

**DETERMINANTS OF UNWANTED FERTILITY IN BANGLADESH: WHETHER  
SEX PREFERENCE AND UNMET NEED ARE DOMINANT?**

**Md. Mahfuzur Rahman**

Assistant Professor, Dept. of Population Science & Human Resource Development, Bangladesh

**Tapan Kumar Roy**

Associate Professor, Dept. of Population Science & Human Resource Development, Bangladesh

**Md. Abdul Goni**

Professor, Dept. of Population Science & Human Resource Development, University of Rajshahi, Bangladesh

---

**ABSTRACT**

This study investigates the determinants of unwanted fertility in Bangladesh and examines the dominance of each of these factors over others. This study is based on 2011 BDHS data and logistic Regression Technique has been applied for analyses. Result shows that about 17 percent women reported their last birth was unwanted and 83 percent of them married before reaching age 18. The most striking finding of this study is that, along with the unmet need, marriage at younger age, religion, low schooling years of women, and husband's desire for more children supersede sex preference and these factors influenced to have far higher unwanted births than their respective counterparts. Surprisingly child loss experience has become statistically insignificant even before introducing any control effect, which implies that the fear of child loss has become insignificant to influence Bangladeshi mothers to have unwanted births.

**Keywords:** unwanted fertility, total fertility rate, replacement level fertility, unmet need, sex preference

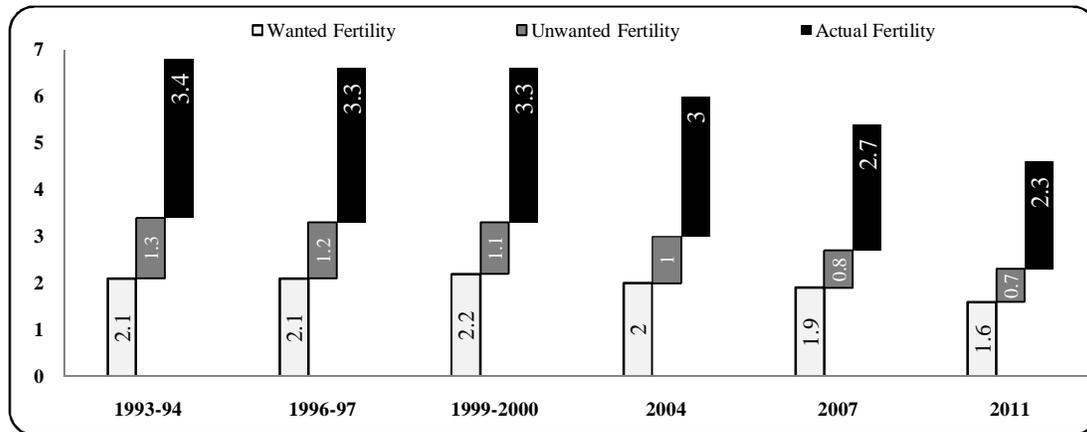
## **Introduction**

Bangladesh is one of the most densely populated (964 inhabitants per square kilometer) countries in the world and her population followed an exponential growth trend during the past century (PHC 2011). Bangladesh's current health sector program, the Health, Population and Nutrition Sector Development Program (HPNSDP) 2011-2016 aims to reduce fertility to 2 births per woman by 2016 to shed the overwhelmingly contiguous population. To shape the fertility to align with the target, it is very important to identify the instrumental factors that might linger the achievement of the target, so that recuperative measures can be taken to control those factors. One of the mainstays that are standing in the way of achieving the low fertility target is unwanted fertility. The excess of fertility over ideal family size reported by the respondents is considered as unwanted fertility and it is an indicator of imperfect control over the reproductive processes. The elimination of unwanted births lead to substantial reductions in fertility and rates of population growth (Bongaarts 1997). Unwanted births are thought to carry distinctive and substantial costs (Gipson et al. 2008), at the individual level, preventing unwanted births enhances the well-being of women and their children (Kulkarni and Choe 1998). Unplanned pregnancy creates greater risk of complicated pregnancy outcomes (Roy et al. 2012). Prevention of unwanted births close the gap between reproductive aspirations and outcomes thus upholds individual right, and the prevention of unwanted births can be a cost-effective step towards attainment of population goal, since unwanted births are assumed to be less costly to avert (Casterline and Mendoza 2008).

