



On the dynamics of high-risk fertility in Bangladesh

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Abstract

Our aim in this study is to explore the dynamics of age-pattern of childbearing and risk fertility among Bangladeshi women. By using age-specific fertility rates of 21 age schedules from 1986 to 2006 contribution of early, on time and delayed childbearing on total fertility rates are studied and time trend behavior of risk fertility is observed. Our study explored that the level of early childbearing seems to be stagnant over the years. The decrement of the high-risk fertility is due to the decrease of total fertility rates, however, the contribution of early childbearing to the total fertility rates is unchanged and contribution of early childbearing to the high-risk fertility is more influential than the delayed childbearing. The ratio of risk-birth is plateau at the same level even after twenty years. Possible policies to reduce the risk-birth are also discussed in this paper.

Keywords: Age-specific fertility rates; delayed childbearing; early childbearing; high-risk fertility; total fertility rate.

1. Introduction

Pregnancy in adolescence is associated with higher maternal mortality due to higher incidence of gestational complications, such as anaemia, toxemia and increased risk of complications during childbirth (Abdullah et al., 2007). Nearly half of the adolescent girls (15–19 years) in Bangladesh are married and 57% become mothers before the age of 19 years (UN, 2005). The infant mortality rate in 2000 was 106/1000 in case of mothers who were aged less than 20 years and that was 79/1000 in case of mothers who were aged 20–29 years (Barkat and Majid, 2003). As they claimed in their study, the overall maternal mortality rate is 4.5 but the adolescent maternal mortality rate is 5.8 per 1000 live births. Thus maternal age causes many health complications during pregnancy as well as affects the pregnancy outcomes.

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Age of women is also a very important determinant of miscarriage risk. Rochebrochard and Thonneau (2002) studied frequent reproductive failure to investigate both maternal age and paternal age effects on miscarriage risk. They explored that the miscarriage risk is higher for the women aged 35 and above. Consequently, highest miscarriage risk was investigated for couples having higher maternal and paternal ages. Luke and Brown (2007) used US Birth Cohort Linked Birth/Infant Death Data Set to explore the maternal age and parity effect on pregnancy complications and outcomes. Increased maternal age was envisaged as the most prominent factor of pregnancy complications. As discussed in many literatures, both the maternal and paternal age contribute significantly to pregnancy complications as well as fetal loss.

A study on Danish National Birth Cohort Data from 1997 to 1999 explored the paternal age related risk of early and late fetal loss where pregnancies with younger fathers were terminated with less fetal death compared to the pregnancies with older fathers (Andersen et al., 2004). Both paternal and maternal ageing are very important factors affecting the pregnancy outcome. Astolfi, Pasquale and Zonta (2004) studied the effect of parental ageing on stillbirth. In their study, risks were estimated for fathers and mothers beyond the age threshold 35 and 40 years and more stillbirths were depicted for that threshold age group than previous age groups of parents. Consequently, the paternal age-schedule were investigated in some literatures that explored the notion of spontaneous abortion. The risk of spontaneous abortion is hypothesized to increase with increasing paternal age and this is stronger for first trimester losses (Slama et al., 2005).

Maternal age is hypothesized as a cause of low birth weight in many literatures. Though teenage (12-19) and elderly (35-50) maternal age have significant impact on low birth weight, some modes of differences are observed for certain complications like blood loss and caesarian section. Elderly mothers are more likely to vulnerable to blood loss and caesarian section whereas teenage mothers are less vulnerable to risk of labor and delivery complications that require obstetric care service compared to the less risk age groups of 20-34 years (Muganyizi et al., 2008). Stillbirth throughout the gestation is also a risk during the pregnancy and advanced maternal age (35+) is found to increase the risk of stillbirth with a peak risk from 37 to 41 weeks (Reddy et al., 2006).

Delayed childbearing (above 30 years) may also be problematic for pregnancy outcome. Andersen et al. (2000) showed that irrespective of the reproductive history the fetal loss is high in women in their late 30s or older ages. They also suggested for considering pregnancy planning and counseling to reduce the risk to ensure risk free birth. Heffner (2004) displayed fertility and miscarriage rates as

a function of maternal age which depicted a fast upward-shift of spontaneous abortion rate from the ages 30 and above.

