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Is there any association between parental education and child mortality? A study in a rural area of Bangladesh

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ABSTRACT

Objectives: To assess the association between parental education and under-five mortality, using the Integrated Management of Childhood Illness (IMCI) data from rural Bangladesh. It also investigated whether the association of parental education with under-five mortality had changed over time.

Study design: This study was nested in the IMCI cluster randomized controlled trial.

Methods: Participants considered for the analysis were all children aged under five years from the baseline (1995–2000) and the final (2002–2007) IMCI household survey. The analysis sample included 39,875 and 38,544 live births from the baseline and the final survey respectively. The outcome variable was under-five mortality and the exposure variables were mother's and father's education. Data were analysed with logistic regression.

Results: In 2002–2007, the odds of the under-five mortality were 38% lower for the children with mother having secondary education, compared to the children with uneducated mother. For similar educational differences for fathers, at the same time period, the odds of the under-five mortality were 16% lower. The association of mother's education with under-five mortality was significantly stronger in 2002–2007 compared to 1995–2000.

Conclusions: Mother's education appears to have a strong and significant association with under-five mortality, compared to father's education. The association of mother's education with under-five mortality appears to have increased over time. Our findings indicate that investing on girls' education is a good strategy to combat infant mortality in developing countries.

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Introduction

The mortality rate for children under five years of age is a leading indicator of child health and the overall development of a country. Globally, almost 20% of all the deaths are of children aged under five years.[1] The global effort, particularly the United Nation's Millennium Development Goals (MDGs) significantly contributed in the progress of reducing child mortality.[2] The progress has been accelerated in recent times, with an annual rate of reduction of 4.0% during 2005–2013 against 1.2% during 1990–1995.[3] In spite of the remarkable success in reducing under-five mortality, it remains high – 48 per 1000 live births – with large variation among countries.[4] For example, under-five mortality rate is 82 per 1000 live births in low-income countries, compared with six per 1000 live births in high-income countries.[4] Similar to other low-income countries, mortality in children younger than five years remains high in Bangladesh and currently stands at 41 per 1000 live births.[4]

Research has largely found a significant association of mother's education with under-five mortality.[5–9] It is estimated that nearly 4.2 million under-five deaths have been prevented between 1970 and 2009 due to an increased educational attainment of women which accounts for nearly half of the total reduction in under-five deaths during that period.[6] A study particularly indicated that a one year increase in mother's education is associated with 7–9% reduction in under-five mortality rate.[7] Similar to earlier studies, the under-five mortality in Bangladesh has been found to be 45% lower among the children whose mothers have secondary education compared to the children whose mothers are illiterate.[9,10]

While father's education is also believed to contribute towards child health, studies that compare the relative contribution of father's and mother's education on the child mortality have found mixed results.[5,11–14] For example, a study in Indonesia has found that both the father's and mother's education have similar association with under-five mortality.[13] In contrast, a number of studies have found a weak or insignificant association of father's education with child health, compared to mother's education.[5,11,15]

Factors like child care seeking behaviour and practices by the primary carers can affect child mortality. For example, approximately 70% of children in Bangladesh do not receive their first postnatal check-up, while only 8% of sick children receive care from trained health professionals.[10,16] It is likely that the lack of parental medical literacy, primarily due to low education, is one of the key factors for the poor child care which in turn influences the child survival. Moreover, increases in the educational attainment are potentially linked to the reductions in fertility, which may further contribute in reducing child mortality.[6]

Over time, educational attainment and the quality of education have been changing all over the world.[17] For example, increased government initiatives and people's awareness about education rapidly increased educational attainment in Bangladesh.[18] Moreover, no study has investigated whether the association of parental education on the under-five mortality has changed over time. Therefore, it seems important to investigate the magnitude of the association of parental education on under-five mortality as well as its' trend, both for policy making and implementing intervention strategies.

The objective of this paper is to examine the association of mother's education and father's education with the under-five mortality in rural Bangladesh. It also investigates whether such association has changed over time. By focussing on trends of association between parental education and under-five mortality, our study may potentially contribute to the literature on the impact of parental education on child health. On the policy front, our study may indicate the increasing or decreasing importance of parental education and thus can make those more effective in the battle against child mortality.

The remainder of this paper is organized as follows. Methods section provides information on sampling procedure, study participants, data management and estimation strategy. Results present the findings of our analysis followed by the Discussion, which compares our findings with similar studies. The last section concludes.

Methods

Sampling procedure and study participants

This study was nested within the Integrated Management of Childhood Illness (IMCI) Multi Country Evaluation of Bangladesh; a cluster randomized controlled trial (RCT). The study was implemented in the Matlab subdistrict in Bangladesh with a population of approximately 350,000 and the study units were the first-level health facilities and their catchment areas.[19] Details of the design were published earlier.[20]

All live births between 1995–2000 and 2002–2007, which included 39,875 children aged under five years for baseline and 38,544 for the final survey, were considered for the analysis. While it included multiple eligible child of a mother, children whose mothers were divorced or separated or widowed were excluded from this analysis as information of father's education was not available for those participants. The baseline survey was conducted from February–October, 2000 while the final survey was carried out during July–October, 2007 on all the households in the study area.[21] Data collection procedures in the surveys were described previously.[20,21]

Data management

The primary outcome of interest in this analysis was under-five mortality. We determined under-five mortality from the complete birth history of all ever-married women aged 15–49 years. Primary exposures were mother's education and father's education. Each woman was asked about her and her husband's completed years of formal schooling during the interview. For the purpose of the analysis, we categorized parental education as no education, primary incomplete (1–4 years of schooling), primary (five years of schooling completed), secondary incomplete (6–9 years of schooling) and secondary (10 years of schooling completed or more).