Bangladesh has been experiencing a steady and encouraging decline in fertility since 1970 apart from a decade long plateau during 1993-94 to 2004. The total fertility rate (TFR) has declined to 2.3 in 2011 starting from over 6 in 1971-75 (BDHS 2011), but every Demographic and Health Survey (DHS) conspicuously exposed a big gap between wanted fertility and actual fertility and that gap comprises the unwanted fertility (Bongaarts 2006). Figure 1 shows that during the cessation period (1990s) the unwanted TFR ranged from 1.1 to 1.3 per woman and the wanted fertility were almost at replacement level. Though the unwanted fertility shows declining trend yet the magnitude is found 0.7 in 2011, implies that Bangladeshi women have 0.7 children more than their wanted number of children and the TFR would be 30 percent lower if unwanted births could be forestalled and the fertility would have reached sub-replacement level (BDHS 2011). The facts and figures suggest that though Bangladesh is doing well in bringing her fertility down, but the process would have been

expedited if the unwanted fertility could have been averted and the determinants of that unwanted fertility is redolent of this study.

**Figure 1 Trends in unwanted, wanted and actual TFR, Bangladesh 1993-2011**



**Source:** BDHS Report-2011

Very few numbers of studies have been carried out on unwanted fertility and its determinants over the world, as well as in Bangladesh. Adetunji (2001) in a study suggested that unwanted fertility depends on where a country is in the course of fertility transition. In another study conducted on 41 countries, Gillespie et al. (2007) intended to examine the relationship between fertility with only economic condition (asset possession) and income inequality. They concluded that economic condition (wealth level) has strong negative influence on unwanted fertility. But in a study on Colombia and Peru, Adetunji(1997)found that unwanted pregnancy decreased with years of education, but no significant relationship emerged between unwanted pregnancy and socioeconomic status. In a study conducted with Chilean data, women aged 15-24 living in households of low socioeconomic status (as measured by the father's level of education) were more likely than the daughters of better educated men to experience unintended (unwanted or mistimed) pregnancies(Herold et al. 1994).Result from a different study on Ecuador revealed that, among variables that independently raised the likelihood of unwanted pregnancy were residence in a major metropolitan area, number of previous births and use of a contraceptive method before the most recent pregnancy; in contrast, variables: residence in rural areas, living in a high-income household and giving birth at a relatively older age (i.e., 30-49 years) negatively influenced the incidence of

unwanted pregnancy (Eggleston 1999). A study conducted on Iran concluded that a meaningful relation exists between unintended pregnancy rate and pregnancy turn (Abbasi-Shavazi et al. 2004). In Bangladesh, no study has made attempt to examine the control effect of variables to trace the factors comparatively more important determinant than the others. Moreover, the aforementioned studies are outdated and the complex socio-economic relationships and implications are ever changing.

This study intended to shed light on the differentials and determinants of unwanted fertility using the latest Bangladesh Demographic and Health Survey 2011 data. Production of a fertility might be different (still birth or live birth), moreover a pregnancy may be terminated at any intermediate point of gestation period, for this reason this study has considered unwanted birth as the subject matter rather than unwanted pregnancy. Since Bongaarts (2005) spotted unmet need as one of the most striking factors in analytic framework for the determinants of fertility; and in another study on stalled fertility in Bangladesh, Menken et al. (2009) concluded that the factor sex preference accompanied by number preference regulated fertility despite all other surrounding parameters. Therefore, the main objective of this study was to examine the tenacity of sex preference and unmet need in influencing unwanted fertility by studying the control effects of all other relevant variables on them. This study is expected to mark the up-to-date determinants of unwanted fertility and find out the relative importance of each variables in influencing unwanted fertility, thus will help policy planners find relatively small number of factors but most important to influence the unwanted fertility.

### **Data and Methodology**

This study used the data of Bangladesh Demographic and Health Survey (BDHS) 2011. The survey was based on a two-stage stratified sample of households. In the first stage, 600 enumeration areas were selected with probability proportional to the enumeration area size, with 207 clusters in urban areas and 393 in rural areas. In the second stage of sampling, a systematic sample was applied and a total of 17,842 ever married women (response rate: 98 percent) of age 12-49 were successfully interviewed from a total of 17,141 completed household. Our focus was on the unwanted fertility in five years preceding the survey, consequently we sorted out 7,325 ever married women, of age 13-49, given birth at least one child during the five years period preceding the survey. Finally these 7,325 ever married women were used as the unit of analyses in this study. In the course of analysis it has been

observed that the variables having unmet need, husband's/partner's completed years of schooling, and couple's desire for children having missing entries for 134 (1.8 percent), 1046 (14.3 percent) and 424 (5.8 percent) cases respectively. The analyses of only these variables have been done excluding the cases possessing missing entries.

