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Differential Determinants of Birth Spacing Since Marriage to First Live Birth in Rural Bangladesh

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ABSTRACT

This paper focuses on birth spacing, i.e. since marriage to first live birth in the rural areas of Bangladesh. The objective of this study was to examine the socio-economic factors which influenced the birth spacing among women since their marriage to their first live birth. The analysis was based on the primary data collected from women through a structured questionnaire. Different socio-demographic and economic factors which determined birth spacing had been identified in the analysis. A multivariate quantitative analysis was applied for this study. The findings indicated that both the socio-demographic and economic factors played, to some extent, a significant and important role in determining the birth spacing since marriage to first live birth. In particular, the women's level of education played the most important role, and this was followed by the respondents' age at marriage, quality of care at the clinic, respondents' present age, mass media exposure, age gap between spouses, respondents' age at familiarity with contraceptives and family's income. All these factors explained 13.5 percent of the variation in birth spacing since marriage to first live birth.

Keywords: Birth spacing, marriage, first live birth, Total Fertility Rate (TFR), Statistical Packages for Social Sciences (SPSS), Bangladesh

INTRODUCTION

In Bangladesh, mortality was found to decline earlier than fertility. In more specific, mortality started to reduce since 1950s, while fertility remained high till 1970s. Due to the gap between the declining mortality and the high fertility in Bangladesh, the population started to grow in an accelerated pace, particularly since 1950s in which this was high at all time (2.5%) in the 1960s and 1970s. In 1960s, the TFR (Total Fertility Rate) was 7 children per woman and this was estimated to be 3.4 in 1993-94. However, the total fertility rate remained almost stable at 3.3 in 1996-97 and 1999-2000. Over the last 25 years, there has been a decline of 48 % in the TFR, i.e. a decline of about 1.9 % per year (BBS, 2001).

Despite such achievements, the present TFR is far above the replacement level, and the problem pertaining to the rocketing population still remains as the number one problem in the country (Datta and Radheshyam, 2000). The estimated 65% growth in the population during 2000-2025 could be attributed to the current young age structure of the population. If this level of fertility continued to grow for a long time, the process of attaining the replacement level would be delayed further and the momentum would produce a much larger population (Hossain *et al.*, 2003).

The high fertility in Bangladesh is one of the effects of interrelated social and economic conditions characterized by labour intensive technology, low productivity, patriarchy, preference

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for son, low female status, male dominance, the value of children for labour and security, as well as old age insecurity. Meanwhile, other factors which have been indicated as barriers to the immediate adoption of fertility regulation in Bangladesh include early female age at marriage, high infant mortality, the inadequacy and inefficiency of the health and family planning service, as well as physical isolation of the bulk of the rural residents (Alam *et al.*, 2005).

Population experts (Hossain *et al.*, 2003) suggested that future growth would be determined by three components, namely population momentum, unwanted fertility and big family size. Among the three components, population momentum was stated as the predominant factor as more than 80% of the expected 85 million people would be added to the country's population by the middle of the 21st century due to this factor alone (BBS, 2001). Therefore, minimizing the population is now a major challenge in limiting the growth in the population in the future. Moreover, with over 40% of the population below the age of 15 years, reproductive year would definitely be continued in the near future (BDHS, 2004). The options for minimizing the impacts of the population momentum are generally focused on increasing the average age at marriage and child bearing, as well as in the delay of births, especially the first birth and this can then be extended to birth intervals (Hossain *et al.*, 2003).

Age at marriage is considered as an exposure to the risk of becoming pregnant and the actual initiation of process of child bearing. In Bangladesh, the mean age at marriage is 14.8 years, while 68 percent of the women marry before they reach 18. In the rural areas, the mean age at marriage is lower than the national level. Therefore, the national TFR was found to be 3.0; this figure was 3.2 in the rural areas and 2.5 per 1000 women in the urban areas (BDHS, 2004). On the contrary, the figure was lower than that of both the rural and national levels. Due to the above reasons, the rural women contributed to a higher number of births and this led to the continuous high TFR level in Bangladesh (Islam, 2002). In order to reduce the national TFR, it is thus necessary to reduce the number of births contributed by the rural women. The most important way to reduce the TFR is to increase the age at marriage (Anon, 2005). However, as age at marriage is considered to be determined by complex social values, norms and other deep rooted socio-cultural and socio-economic factors, it requires time (Anon, 2006). Among other alternatives, birth spacing is the most important option (Hossain and Islam, 2004). If first birth interval can be controlled by family planning programmes, the subsequent birth interval may also be controlled (Akhter *et al.*, 1996). As the socio-cultural and socio-economic context of the rural Bangladesh is complex, it is necessary to understand the socio-demographic and economic factors which determine the birth interval since marriage to the first live birth among the women in the rural areas of Bangladesh.

