Birth Spacing and Its Effects on Fertility and Child Survival in Bangladesh

By

M. Nurul Islam
Department of Statistics
University of Dhaka

and

Salehin Khan Chowdhury
Daffodil University, Dhaka

EXTENDED ABSTRACT

Birth spacing is an important measure of the pace of child bearing. Differentials in fertility in a population are usually attributed to variation in the exposure to the risk of pregnancy and the interval between births when exposed. While the entry into the marriage generally signals the beginning of exposure to the risk of becoming pregnant, the occurrence of the first conception and the birth ensures the actual initiation of process of childbearing. The future courses of childbearing then depends on the behavior of birth spacing. Hence for a complete understanding of the process of family building, an attempt has been made in the present study to analyze the birth spacing pattern, its differentials, covariates and quantum and tempo of fertility in Bangladesh. This study also examines the influence of birth spacing on child survival.

The data used for the completion of this work is extracted from the Bangladesh Demographic and Health Survey (BDHS) conducted in 1999-2000. This survey was conducted under the authority of the National Institute for 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. Macro International Inc. of Calverton, Maryland, provided technical assistance to the project as a part of its international Demographic and Health Surveys program, with financial assistance from the U.S. Agency for International Development (USAID)/Bangladesh.

The study considers first to fifth birth intervals as it covers most of the range of fertility experience in Bangladeshi women. From birth history data, subtracting the date of marriage from the date of first birth we get first order birth interval in months. Among the 10,544 ever-married women, 9,371 women gave at least one child at interview date. This indicates that there are 9,371 'marriage to first birth intervals'. However, in this analysis we have considered 8,514 first birth intervals excluding those intervals less than 9 months. Subsequent birth intervals (second to fifth) are calculated by subtracting the date of previous birth from the date of index child born. In this case 7,392, 5,948, 3,674 and 2,481 observations (excluding those intervals less than 9 months) are included for analysis of second to fifth birth interval respectively. We also considered overall subsequent birth interval by combining second to fifth birth interval and it contains 18,895 intervals (sum of second to fifth interval) for analysis.

To study the quantum and tempo of fertility and conception wait of Bangladeshi women, Life table technique proposed by Rodriguez and Hobcraft in 1980 was employed. To investigate the pattern and differentials of interval by selected demographic and socioeconomic variables, we used Cox's proportional Hazard regression model. To see the association between preceding and subsequent birth intervals controlling other biological and social correlates of mortality, binary logistic regression model is used.

The distribution of birth intervals between marriage to first birth, second to fifth birth and overall subsequent birth intervals are positively skewed with unimodal peaks lying somewhere between 12 to 13 months for marriage to first birth interval and 24 to 35 months for subsequent birth intervals. The mean of first birth interval is slightly shorter than the mean of subsequent birth intervals and it is around 36 months. The median first birth interval is 28 months, which is four months shorter than that of subsequent birth intervals. We observed that, about 63.4% of the women take their first child within three years of marriage and for subsequent child this percentage is shorter (57.8%). The BDHS 1999-2000 demonstrates lower interval between marriage to first birth but higher interval between subsequent births than observed in the BDHS 1996-97 (Azad, 2001). So, we can say that in Bangladesh marriage to first birth interval decreases and subsequent birth interval increases over time.

The quantum i.e. proportion of women moving from one parity to next parity and the tempo i.e. average time required to such transition have been estimated by using life table technique. The life table analysis of birth intervals reveals that about 76 percent of Bangladeshi women take their first child within five years of marriage and their average first birth interval is 25 months. This percentage is almost the same for overall subsequent births but the average subsequent birth interval is 30.5 months. The differential analysis of quantum and tempo of fertility has been done for place of residence, working status, level of education and region of residence.

To identify the determinants of birth interval Cox's proportional Hazard Regression has been applied. This result indicates that while controlling the other variables women living in the urban areas tend to have a longer birth interval than the women living in the rural areas. Subsequent birth interval of urban women is also longer than rural women. In the multivariate analysis longer duration of first and subsequent birth intervals are observed among the working women. Educated women are likely to have shorter first but longer subsequent birth interval than women having no education. Upper social class women used to have shorter first but longer subsequent birth interval than middle or lower class women. The results indicate that marriage to first birth interval increases significantly with age of the respondent but decreases with age at marriage. An unexpected finding was that ever users of contraception have distinctly shorter birth interval than never users. Gender preferences also have significant effect on birth interval in Bangladesh. Our analysis also shows that religion and region of residence have no significant effect on marriage to first birth interval but appears to have significant effect on subsequent birth interval. Previous reproductive experience has also been found to have a significant influence on the pace of child bearing. Length of prior birth interval is positively related to the length of subsequent birth intervals.

We have analyzed the relationship between the length of preceding and subsequent birth interval and their effect on age specific probability of death of index children. The preceding and subsequent birth intervals are significantly correlated. We observed that surviving probability of index child is positively associated with the preceding as well as subsequent birth interval.

To see the effect of preceding and subsequent birth interval on child survival after controlling age specific survival status of index child, mothers age and sex of index child, three separate logistic regression models (neonatal, post neonatal and child mortality of index child) are fitted. Our models reveal that short preceding birth interval significantly influence the neonatal mortality of index child. Neonatal mortality risk of index child is 74% more for preceding birth interval within 12 months and 35% more for preceding birth interval 13 – 24 months than that of longer preceding birth interval (24+ months). Our result is consistent with that of Boerma & Bicego (1992), Miller et al. (1992), Koning et al. (1990) and Hobcraft et al. (1985). They have reported high mortality risks among neonates born after short birth intervals. This may be due to maternal depletion (Alam, 1995). Post neonatal and childhood mortality is also significantly influenced by shorter preceding birth interval. Several studies report this pattern (Curtis et al. 1993; Hobcraft et al. 1985; Swenson, 1981). Our analysis further demonstrates that shorter subsequent birth interval has significant influence on child mortality in Bangladesh. Similar pattern was also observed by Sweemer (1984) among Punjabi women in India.

The study clearly indicates that, the quantum of fertility is very high in Bangladesh. Strong gender preferences, particularly son preferences exist in Bangladesh. Our analysis demonstrates that shorter birth interval has significant influence on child survival. This emphasizes the need to encourage woman to have longer birth interval, not only to limit family size, but also to guarantee good health of the mother and the child. Education is consistently a dominant factor and such informal education should be emphasized that will eventually encourage women to defer marriage.