In this study univariate, bivariate and multivariate techniques have been used to analyse the data. Chi-square test(Rao 1996)is used as bivariate technique to primarily examine the association between dependent and independent variables. The multivariate technique, binary logistic regression analysis(Liao 1994)has been applied to predict the odds of experiencing unwanted birth by selected background characteristics. A total of three regression models have been fitted using logistic regression technique to mainly examine the control effect of the selected variables on sex preference and unmet need in influencing unwanted birth, and from the same fitted lines we have also observed the control effect of the selected variables on each other to underscore the centre-piece. All the analyses and data processing in this study has been performed by using computer software SPSS.

### ***Variables***

The sole dependent variable of this study is whether the last birth in five years preceding the survey was unwanted? A birth is considered unwanted if the number of living children at the time of conception of the birth was equal to or higher than the ideal number of children as reported by the respondent, while the mistimed births have been included in wanted category. If the last birth of a respondent during five years preceding the survey was unwanted then the women was coded 1, otherwise the women was coded 0.

The independent variables included in the study are sex preference, having unmet need, age at first marriage, residence, region, religion, respondent's completed years of schooling, husband's/partner's completed years of schooling, current work status, economic class, experienced child (< 5 years) death, radio/television possession, aware of community clinic and couple's desire for children. Whether a respondent is biased to a specific sex has been decided depending upon the information on her desire for number of son and daughter, e.g. if a respondent's desired number for son is higher than that of the daughter, then the respondent is classified as "Have Preference to Son", and vice versa, but if the desired number for son and daughter are same then she is classified as "Unbiased". The non-numeric responses (up to god/ fatalistic, others and Don't Know) were include in "Unbiased" category so that the

sex biases remain free from any unknown factors. Respondents who have unmet need for spacing and limiting births were categorised as having unmet need. Economic class of each respondent was measured by the classified wealth index in BDHS data; those who were categorised as poorest and poorer were considered as poor and those who were categorised as richest and richer were considered as rich; this has been done to reduce the number of subcategories to increase the group size which in turn expected to facilitate the statistical analysis. Respondents who did not have either a radio or a television and the respondents who reported were not a de jure resident were considered as not possessing a radio/television, as our focus was only on finding out those possessed a radio/television. The variable “couples desire for children” actually reflects the understanding between spouses/partners in terms of desire for number of children. If the respondent and her husband/partner desired for same number of children then the couple were considered to have agreement in terms of desired number of children. The category Don’t Know (DK) responses in couple’s desire for children have been included in “both want same” category from two point of view; firstly it is thought that husband and wife does not have strong opinion and have not had any bitter argument regarding the desire for the number of children, in case of such oblivion the couple can reach to an agreement at any time; secondly the DK has been included in “both want same” category to keep it free from any unknown effects.

### ***Sample Profile***

Table 1 represents the background characteristics of the respondents selected for this study. Only 4.5 percent of the 7,325 respondents were under 18 years of age and as much as 86 percent were found in age group 18-34. A vast majority of the respondents (76%) got married before reaching the legal age

**Table 1:** distribution of ever married women by selected background characteristics

<b>Background Characteristics</b>	<b>Number</b>	<b>Percentage</b>
<b>Current Age of Respondents</b>		
< 18	329	4.5
18-34	6308	86.1
35+	688	9.4
<b>Age at First Marriage</b>		
< 18	5557	75.9
18+	1768	24.1
<b>Residence</b>		
Urban	2328	31.8
Rural	4997	68.2
<b>Religion</b>		
Muslim	6600	90.1
Hindu	699	9.5
Others (Christian & Buddhist)	26	0.4
<b>Completed Years of Schooling</b>		
0 (no education)	1332	18.2
1-4 (incomplete primary)	1274	17.4
5-9 (complete primary)	3676	50.2
10+ (Secondary and Higher)	1043	14.2
<b>Current Work Status</b>		
Not Working	6559	89.5
Working	766	10.5
<b>Economic Class</b>		
Poor	2926	39.9
Middle	1408	19.2
Rich	2991	40.8

Source: BDHS 2011

of marriage (18 years) in Bangladesh. Of the total respondents 68 percent used to reside in rural areas and 90 percent were Muslim. A substantial proportion of the respondents were with no education (18%) and incomplete primary education (17%); while about 50 percent and 14 percent of the respondents were found to have completed primary education and secondary and higher education respectively. About 90 percent respondents were not working at the time of this survey and 40 percent of the respondents were found poor.

