

Investigating the role of health care at birth on inequalities in neonatal survival: Evidence from Bangladesh

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Introduction

While there is a significant body of evidence regarding the determinants of neonatal mortality, a number of important gaps in research still exist. In particular, knowledge on the impact of health care on newborn survival is limited, particularly when care at birth is considered. This is partly due to methodological difficulties. In countries such as Bangladesh, where skilled care at birth is rare, those who receive it are much more likely to have experienced complications that are strongly associated with the probability of neonatal survival. Thus a direct comparison of outcomes from women who used skilled care at birth against those who did not often results in higher neonatal mortality for women delivering in institutions in a range of settings (e.g. Govindasamy *et al* 1993).

Clearly these differences in mortality do not necessarily imply that a skilled attendant at birth or an institutional setting is detrimental to newborn health or survival. However, it could be hypothesised that the apparent increases in mortality in hospitals mask important differences in outcomes. It is well known that poor women experience worse neonatal outcomes than women of higher socioeconomic status, but it could be hypothesised that this difference will be magnified when only institutional delivery is examined, as poor women are less likely than richer ones to plan their deliveries and may wait longer before seeking care.

The aim of this paper is to examine the association between place of delivery and neonatal mortality in Bangladesh, and how this varies between different groups of women. Our approach is to use both bivariate and multivariate regression using composite variables to examine how socio-economic status is associated with neonatal outcomes for women giving birth in institutions.

Data and methods

Our analysis is based on data collected from three DHS surveys collected in 1996/7, 1999/2000 and 2004 in Bangladesh. These are nationally representative household surveys providing a combined sample size of 29,036 households, with 19,929 children born to 14,689 mothers within the previous five years prior to the three surveys. Full birth histories were collected from women aged between 15 and 49 years in sampled households, and data are comparable over time.

In order to examine the interaction between socio-economic status and place of delivery two sets of composite variables therefore developed for asset quintile and place of delivery, and a further one for maternal education and place of delivery.

The data was initially examined using simple cross tabulations to establish bivariate relationships between composite variables for socio-economic status / place of delivery and outcomes (neonatal mortality rate: NMR). While this is valuable in identifying general patterns such as socio-economic inequalities *etc.*, interpretation is difficult as many of the factors affecting neonatal mortality are closely correlated. Binomial multivariate logistic regression was therefore carried out in order to better establish the impact of specific factors while adjusting for others,

Results

The bivariate analysis showed that poorer women from rural areas had very high levels of neonatal mortality when they gave birth in institution compared to their counterparts who gave birth at home. For more wealthy rural women, and all women from urban areas the differential in neonatal mortality between home and institutional birth was much less. When education is examined mothers who received no education had markedly higher NMRs when delivering in institutions than counterparts giving birth at home. Little difference in NMR was seen among women with secondary or further education depending on where they gave birth. The analysis clearly demonstrates that differentials for mortality by socio-economic group (e.g.

asset quintile and maternal education), are much greater for women who deliver in institutions than for those who give birth at home.

The multivariate analysis clearly shows that socio-economic factors influence how outcomes differ by place of delivery. For instance, a woman with no education who delivers at home will have a probability of neonatal death of 0.07. If she gives birth in a government institution this nearly doubles to 0.12¹. It is, however, interesting to note that while these regressions are able to identify groups of women who experience increased neonatal mortality, it is not possible to identify any group that experiences reduced mortality from institutional delivery. A number of groups of women who have delivered in institutions including urban and rural women in quintile 5 and women who have received recommended ANC demonstrate a marked but insignificant decrease. Larger sample sizes could mean that these differences reach significant.

Discussion / Conclusion

While this study was unable to conclusively show that some groups of women have improved outcomes from using institutional care of delivery, it did highlight that women who are of lower socio-economic status or do not receive antenatal care have extremely poor neonatal outcomes. The socio-economic gradient is much/ steeper when only institutional deliveries are considered, suggesting that services are particularly failing to meet the needs of poorer and less educated women. This could be because they seek care later, or the care they receive is poorer quality.

Further research in different contexts (i.e. countries with a higher proportion of institutional deliveries) may be able to better identify improved outcomes for some groups of women. Greater disaggregation of institutional outcomes by socio-economic groups would provide more comprehensive evidence on whether services are reaching the poorest than utilisation data alone.

References

Govindasamy P., Stewart M., Rutstein S., Boerma T., Sommerfelt A. High-Risk Births and Maternity Care. *Demographic and Health Surveys Comparative Studies*