveals the background information of the respondents living both in rural and urban areas of Bangladesh. Among the six administrative regions, the maximum number of rural women (24.0%) was from Rajshahi region, followed by Dhaka (19.4%), Chittagong (17.3%), Khulna (14.9%), Barisal (13.4%) and Sylhet (11.0%), respectively. In case of urban areas, the maximum number of women were from Dhaka region (28.8%), followed by Chittagong (19.7%), Rajshahi (19.3%), Khulna (15.0%), Barisal (9.0%) and Sylhet (8.1%), respectively. The illiteracy rate was higher among rural women (42.4%) than that of urban (31.4%). Women empowerment should be enhanced through the participation of women in income related activates as the results indicated that about 80% of the rural and 75% of urban women did not have any job (are not working). The results also showed that the majority of the respondents (about

Background characteristics	Rural		Urban	
	Respondents	Percentage	Respondents	Percentage
Geographic region				
Dhaka	1464	19.4	1125	28.8
Chittagong	1301	17.3	768	19.7
Rajshahi	1809	24.0	755	19.3
Barisal	1009	13.4	351	9.0
Sylhet	832	11.0	318	8.1
Khulna	1121	14.9	587	15.0
Respondent's education				
No education	3193	42.4	1226	31.4
Primary	2327	30.9	1054	27.0
Secondary	1769	23.5	1180	30.2
Higher secondary and above	247	3.3	444	11.4
Working status				
Not working	5994	79.5	2931	75.1
Working for earning	1542	20.5	973	24.9
Religion				
Muslim	6701	88.9	3481	89.2
Non-Muslim	835	11.1	423	10.8
Husband's education				
No education	3052	40.5	1082	27.7
Primary	2047	27.2	856	21.9
Secondary	1785	23.7	1162	29.8
Higher secondary and above	652	8.7	804	20.6
Watching TV				
No	4112	54.6	825	21.1
Yes	3424	45.4	3079	78.9
Husband's occupation				
Manual	5544	73.6	2279	58.4
Non-manual	1992	26.4	1625	41.6
Total	7536	100	3904	100

80% of rural and 90% of urban) were Muslims by religion. Occupations of the husband were categorized into two groups such as manual (includes those who were involved directly with physical labor to earn) and non-manual (includes those who were involved with different professional, clerical and business related activities to earn). The results indicated that more than 75% of the rural husbands were engaged with manual occupation and about 62% for urban.

Table 2: Results of Chi-square test between age at marriage (<18 years & 18+ years) and selected background characteristics.

Background Characteristics	Rural			Urban		
	Age at Marriage			Age at Marriage		
	< 18 years	18+ years	Chi-Square	< 18 years	18+ years	Chi-Square
Geographic Region			105.269			34.391
Dhaka	13.1	6.3	(.000)	14.2	14.6	(.000)
Chittagong	6.8	10.5	5 d.f	2.1	17.6	5 d.f
Rajshahi	19.1	4.9		9.4	9.9	
Barisal	6.5	6.9		5.2	3.8	
Sylhet	3.7	7.3		4.4	3.7	
Khulna	10.1	4.8		5.1	9.9	
Respondent Education			684.178			860.060
No Education	37.8	4.6	(.000)	26.8	4.6	(.010)
Primary	25.7	5.2	3 d.f	20.5	6.5	3 d.f
Secondary	13.9	9.6		16.7	13.5	
Higher secondary & Above	1.7	1.6		7.4	4.0	
Working Status			0.03			1.229
Not Working	72	7.5	(.863)	60.8	14.3	(.001)
Working for earnings	13.2	7.3	1 d.f	12.1	12.8	1 d.f

Religion			76.310			41.573
Muslim	82.4	6.5	(.000)	76.5	12.7	(.000)
Non-Muslim	6.7	4.4	1 d.f	6.1	4.7	1 d.f
Husband's Education			324.070			523.585
No Education	36.2	4.3	(.000)	23.3	4.4	(.000)
Primary	21.5	5.7	3 d.f	14.7	7.2	3 d.f
Secondary	15	8.7		19	10.8	
Higher secondary & Above	3.3	5.4		14.4	6.2	
Watching TV			32.843			64.091
No	48.8	5.8	(.000)	15.8	5.3	(.000)
Yes	36.1	9.3	1 d.f	62.7	16.2	1 d.f
Husband's Occupation			27.349			104.937
Mannual	67	6.6	(.001)	48.9	9.5	(.003)
Non-Mannual	16	10.4	1 d.f	20.4	21.2	1 d.f

Note: Value in the parenthesis indicates the significance level.