### **Analytical Framework and Hypothesis**

Socioeconomic development is considered the main cause of a fertility transition over time that operates through the changes in the cost/benefit ratio of children and mortality decline (raises child survival) which controls families demand for birth to achieve the desired number of surviving children. These trends in desire for birth is expected to raise the demand for birth control (i.e., contraception and induced abortion), and, to the extent this demand is satisfied, lower fertility results (Bongaarts 2005). Socioeconomic development also brings changes in demographic characteristics (age structure, age at marriage, marital status, child loss experience, attitude towards sex and number, etc.) which work as auto-mechanism in changing fertility preferences. For example, by lingering the female marriage her reproductive can be shortened. The socio-economic and cultural factors are also expected to shape the psychology of human being to possess affinity for a combination of specific sex of children to achieve a desired family size. Such impulse for a particular sex often become untenable consequently results into unwanted births.

Aforesaid discussion suggests to adopt following hypotheses:

H<sub>1</sub>: The socio-economic and demographic variables included in the analyses will turn out to be the significant predictors of unwanted fertility.

H<sub>2</sub>: The control effects of all the factors cannot vitiate the influence of sex preference and unmet need on unwanted fertility.

### **Results**

#### ***Unwanted Fertility Scenario***

Table 2 represents the distribution of ever married women aged 13-49 had unwanted birth by their background characteristics. The table also represents the result of Chi-square analysis; an attribute is considered significantly associated with the incidents of unwanted birth if the “p” value of Chi-square test is less than 0.05. Chi-square analysis shows that, except the variables region, current work status, experienced child (< 5 yrs) death and aware of community clinic, all other variables were highly significant in influencing the unwanted fertility. Among the total (N = 7,325) respondents we found 989 (14%) women had their last birth unwanted during five years preceding the survey. Cross classification of the attributes exhibits that the percentage of respondents had unwanted birth is higher for the group biased

to son (19%) than the other groups, interestingly percentage to have unwanted birth for the women preferred daughter (9%) over son is much lower than that of those who are unbiased (13%). About 17 percent respondents of those having unmet need experienced

**Table 2:** Distribution of ever married women had unwanted birth among selected characteristics, BDHS 2011

Characteristics	Women Experienced Unwanted Birth		Total (N = 7325)
	Number	Percentage	
<b>Sex Preference<sup>***</sup></b>			
Unbiased	840	13.0	6472
Having Preference to Son	136	19.2	709
Having Preference to Daughter	13	9.0	144
<b>Having Unmet Need<sup>***a</sup></b>			
No	794	12.9	6173
Yes	173	17.0	1018
<b>Age at first marriage<sup>***</sup></b>			
10-13	325	22.4	1448
14-17	494	12.0	4109
18 <sup>+</sup>	170	9.6	1768
<b>Residence<sup>**</sup></b>			
Urban	268	11.5	2328
Rural	721	14.4	4997
<b>Region</b>			
Barisal	109	12.7	856
Chittagong	199	14.3	1393
Dhaka	175	14.2	1229
Khulna	98	11.2	877
Rajshahi	122	12.9	949
Rangpur	121	12.6	962
Sylhet	165	15.6	1059
<b>Religion<sup>***</sup></b>			
Muslim	937	14.2	6600
Others <sup>1</sup>	52	7.2	725
<b>Respondent's Completed Years of Schooling<sup>***</sup></b>			
0 (no education)	358	26.9	1332
1-4 (incomplete primary)	260	20.4	1274
5-9 (complete primary)	307	8.4	3676
10 <sup>+</sup> (Secondary and Higher)	64	6.1	1043
<b>Husband's/Partner's Completed Years of Schooling<sup>***a</sup></b>			
0 (no education)	412	21.0	1959
1-4 (incomplete primary)	187	15.6	1202
5-9 (complete primary)	278	10.5	2648
10 <sup>+</sup> (Secondary and Higher)	43	9.1	470
<b>Current Work Status</b>			
Not Working	873	13.3	6559
Working	116	15.1	766
<b>Economic Class<sup>***</sup></b>			
Poor	527	18.0	2926
Middle	169	12.0	1408
Rich	293	9.8	2991
<b>Experienced Child Death</b>			
No	969	13.5	7183
Yes	20	14.1	142
<b>Radio/Television Possession<sup>***</sup></b>			
No	666	15.3	4342
Yes	323	10.8	2983

<b>Aware of Community Clinic</b>			
No	788	13.2	5970
Yes	201	14.8	1355
<b>Couple's desire for children<sup>****a</sup></b>			
Both want same	629	11.2	5638
Husband wants more	153	20.2	757
Wife wants more	68	13.4	506