Not only the maternal or paternal age but also the birth interval between two consecutive births affects the risk of childbearing. Due to the inappropriate birth interval many pregnancy complications may be occurred. As for example, low birth interval (< 18 months) may cause stillbirth, neonatal death and low birth weight (Williams et al., 2008 and Royce, 2006). Very short (<18 months) or too long (>59 months) interpregnancy interval increase the risk of adverse perinatal outcome such as preterm birth, low birth weight, small for gestational age and perinatal death (Conde-Agudelo et al., 2006 and Norton, 2005).

Parity is a very important determinant of pregnancy outcome and more births may cause some health complications during the pregnancy. Compared with low multiparity (1-3 parity), mothers and babies of nulliparity and grand multiparity (4 and above parity) are at higher risk of obstetric complications, neonatal morbidity, and perinatal mortality, after adjustment for potential confounders, including age, maternal smoking status, and socioeconomic status (Bai et al., 2002). Similarly, in some literatures (Majoko et al., 2004) the risk of developing any pregnancy complications was found highest in nulliparous women with an increased risk of pregnancy complications whereas high parity women with no previous complicated pregnancy were found at low risk of complications. However, in another study by Humphrey (2003) does not support the traditional view that women with grand multiparity are more likely to have complicated deliveries, higher perinatal mortality rates and poor maternal outcomes. In Bangladesh, the average number of children ever born per woman was 2.6 in 2000 which declined to 2.5 births per woman in 2005 (BBS, 2006). Consequently, most of the ever-married women consider two children as ideal, with an average of 2.5 children (Islam et al., 2003). Thus, more or less Bangladeshi women are in low multiparity group of least risk of pregnancy complications.

Our aim in this study is to explore the risky childbearing age pattern of Bangladeshi women. To do this we would like to focus on time trend behavior of early, on time and delayed childbearing of Bangladeshi women. Apart from this, we would also explore the time trend pattern of high and less risk fertility levels. Policies to reduce the risk-fertility, especially to reduce the adolescent pregnancy in Bangladesh would also be discussed at the end of the paper.

2. Data and methods

This study uses data on total fertility rates (TFR) and age-specific fertility rates (ASFR) from 1986 to 2006. Data on these 21 age schedules of fertility are obtained from Statistical Year Book of Bangladesh published by the Bangladesh Bureau of Statistics (BBS, 2006).

The age-specific fertility rates (ASFRs) covering the age range of 15 to 49 years in quinquennial age group from the year 1986 to 2006 form the basis of the analysis of childbearing age-pattern of Bangladeshi women. From the ASFRs we compute the early, on time and delayed childbearing as ECB, OTCB and DCB respectively by using the following formulae

$$ECB = 5 \times ASFR(15 - 19)$$

$$OTCB = 5[ASFR(20 - 24) + ASFR(25 - 29)]$$

$$DCB = 5[ASFR(30 - 34) + ASFR(35 - 39) + ASFR(40 - 44) + ASFR(45 - 49)]$$

Maternal age is a risk factor of childbearing. Risk-fertility is a level of fertility that occurs at different age groups of high-risk maternal ages. Maternal ages are classified into two risk groups such as less-risk age groups of 20-34 years and other age groups within the reproductive span is termed as high risk age groups (Muganyizi et al., 2008). Thus risk-fertility is a function of ECB, OTCB and DCB. Consequently, total fertility rates (TFR) can be decomposed into high-risk (HRF) and less-risk (LRF) fertility levels. LRF, HRF and TFR can be computed from the ASFRs by using the following relationship.

$$LRF = 5[ASFR(20 - 24) + ASFR(25 - 29) + ASFR(30 - 34)]$$

$$HRF = 5[ASFR(15 - 19) + ASFR(35 - 39) + ASFR(40 - 44) + ASFR(45 - 49)]$$

$$TFR = ECB + OTCB + DCB = HRF + LRF$$

Contribution of ECB to TFR can be computed as $\frac{ECB}{TFR} \times 100$ which means the percentage of total birth are given by the mothers at their early maternal ages of 15-19 years. Similarly, contribution of DCB to TFR can be computed as $\frac{DCB}{TFR} \times 100$ and that of HRF to TFR is

$\frac{HRF}{TFR} \times 100$. Contribution of HRF to TFR is computed to explore the percentage of total birth

given by the mothers of high-risk age groups. Consequently, the risk ratio (RR) is computed as the

proportion of HRF to LRF, that is, $RR = \frac{HRF}{LRF}$.