To see the association between age at marriage and various selected background characteristics of rural-urban differentials in Bangladesh, a well-known statistical tool namely- Pearson Chi-square test procedure was used and the results are presented in Table 2. The results revealed that there were significant variations in legal age at marriage (among rural and urban women, it was 7.4% and 13.9%, respectively) among women with different socio-economic and demographic characteristics. Among the selected background characteristics - geographic region, respondents and their husbands' education, religion, watching TV and husband's occupation were significantly associated with the age at marriage of the ever-married women of Bangladesh.

Table 3: Logistic regression estimates of the effects of different background characteristics on age at marriage of rural–urban differentials in Bangladesh.

Background characteristics	Rural		Urban	
	Coefficient (β)	Odds ratio $[Exp(\beta)]$	Coefficient (β)	Odds ratio $[Exp(\beta)]$
Geographic region				
Dhaka (r)	-	1.00	-	1.00
Chittagong	0.552*	1.737	0.408*	1.504
Rajshahi	-0.295***	0.745	-0.356**	0.701
Barisal	-.059	0.943	-0.418**	0.658
Sylhet	1.141*	3.131	0.686*	1.986
Khulna	-0.439**	0.645	-0.592*	0.553
Respondent's education				
No education(r)	-	1.00	-	1.00
Primary	0.093	1.097	0.235	1.265
Secondary	0.610*	1.840	0.741*	2.098
Higher secondary+	2.562*	12.966	2.618*	13.703
Working status				
Not working(r)	-	1.00	-	1.00
Working	0.149	1.161	0.235***	1.265
Religion				
Muslims(r)	-	1.00	-	1.00
Non-Muslims	0.684*	1.981	0.752*	2.122
Husband's education				
No education(r)	-	1.00	-	1.00
Primary	0.111	1.117	0.362***	1.436
Secondary	0.372*	1.451	0.394**	1.483
Higher secondary+	0.879*	2.408	1.051*	2.860
Watching TV				
No(r)	-	1.00	-	1.00
Yes	0.096	1.101	0.457*	1.579
Husband's occupation				
Manual (r)	-	1.00	-	1.00
Non-manual	-0.035	0.966	0.098	1.103

Note: (r) = Reference category

*Significant at the p-level of 0.01

** Significant at the p-level of 0.05

*** Significant at the p-level of 0.1

The results of logistic regression analysis are presented in Table 3 in the form of logistic regression coefficients, p-value, and relative odds ratio corresponding to the selected explanatory variables both for rural and urban areas.

Dhaka division was considered as the combination and interactions of all other divisions, therefore, considering Dhaka as reference category, the regression coefficients both for rural and urban ever-married women of Bangladesh under different geographic regions were being calculated. Except for the rural areas of Barisal division, all results showed the statistically significant effect on age at marriage. For rural areas, the odds ratio corresponding to Chittagong and Sylhet divisions were found 1.737 and 3.131, respectively. This clearly indicated that the women of Chittagong and Sylhet divisions had 1.737 and 3.131 times respectively more probability in getting their married after the legal age at

marriage (18+ years) than the women of Dhaka division (reference category). On the other hand, for urban areas, the odds ratio corresponding to Chittagong and Sylhet divisions were found 1.504 and 1.986 respectively. This also indicated that the women of Chittagong and Sylhet divisions had 1.504 and 1.986 times respectively more probability in getting their married after the legal age at marriage (18+ years) than that of the women of Dhaka division (Table 3).