<sup>1</sup>Others include Hindu, Buddhist & Christian; <sup>a</sup>Having missing entries; \*p < 0.05; \*\*p < 0.01; \*\*\*p < 0.001

unwanted birth, which is about 4 points higher than the percentage of those who are not having unmet need (13%). The proportions of women had unwanted birth by different age group of first marriage of respondents decrease with the increase in age at first marriage of respondents, about 83 percent of the unwanted births taken place among the women who married before reaching age 18. Lesser percentage of urban women (12%) is to have unwanted birth than that of the rural women (14%). Among the regions, proportion of women of Sylhet region (16%) is observed highest to have unwanted birth, while the proportion of women of Khulna regions (11.2%) are observed lowest. Muslim women (14%) are more likely to experience unwanted birth than others (7%). The percentages of respondents had unwanted birth by various educational attainment group, decrease with the increase in completed years of schooling attainment of both respondents and her husband/partner. Percentage of the respondents had unwanted birth, with completed primary education (8%), is about 59 percent and 69 percent lower than the percentages of those who attained 1-4 completed years (20%) and 0 years of education (27%) respectively. Proportion of respondents among poor (18%) is observed highest to experience unwanted births and the proportions follows a falling stream with the progress in economic condition. In having unwanted fertility, percentage among the women experienced child (< 5 Years) (14.1%) death, is slightly higher than that of the percentage who did not experience any child death (13.5), but the gap is exiguous and can be considered nebulous. Higher percentage is observed among those who did not have radio/television (15%) to have unwanted birth than their counterpart (11%). Result shows that women had agreement (11%) with husbands in terms of desired number of children is observed less likely to have unwanted birth than that of those who did not have agreement. Interestingly; the impact of women's desire for more children than their husband exhibit lesser influence on having unwanted birth than those whose husbands desire more children; the percentage of women desired for more children (13%) than their husbands is 34 percent lower than that of the women whose husbands wanted more children (20%) than her. In experiencing unwanted fertility, the result shows a

little anomalous figure for currently working women and for the respondents who were aware of community clinic; these two variables are also found insignificant in Chi-square test.

***Multivariate Analysis***

In this portion we have performed logistic regression analysis as part of multivariate analysis to find out the relative odds of influencing unwanted fertility by selected variables. In logistic regression analysis, the cut off level for a variable is considered  $p \geq 0.05$ . A total of three regression models have been fitted here. Let Y be the response variable which is dummy in nature, viz. takes the value 1 if the birth is unwanted and 0 otherwise, and X is explanatory variable then the logits (*g*) of the three fitted models can be given as follows:

$$g(x) = \beta_0 + \beta_1x \quad \dots\dots\dots \text{Model 1}$$

$$g(x_1, x_2) = \beta_0 + \beta_1x_1 + \beta_2x_2 \quad \dots\dots\dots \text{Model 2}$$

$$g(x_1, \dots, x_p) = \beta_0 + \sum_{i=1}^p \beta_i x_i \quad \dots\dots\dots \text{Model 3}$$

In the first model, all the explanatory variables have been taken separately and the significance of each variable is examined in influencing the response variable (unwanted fertility). In the second model only the variables sex preference and unmet need have been included together to see control effect of one on another. All the variables found significant from first and second models are included together in third model to study the control effects of other variables on sex preference and unmet need, as well as to study the tenacity of other variables to influence the response variable.

Result of model 1 (Table 3) demonstrates that among included variables region, current work status, experienced child (< 5 years) death and aware of community clinic are found insignificant and other variables are found highly significant in influencing unwanted fertility. Those who have preference to son are 1.59 times more likely to experience unwanted birth than those who are unbiased to the sex of the children. Interestingly preference for daughter has been found insignificant in influencing unwanted fertility. Respondents having unmet need are 39 percent more likely to have unwanted birth than their counterpart. Respondents who married at age 14-17 and 18<sup>+</sup> are 0.47 times and 0.37 times less likely to have unwanted birth respectively than those who married before age 14. Rural

women and Muslim women are more likely to experience unwanted birth than their respective counter parts.