3. Childbearing pattern and high-risk fertility

Early childbearing means giving birth before 20 years of maternal age. Since reproductive span of a mother assume to range from 15 to 49 years with some exceptions in rare situations, so early childbearing occurs generally in the age group of 15-19 years. During early nineties, the ECB was plateau at 0.40. Thereafter, the ECB level started declining and become plateau at 0.27 in mid-nineties. Though there depicts a rapid decline in the ECB level during the late nineties with a hope to millennium development goal, sooner this step-back and become plateau at the level of mid-nineties (Figure 1). Thus there is a little hope to eradicate early motherhood from Bangladesh very soon.

On time childbearing (OTCB) refers to births given by the mothers of age groups of 20-29 years. Though the level of OTCB is decreasing over time, this becomes plateau at 2.0 during mid-nineties and at the beginning of this millennium this becomes plateau at 1.5. Levels of OTCB are tremendously decreasing but there depicts a sharp decline after mid-nineties (Figure 1). Consequently, level of delayed childbearing (DCB) is also decreasing. During early nineties DCB was plateau at 1.5, during mid-nineties this became plateau at 1.17. After a sharp decline in late nineties level of DCB becomes almost half of that in mid-eighties (Figure 1).

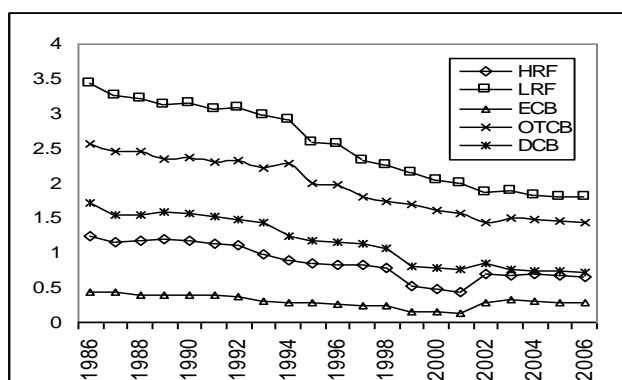


Figure 1: Risk fertility and childbearing pattern: 1986-2006

Pregnancy complications and risks of pregnancy outcome are associated with the maternal age. Age-pattern of risk fertility means structure of maternal age of mothers giving birth within risk age groups. Generally, high-risk age groups are 15-19, 35-39, 40-44 and 45-49 years. From the mid-

eighties to early nineties, high-risk fertility level was nearly 1.10, that is, in an average each mother gave at least one birth in their risk age groups. High-risk fertility level is decreasing and become very close to 0.65 over this decade (between 2002 and 2006). Thus the level of risk fertility has been reduced nearly half from HRF level 1.25 in 1986 to 0.65 in 2006 (Figure 1). Similarly, a gradual decrement is depicted at less risk fertility levels and over the last 21 years (1986-2006) the LRF level has reduced nearly to a half of that in 1986. Thus both the HRF and LRF levels are declining nearly 48% from their values in 1986. A reduction of nearly 48% of TFR was experienced over the last 21 years (from 4.695 in 1986 to 2.45 in 2006). Therefore, the reduction in HRF and LRF were mainly attained from the reduced fertility levels.

To view the impact of reducing TFR level on HRF, ECB and DCB, we have computed the contribution of HRF, ECB and DCB as a percentage of TFR. Contribution of early childbearing (CECB) to TFR was more or less around 10%, that is, among all the births nearly 10% births were given by adolescent mothers. However, irregular but steady decrement is observed in the contribution of delayed childbearing (CDCB) to TFR, that is, proportion of late motherhood is decreasing. On the other hand, a minor increase in the contribution of on-time childbearing to the total fertility is observed over the years. From Figure 2, it is apparent that the adolescent pregnancy is still a greater share of total number of births and the proportion of this share is stagnant.