MATERIALS AND METHODS

This study is of the cross-sectional survey type. For this, a structured interview schedule was prepared to collect the required information and data. Data were collected through face-to-face interviews. The collected data were analyzed using the Statistical Packages for Social Sciences (SPSS).

Two villages, namely Chakbalu and Talpatila of Manda Thana in the district of Naogaon, were purposively selected for this study. A list, which was taken from the Union's voter list, was prepared for the respondents. Taking an idea from the exiting voter list, the researcher divided the villages by different paras (i.e. small unit of village) and samples were drawn randomly. To meet the requirement of the research objectives, women who had given at least one live birth were selected. The total sample size was 500. However, no sample-determining formula was applied in deciding on the size of the sample.

Interview schedule was developed and used for the data collection. The interview schedule was pre-tested on 30 women in the selected areas. This procedure was undertaken to ascertain the flow or sequence of the questions, the suitability of the language used, and the comprehensiveness of the issues to address the objectives of the study. The interview schedule was then finalized both in Bengali and English language for data collection.

The data was collected through the face-to-face interviews from the field using the interview schedule. It involved 4 trained field investigators (young women) who were specially assisted by two local school teachers so as to identify the women to be interviewed.

Hypotheses of the Study

It was postulated that:

H1: The higher the respondents' level of education, the bigger the birth gap from marriage to the first live birth.

H1: The higher the respondents' age, the bigger the birth gap from marriage to the first live birth.
H3: The higher the respondents' age at marriage, the bigger the birth gap from marriage to the first live birth.
H4: The higher the quality of care, the bigger the birth gap from marriage to the first live birth.
H5: The more the mass media exposure, the bigger the birth gap from marriage to the first live birth.

SPECIFICATION OF THE MULTIVARIATE STATISTICAL MODEL FOR THE STUDY

The dependent variable of the study was the birth gap since marriage to the first live birth. The independent variables were the respondents' socio-economic status which included their education, income, family type and size; cultural variables such as religion and the desired number of children; patriarchal attitude; programmatic variables such as the quality of care, the distance from home to clinic, and the mass media exposure, as well as demographic variables like the age at present, the age difference/gap between spouses, age at marriage, age at familiarity with contraceptives and the age at the first live birth.

The Ordinary Least Square regression analysis technique was used for the multivariate analysis to examine the net effect of the independent variables on the dependent variable.

For the unstandardized beta coefficients, the following multiple regression equation was used in this regression model:

$$\hat{X}_{10} = a+b_1x_1+b_2x_2+b_3x_3+b_4x_4+b_5x_5+b_6x_6+b_7x_7+ b_8x_8+b_9x_9$$

Here, a= constant, b= slope /b coefficient, x_1, x_2, x_3, x_4, x_5, x_6, x_7, x_8 and x_9 = Independent Varietals, $\hat{X}_{10}$ = (Predicted) Dependent Variable.

For the standardized beta coefficients, the following multiple regression formula was used in this regression model:

$$\hat{Z}_{10} = B_1Z_1+B_2Z_2+B_3Z_3+B_4Z_4+B_5Z_5+B_6Z_6+B_7Z_7+B_8Z_8+ B_9Z_9$$

Here, a is dropped as it is always zero, B=beta weights/coefficient, Z_1, Z_2, Z_3, Z_4, Z_5, Z_6, Z_7, Z_8 and Z_9 = Standard Score of Independent Variables, $\hat{Z}_{10}$ = (Predicted) Dependent Variable.

MULTIVARIATE ANALYSIS OF BIRTH GAP SINCE MARRIAGE TO THE FIRST LIVE BIRTH

The Stepwise Method was used in the multivariate regression analysis to determine the explanatory variables of the birth gap since marriage to the first live birth. At first, the interval level variables, which seemed important and included in the bivariate analysis (correlation matrix was computed at the time of data analysis) in explaining the birth gap since marriage to first live birth, were entered in the regression equation. The results showed that most of the variables, which had been found to have a statistically significant relationship with the dependent variable at the bivariate level, lost their significance. When the stepwise forward method was applied, the computer serially picked up the variables which showed the most significant results by itself.