**Table 3:**Relative odds of having unwanted birth by selected characteristics

Characteristics	Relative odds		
	Model-1	Model-2	Model-3
<b>Sex Preference</b>			
Unbiased <sup>®</sup>	□	□	
Having Preference to Son	1.591 <sup>***</sup>	1.607 <sup>***</sup>	IS
Having Preference to Daughter	0.665	0.673	
<b>Having Unmet Need</b>			
No <sup>®</sup>	□	□	□
Yes	1.387 <sup>***</sup>	1.374 <sup>**</sup>	1.566 <sup>***</sup>
<b>Age at first marriage</b>			
10-13 <sup>®</sup>	□		□
14-17	0.472 <sup>***</sup>	NI	0.577 <sup>***</sup>
18 <sup>+</sup>	0.368 <sup>***</sup>		0.681 <sup>**</sup>
<b>Residence</b>			
Urban <sup>®</sup>	□	NI	IS
Rural	1.296 <sup>**</sup>		
<b>Region</b>			
	IS	NI	NI
<b>Religion</b>			
Muslim	□	NI	□
Others <sup>1</sup>	0.467 <sup>***</sup>		0.503 <sup>***</sup>
<b>Respondent's Completed Years of Schooling</b>			
0 (no education) <sup>®</sup>	□		□
1-4 (incomplete primary)	0.698 <sup>***</sup>	NI	0.680 <sup>***</sup>
5-9 (complete primary)	0.248 <sup>***</sup>		0.306 <sup>***</sup>
10 <sup>+</sup> (Secondary and Higher)	0.178 <sup>***</sup>		0.250 <sup>***</sup>
<b>Husband's/Partner's Completed Years of Schooling</b>			
0 (no education) <sup>®</sup>	□		
1-4 (incomplete primary)	0.692 <sup>***</sup>	NI	IS
5-9 (complete primary)	0.440 <sup>***</sup>		
10 <sup>+</sup> (Secondary and Higher)	0.378 <sup>***</sup>		
<b>Current Work Status</b>			
	IS	NI	NI
<b>Economic Class</b>			
Poor <sup>®</sup>	□		
Middle	0.621 <sup>***</sup>	NI	IS
Rich	0.494 <sup>***</sup>		
<b>Experienced Child (&lt; 5yrs) Death</b>			
	IS	NI	NI
<b>Radio/Television Possession</b>			
No <sup>®</sup>	□	NI	IS
Yes	0.670 <sup>***</sup>		
<b>Aware of Community Clinic</b>			
	IS	NI	NI

<b>Couple's desire for children</b>			
Both want same ®	□		□
Husband wants more	2.017***	NI	1.576***
Wife wants more	1.236		1.247

® = Reference Category; IS = Insignificant; NI = Not included in the model; \*p < 0.05; \*\*p < 0.01; \*\*\*p < 0.001

Respondents with complete primary education and secondary and higher education are respectively 75 percent and 82 percent less likely to experience unwanted birth than those who have no education. As expected, respondents whose husbands have primary education and secondary and higher education are also found less likely to have unwanted birth by than those whose husband has no education at all. Richer respondents are found less likely to have unwanted birth than their poor counterpart. Those who possess radio/television are 0.67 times less likely to experience unwanted birth than those who do not have radio/television. In the variable couples desire for children, the subcategory wife wants more is found insignificant, while the respondents whose husband wants more children than her are 2.02 times more likely to have unwanted birth than the respondents who have agreement with their husbands.

In the second model sex preference and having unmet need have been included together to see the control effect of one on another. Result of model 2 shows that, though the p value for those having unmet need reduces a little bit still that remains less than 0.01, and the significance level for those having preference to son remains as it was; the subcategory, having preference to daughter of category “sex preference” remains insignificant as before. In second model, the pitches of impacts of all the subcategories on response variable remain virtually same.

Third model includes all the predictors found significant from model 1 and model 2. Result of model-3 shows that the subcategory having unmet need still remain as highly significant predictor of unwanted birth and its significance level bounce back to less than 0.001 from the value 0.01 in model-2, but unexpectedly sex preference becomes insignificant. Besides these, in third model the variables residence, husband's/partner's completed years of schooling, economic class, and radio/television possession become insignificant. The result of third model demonstrates that though the last standing variables impact on unwanted fertility decreases to a little extent, yet the variables age at first marriage, religion, respondent's completed years of schooling, and couples desire persistently (significantly) continues to influence unwanted fertility despite control effects of other factors.

## **Discussion**

In this study, the determinants of unwanted fertility in Bangladesh have been examined. In consideration of first hypothesis, we found a number of variables significantly influence unwanted fertility disregarding the control effects. Though preference for daughter did not show any significant influence on unwanted birth, the category preference for son seems strong hold on unwanted fertility. Menken et al. (2009) in a study concluded that, desire for at least one child of each sex, especially boys, and a preference for two boys and a girl may have inhibited the fall in fertility in Bangladesh. Since, insignificance of preference to daughter in influencing unwanted fertility implicitly implies that those who preferred more daughters than boys, somehow compromise with the existing number of boys, but in case of those who preferred more boys over girls try to correct the situation by having additional children that results unwanted fertility. Unmet need has been deemed to be very powerful predictor of unwanted fertility in Bangladesh; Bongaarts (2005) observed that the impacts of all other factors operate on fertility through unmet need.