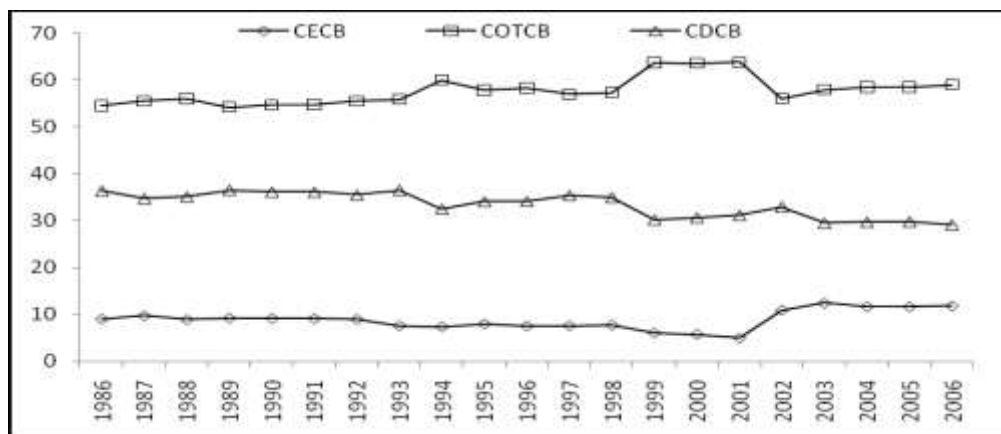


Figure 2: Contribution of early (CECB), on-time (COTCB) and delayed (CDCB) childbearing to total fertility

Contribution of early childbearing and delayed childbearing on HRF can be depicted by comparing the graphs of some proportions such as HRF/LRF, DCB/OTCB and ECB/OTCB (Figure 3). We find that the line graph of HRF/LRF seems to be quite stagnant with very small variations in some years. However, the DCB/OTCB seems to follow a decreasing trend with stagnant but upward

shift of ECB/OTCB in last few years. Therefore, any reduction in HRF was mainly due to the reduction in delayed childbearing compared to a very small reduction in early childbearing. Although the level of total fertility rates are decreasing, contribution of HRF to TFR remains almost stagnant and any reduction in HRF may be mainly due to the reduction in DCB than that of ECB.

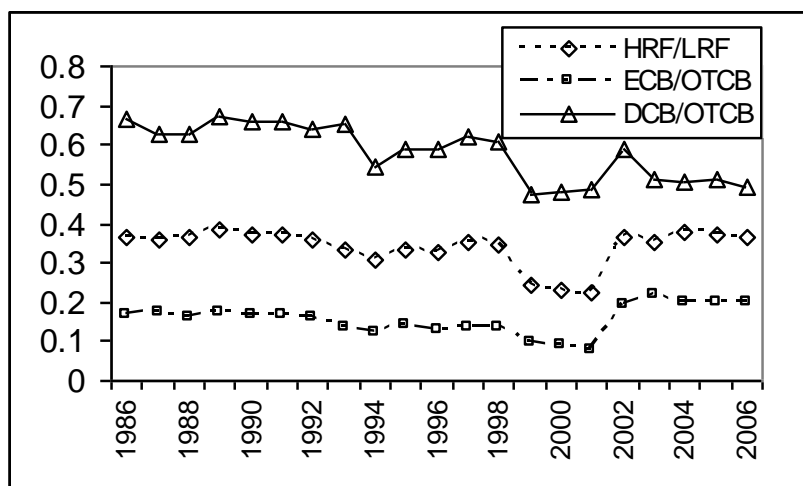


Figure 3: Proportion of HRF, ECB and DCB: 1986-2006

4. Policy implication and concluding remarks

Bangladesh is a developing country with high fertility rate and still struggling with the high infant and maternal mortality rates to reach the millennium development goal. Since early childbearing is a major cause of maternal mortality as well as a cause of adverse pregnancy outcome, it is desirable to implement some policies to reduce early childbearing. Some remarks to the policies may be

- Premarital birth in Bangladesh is a rare event due to the social norm. In fact, adolescent mothers in Bangladesh get married during their childhood and get babies within few months. Thus the implementation of the child-marriage protection law is the most active way of reducing adolescent fertility.
- Married adolescents may have wanted or unwanted pregnancies. So sex education is also important for teenagers.

There may be many other ways to reduce adolescent fertility; however, the above mentioned two are the main way, as we think. Nevertheless, well-planned steps to control the child marriage and spreading the knowledge of safe sex would help to reduce the adolescent pregnancy as well as to meet the millennium development goal easily.

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