For the standardized beta coefficients, the following multiple regression formula was used in this regression model:

$$\hat{Z}_{10} = B_1Z_1+B_2Z_2+B_3Z_3+B_4Z_4+B_5Z_5+B_6Z_6+B_7Z_7 + B_8Z_8+B_9Z_9$$

Here, a is dropped as it is always zero, B=beta weights/coefficient, Z_1= Standard score of Respondents' Level of Education, Z_2= Standard score of Family Income, Z_3= Standard score of Respondents' Present Age, Z_4 = Standard score of Age Gap between Spouses, Z_5 = Standard score of Respondents' Age at Marriage, Z_6 = Standard score of Quality of Care Inside the Clinic, Z_7 = Standard score of Distance from Respondents' Home to Clinic, Z_8 = Standard score of Mass Media Exposure, Z_9 = Standard score of Respondent's Age at Familiarity with Contraceptives. $\hat{Z}_{10}$ = (Predicted) Standard score of the Birth Gap since Marriage to First Live Birth.

Table 1 presents the constant, un-standardized regression coefficients, the standard error of the un-standardized regression coefficients, standardized regression coefficients, significant level, and the R-Square change (proportion of variance explained by each of the independent variables in the dependent variable in the model).

FINDINGS

From the regression analysis, it was found that all the independent variables explained 13.5 percent variance of the dependent variable. The un-standardized beta coefficient 0.032, for the independent variable respondents' level of

TABLE 1
Regression analysis of birth spacing since marriage to first live birth

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	R Square Change	Percentage Explained
	B	Std. Error	Beta				
(Constant)	.636	.516		1.231	.220		
Respondents' Level of Education	.032	.015	.160	2.082	.039	.048	0.355
Family Income	.000	.000	.007	.100	.921	.001	0.007
Respondents' Present Age	.056	.017	.255	3.176	.002	.017	0.126
Age gap between Spouses	.009	.019	.035	.490	.625	.004	0.030
Respondents' Age at Marriage	-.076	.030	-.249	-2.545	.012	.027	0.200
Quality of Care at the Clinic	.192	.086	.188	2.246	.026	.022	0.163
Distance from Respondents' Home to Clinic	.001	.040	.002	.021	.983	.000	0.000
Mass Media Exposure	.013	.008	.119	1.646	.102	.013	0.100
Respondent's Age at Familiarity with Contraceptives	.020	.023	.080	.850	.397	.004	0.030
Multiple R = 0.368, R-square = 0.135, Adjusted R- Square = 0.091, Standard Error = 0.742							

A dependent variable: Birth gap from marriage to the first live birth
Source: Filed Survey, 2006.

education, suggested that for each unit change in the independent variable, it would change 0.032 in the dependent variable, controlling the effect of other variables as independent variables. A standardized beta coefficient suggested the relative position of an independent variable as the standardized beta was standardised by a standard deviation using z score. The standardized beta 0.160 for the respondents' level of education suggested that this was the fifth highest predictor among all the independent variables given in Table 1.

Table 1 indicates that the respondents' level of education was the most important variable among all the variables in determining the time spent since marriage to first live birth. Individually, this variable explained 35.5 percent variance of the dependent variable. The result is consistent with the hypothesis postulating that the higher the respondents' level of education, the bigger the birth gap from marriage to the first live birth.

The second most important variable was the respondents' age at marriage. This variable explained 20% of the variance of the dependent variable. However, the dependent variable and this variable were adversely related to each other; the fact which was not consistent to the proposed hypothesis, i.e. the higher the respondents' age at marriage, the bigger the birth gap from marriage to the first live birth.

The third most important variable was the quality of care rendered at the clinic; this consists of three components - the availability of contraceptive method at the clinic, the availability of service provider in the clinic and the friendly behaviour of service provider. These are among all the independent variables which explained 16.30 percent of the variance of the dependent variable. This result was adversely related with the dependent variable and not consistent with the tested hypothesis, i.e. the higher the quality level, the bigger the birth gap since marriage to the first live birth.

The fourth most important variable was the respondents' age at present/time of study. Among all the independent variables, this variable explained about 12.6 percent of the variance of the dependent variable. This result was found to be consistent with the proposed hypothesis, i.e. the higher the respondents' age, the bigger the birth gap since marriage to the first live birth.

The fifth most important independent variable was the mass media exposure, which explained 10.00 percent of the variance of the dependent variable. This was also consistent with the proposed hypothesis which stated that the higher the mass media exposure, the bigger the birth gap from marriage to the first live birth. Among others, the age gap between spouses, the respondents' age at familiarity with contraceptives and the family income explained about 3.00%, 3.00% and 0.7% variance of the dependent variables, respectively.