This study shows that, theoretically if all the women could have been got married at age 18 or over, then 83 percent of the unwanted birth could have been staved off; young girls are more likely to have unwanted fertility; a similar result has been found by Mekonnen and Worku (2011) in rural Ethiopia in case of higher fertility. This study shows that rural women are more likely to have unwanted births. In a study on Ecuador, Eggleston (1999) commented that rural areas lowered the likelihood of unwanted pregnancy than its counterpart but data from DHS surveys conducted in other South American countries suggest that rural women are more likely than urban women to experience unwanted pregnancies. This suggests a significant gap between urban and rural areas in terms of socio-economic dimensions and family planning and health services. Muslim women exposed higher risk of having unwanted fertility than others which reflect the rigidity of anachronistic mindset of birth control.

Higher completed years of education of spouses of the respondents demonstrate reduced likelihood of unwanted fertility. Women who had many years of education experienced lower risk of having unwanted birth. This result conforms to studies (Mekonnen&Worku 2011;Bhargava 2007; Alene & Worku 2008; Gebremedhin et al. 2009; Fitaw et al. 2004)on higher fertility and may be attributable to the postponement of child birth due to longer schooling. As expected, women from higher economic class were less likely to have

unwanted fertility than the women of lower economic classes; similar result was found by Eggleston (1999) in his study on Ecuador. Lower level of unwanted fertility was observed among the women possessed radio/television reflecting the negative impact of mass media exposure on having unwanted births; a similar finding has been observed in Bangladesh by Roy et al. (2012). Women whose husbands wanted more children were found to contribute more to unwanted fertility than the women had agreement with their husbands; interestingly influence of women wanted more children was found insignificant. This result indicates that the opinion of women is less valued in Bangladeshi culture. McNamee(2009) in his study on Bolivia concluded that couple's preferences contribute only marginally to unwanted fertility; this implies that scenario may vary culture to culture crossing the geographic boundaries.

In respect of second hypothesis of this study, when sex preference and unmet need was taken together in second model both remained highly significant, however in the third model control effects of other variables dispel sex preference unexpectedly in influencing unwanted fertility, but unmet need continues to be influencing unwanted fertility significantly; this implies that unmet need surpass sex preference. Besides these, other variables: age at first marriage, religion, respondent's completed years of schooling, and couples desire for children continued to be significant in third model, apparently supersede other variables became insignificant in third model.

### **Conclusion**

This study intended to examine the determinants of unwanted fertility in Bangladesh, as well as investigate the dominance of sex preference and unmet need on unwanted fertility along with other variables. About 14 percent of the total births in this study were found unwanted. This study exhibits that the Bangladeshi women of particular groups are at significantly elevated risk of unwanted births and numerous measures regarding findings should be taken to inhibit unwanted births to achieve replacement level fertility. Unmet need along with the variables age at first marriage, religion, respondent's completed years of schooling, and couples desire for children were found to supplant other variables in the study to influence unwanted fertility. Quality family planning services that are tailored to the needs of Bangladeshi women along with intensified service operation to reduce unmet need both in rural and urban areas is expected to produce great result to reduce unwanted fertility. Since reaching an agreement by the couples in terms of number of children largely depends upon

the technique of negotiation; existing family planning services may provide great help in this regard by opening a unit which would train the service seekers about the techniques of discussing the contentious issues to reach an agreement to accept the lowest number of children proposed by either of the partners. Getting married at age 18 or above reduced unwanted births to a great proportion, this suggests that the government of Bangladesh should reinforce the law of not having married before 18 among women. Universal primary education should be ensured, especially designed for girls, by the government of Bangladesh to reduce unwanted fertility. This education is also expected to boost the woman empowerment and to attenuate the hold of religion on Bangladeshi women along with other impacts. Woman empowerment is also crucial in achieving the agreement with husbands which exhibits great role in reducing unwanted fertility.

Besides these, without introducing control effects, other variables found significantly (model-1) associated with unwanted fertility are sex preference, residence, husband's/partner's completed years of schooling, economic class and radio/television possession. If unwanted fertility is to fall in Bangladesh, the differential valuing of girls must decline further. Government should take appropriate steps to improve economic standard of people and reduce the gap of rural people with its urban counterpart. Programmes regarding population should be continued to disseminate by mass media (radio/television), as mass media exposure shows considerable impact on reducing unwanted fertility. Finally it can be concluded that if Bangladesh is to achieve the replacement level fertility target then she must take immediate actions in light of aforesaid discussion.