It is apparent from the results that there are significant regional variations in age at marriage among the women of Bangladesh. Therefore, to order to achieve the replacement level fertility within 2015, various programs should be taken to remove the regional variations in age at marriage among the women of Bangladesh.

Education is the key determinant of the life style and status enjoys in a society. For this reason, the regression coefficients corresponding to different levels of education both for respondents and their husbands were calculated. It was seen that the results had statistically significant effect (both for rural and urban areas) on age at marriage except corresponding to primary level of education.

From the results, it is also evident that the women and their husbands of urban areas with secondary and higher secondary+ level education have higher age at marriage (married after the age of 18 years) than their rural counterparts.

In order to identify the impact of working status on age at marriage of the women, the respondents were categorized into working and not working. The regression coefficients demonstrated that working status of urban areas had significant effect on age at marriage. The odds ratio corresponding to working women of urban areas was 1.265. It means that the women of urban areas of Bangladesh have 1.265 times higher probability in getting married after the age of 18 years than the non working women of urban areas (reference category). In the contrary, the working women of rural areas had an effect on age at marriage, with working women having 1.161 times more likely to go for married after the age of 18 years, but it was not statistically significant (Table 3).

Religion is another important and highly significant factor influencing age at marriage of the respondents. The logistic co-efficient indicated that the highest occurrence of married after the age of 18 was among non-Muslim women of urban areas, followed by non-Muslims women of rural areas. It appears that the rural and urban non-Muslim women are 1.981 and 2.122 times respectively more likely to go for getting married after the age of 18 than the Muslim women

Mass media can play a strong role by creating awareness about the early marriage related complications and the bad effect of these complications in the future health of mothers and their new born babies. The result showed that the rural and urban women who watched TV were 1.101 and 1.579 times respectively more likely to go for getting married after the age of 18 than that of the women who did not watch. The result also showed the highly significant (statistically) effect for urban areas but for rural areas, this effect was not statistically significant.

Occupation of the husband had an effect on the female age at marriage, with husbands having non-manual occupation being 0.966 times less likely for rural and 1.1.3 times more likely for urban for getting married after the age of 18, but these effect were not statistically significant.

6. Discussion and Conclusion

This study investigates the predictors of age at first marriage in Bangladesh among female in different characteristics. It has been utilized the national representative data from the Bangladesh Demographic and Health Survey (BDHS -2007). Cross-tabulation technique has been applied to identify the predictors of age at first marriage. Since age at first marriage is one of the important proximate determinants of population size, the present study analyzes the age at first marriage of female respondents. The median age at first marriage is found to be 18 years. The result suggests that early marriage among females is a multi-dimensional phenomenon. None the less, chi-square analysis exhibits that all explanatory variables here such as respondents geographic region, Respondent's education, Working status, Husband's education, Watching TV and Husband's occupation are important in explaining differentials of age at marriage of the Bangladeshi adolescents. Of the entire variables respondents' education, husband's education and access to mass media (watching TV) makes by far the strongest contribution to the variability in age at first marriage of the women in Bangladesh.

The findings of the present study have clear policy implications. To increase age at first marriage to check the growth rate of population, top most importance should be attached to education of the respondents. If literacy rate can be increased it would develop a sense of national awareness and wide outlook among them. Hence, all-out efforts should be taken to weed out female's illiteracy. Initiatives must also be taken to ensure at least secondary education level among girls. In this context, possibility of free education for females up to secondary level can be justified, which will accelerate the females towards higher ages at first marriage. Husband's level of education has impact on age at first marriage. Hence, it can be suggested that males educational must be improved which will help to reduce childhood marriage. Women who are currently working are more aware of their marriage. For this reason the Government should come forward to create job opportunities for women. Geographical region of residence is found to be a significant predictor of age at first marriage. Therefore, economic disparity should be reduced and uniform distribution of national income must be ensured across the country. If the aforementioned recommendations can be implemented properly, the age of first marriage of women will be increased at expected level and accordingly the rate of infant and maternal mortality can be reduced, which occur due to conception in early age.

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