However, in this regression model, the distance from respondents' homes to the clinic was not found, as explained by the independent variable.

CONCLUSIONS

This study delineated some important indicators from a number of independent variables. The variables found as important in the bi-variate analysis were not equally important in the multi-variate analysis and vice-versa. In the bi-variate analysis, the distance from the respondents' homes to the clinic was found to have a weak relationship with the dependent variable, but this variable was indicated to have no explanatory power in the multi-variate analysis. Furthermore, the amount of money spent on per visit to the clinic was found to be moderately related to the dependent variable, but this variable was indicated as having no explanatory power in the multi-variate analysis.

The respondents' level of education was the seventh significant variable in the bi-variate analysis, whereas this was found to be the most significant variable in the multi-variate analysis. This might be due to the fact that in the bi-variate level, the relationship was observed by one dependent and one independent variable without controlling the effect of the other variables. In the multivariate level, the effect of the other variables was controlled. In the multi-variate analysis, the respondents' age at marriage was indicated as the second most important determinant of the independent variable as the determinant of the birth gap from marriage to the first live birth in the rural Bangladesh; this was followed by the quality of care, the respondents' age at present, exposure by mass media, the age gap between spouses, the respondents' age at familiarity with contraceptives and the family income. All these variables explained only 13.5 percent of the factors influencing the birth gap from marriage to the first live birth. Thus, the multivariate model was a weak model to determine the time spent since marriage to first live birth. However, it is important to highlight that conclusions could not be drawn from such a micro level analysis.

RECOMMENDATIONS

Based on the findings of the study, it could be stated that the factors affecting the birth gap since marriage to the first live birth are rather complex in nature. Therefore, the followings measures are recommended:

Due to the traditional norms and values, the people in the rural areas, especially the women are not open to new ideas. Education is the most important means to open a person's mind to something new. Nevertheless, the level of education is usually very poor in the rural areas, as compared to that of the urban areas, though there is Government policy for a universal primary education for all. The data showed that the enrolments for primary schools in 2004 were 83.0% and 86.9% respectively, for male and female in the rural areas (BDHS, 2004). Therefore, there should be effective programmatic measures to ensure a 100 percent enrolment in the primary schools, along with its continuity up to at least the secondary level.

The respondents' age at familiarity with contraception is a determining factor for the birth gap from marriage to the first live birth. The lower the age at familiarity with contraception, the bigger the birth gap. Therefore, measures to create awareness towards family planning, particularly contraceptives should be carried out before marriage using Family Welfare Visitors and exposure by Mass Media.

REFERENCES

Akhter, H.H., Rahman, M.H. and Ahmed, S. (1996). Reproductive Health Issues and Implementation Strategies in Bangladesh, Dhaka, Bangladesh, BIRPERHT.

Alam, N., Ginneken, J.V. and Bosch, A. (2005). Decreases in Male and Female Mortality and Missing Women in Bangladesh. ICDDR, B. Centre for Health and Population Research, Dhaka, Bangladesh.

Anon. (2006). Community views on child marriage: findings of participatory assessments in selected regions in Bangladesh and Ethiopia. International Planned Parenthood Federation (IPPF)/South Asia Regional Office, London.

Anon. (2005). Marriage, inheritance and family laws in Bangladesh: Towards a common family code

(pp. 23-32). Women for Women, UNESCO, Dhaka.

Bangladesh Bureau of Statistics (BBS). (2001). Ministry of Planning, Government of Bangladesh, Dhaka, Bangladesh, pp. 15-85.

Bangladesh Demographic and Health Survey (BDHS). (2004). National Institute of Population Research and Training (NIPORT), Bangladesh and Macro International, USA.

Datta, A.K. and Radheshyam, B. (2002). Improvement in female survival: A quiet revolution in Bangladesh. *Asia Pacific Population Journal, 15,* 19-40.

Hossain, K.M. and Islam, S. (2004). Differential Determinants of breastfeeding in birth spacing: The socio-demographic and Economic Correlation. *Social Science Review, 21*(2), 177-189. University of Dhaka, Dhaka, Bangladesh.

Hossain, M. Nurun Nabi, A.K.M. and Islam, I. (2003). *Bangladesh Development Agenda and Vision 2020: Rhetoric or Reality.* Dhaka, Bangladesh: University Press limited.

Islam, S. (2002). Population policy of Bangladesh: An overview of some important issues and priorities. Khulna University Studies, Khulna University, Khulna, Bangladesh, *4*(2), 805-808.