## REFERENCES

- Abbasi-Shavazi, M.J., Hosseini-Chavoshi, M., and Delavar B. 2004. Unwanted pregnancies and its determinants in Iran. *Journal of Reproduction & Infertility*, 5(17).
- Adetunji, J. 2001. *Mistimed and unwanted child bearing in the course of fertility transition*. Paper presented at the workshop on Prospect for Fertility Decline in High Fertility Countries, Population Division, Department of Economics and Social Affairs, United Nations Secretariat, New York, July 9-11 2001.

- Adetunji, J. 1997. *Levels, trends, and determinants of unintended childbearing in developing countries*. Paper presented at the Annual Meeting of the Population Association of America, Washington, DC, March 27-29 1997.
- Alene, G.D. and Worku, A. 2008. Differentials of fertility in North and South Gondar zones, northwest Ethiopia: a comparative cross-sectional study. *BMC Public Health*, 8:397.
- Bangladesh Demographic and Health Survey (BDHS). 2011. National Institute of Population Research and Training (NIPORT), Mitra and Associates, Dhaka, Bangladesh, Measure DHS, ICF International, Calverton, Maryland, USA.
- Bhargava, A. 2007. Desired family size, family planning and fertility in Ethiopia. *J Biosoc Sci*, 39(3):367-81.
- Bongaarts, J. 2005. The causes of stalling fertility transitions. *Studies in Family Planning*, 37(1).
- Bongaarts, J. 1997. *The proximate determinants of unwanted childbearing in the developing world*. Paper presented at the 1997 annual meeting of the Population Association of America, Washington, D.C., March 27–29 1997.
- Casterline, J.B. and Mendoza, J.A. 2008. *Unwanted fertility in latinamerica: historical trends, recent patterns*. Paper presented at the annual meeting of the Population Association of America, Detroit, April – 2 May 2008.
- Eggleston, E. 1999. Determinants of unintended pregnancy among women in ecuador. *International Family Planning Perspectives*, 25(1): 27-33.
- Fitaw, Y., Berhane, Y., and Worku, A. 2004. Impact of child mortality and fertility preferences on fertility status in rural Ethiopia. *East Afr Med J*, 81(6):300-6.
- Gebremedhin, S. and Betre, M. 2009. Level and differentials of fertility in Awassa town, Southern Ethiopia. *Afr J Reprod Health* 13(1):93-112.
- Gillespie, D., Ahmed, S., Tsui, A., and Radloff, S. 2007. Unwanted fertility among the poor: An inequity? *Bulletin of the World Health Organization*, 85:100-107.
- Gipson, Jessica, D., Koenig, M.A., and Hindin M. 2008. The effects of unintended pregnancy on health outcomes: a review of the literature. *Studies in Family Planning*, 39(1): 18-38.

- Health, Population and Nutrition Sector Development Program (HPNSDP).2011. Program Implementation Plan (2011-2016) Volume-I, Planning Wing, Ministry of Health and Family Welfare, Government of the People’s Republic of Bangladesh.
- Herold, J.M. et al. 1994. Unintended pregnancy and sex education in chile: a behavioural model. *Journal of Biosocial Science*. 26(4): 427-439.
- Kulkarni, S. andChoe M.K. 1998.*Wanted and unwanted fertility in selected states of India*.National Family Health Survey Subject Reports, No. 6.
- Liao, T.F. 1994. Interpreting probability models: logit, probit, and other generalized linear models.*Quantitative Applications in the Social Sciences*, Sage Publications, No. 07-101.
- McNamee, C.B. 2009.Wanted and unwanted fertility in bolivia: does ethnicity matter? *International Perspectives on Sexual and Reproductive Health*, 35(4):166–175.
- Menken, J., Khan, M.N.,and Williams, J. 2009. *The stalled fertility transition in Bangladesh: the effects of sex and number preferences*. IBS Population Program, Institute of Behavioral Science, University of Colorado.
- Population and Housing Census: Preliminary Results (PHC). 2011. Bangladesh Bureau of Statistics, Statistics Division, Ministry of Planning, Government of the People’s Republic of Bangladesh.
- Rao, K.V. 1996. *Biostatistics: A manual of statistical methods for use in health, nutrition and anthropology*. 1st ed. Jaypee Brothers Medical Publishers (P) Ltd, Ansari Road, Daryaganj, New Delhi 110002, India.
- Roy, T.K., Sing, B.P., and Sing K.K. 2012. Socio-demographic determinants of unplanned pregnancy in Bangladesh.*An International Research Referred Journal Related to Higher Education, Drishti*, Banaras Hindu University, 3(1): 1-11.
- Worku, A. and Mekonnen, W. 2011. Determinants of fertility in rural Ethiopia: the caseof Butajira Demographic Surveillance System(DSS). *BMC Public Health*, 11: 782.