Influence of Non-biological Factors on Early Neonatal Mortality: Evidences from Some Selected States of India

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Introduction

Neonatal period is very important in infant's life because three-fourth of infant deaths occur within the first 28 days of life and most of them take place within the first 7 days. The survival of the newborn during the first week of life is mainly determined by stresses of intrauterine life and the birth process, as well as by adjustment to a new environment, nutrition and infection. Therefore, the early neonatal period is the most hazardous period of life.

In India, infant mortality rate has continued to remain high, as compared to all the developed countries, and many of the developing countries. The crude death rate had declined substantially from 27.4 per thousand populations in 1941 – 51 to 8.4 in 2001. The infant mortality rate also has gone down from 187 to 66 over the same period, indicating that the percentage decline is higher for CDR (69%) than that of IMR (65%). The decline in IMR is mainly because of the reduction of post neonatal mortality, while the proportion of deaths during the early neonatal period has increased.

In a study done by Srivastava and Saxena in Lucknow in 1980, it has been established that among the biological factors considered in the study, the incidence of perinatal mortality is found to be significantly influenced by age of mother, parity, period of gestation, birth weight and sex of the child. Among the socio-economic factors, perinatal mortality was found to be significantly related to religion, family income and occupation of the father. Another study by Achyut, Lahiri and Acharya (1997) on five states of rural India found that education of mother has a significant effect on the survival of the infant in the first week of life. In both the studies, it is evident that during the early neonatal phase, non-biological factors were played prominent role in determining infant

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mortality besides the so-called biological and health care factors. Some studies available on perinatal mortality are mainly based on hospital data which itself have many limitations. A significant number of studies have already been done on levels, trends and determinants of infant mortality as a whole, but research focusing on the correlates of early neonatal mortality is scanty in the Indian context due to lack of reliable data and for the basic presumption of the importance of biological and genetic factors in determining neonatal mortality.

Objectives

Against the above backdrop, the present study is an attempt to re-assess the predictors of early neonatal mortality of India as a whole and for three regions in particular (demographically advances states, backward states and those in between) through the modified framework of Kikhela (1989).

Data Source

In order to fulfill the objectives of the present study, the data has been extracted from the nationwide large-scale sample survey "National Family Health Survey (1998 – 99)". Information about the births occurred during three years preceding the survey has been used for the analysis.

Methodology

Rates of early neonatal deaths are calculated and bivariate analysis has been carried out to understand the relation between these mortalities with three aspects: socioeconomic and demographic characteristics of the mother, utilization of health care facilities and characteristics of the child. In the next step, hierarchical binomial logistic regressions are carried out to understand how the relationship of the predictors are changing with the dependent variables (here Early neonatal mortality) while step wise inclusion of set of independent variables. The four models developed in our study are:

Model I: Socio-economic and cultural factors, demographic characteristics of mother and environmental factors.

Model II: Besides the variable of model I, it includes mother's nutritional status and antenatal factors.

Model III: The third one has added factors related to delivery and characteristics of child at birth.

Model IV: In the fourth category the health of infant during 7 days of life is also considered.

Variables under different factors are:

***Socio-economic and cultural factors*:** Religion of mother, education of mother, occupation of mother, occupation of father and mass media exposure

Demographic factors: Age of mother, birth order and birth interval

Environmental factors: Type of house, drinking water facility and toilet facility

Mother's nutritional factors: Body mass index and anemia

Antenatal factors: Antenatal care and tetanus

Delivery factors: Place of delivery and delivery assistance

Child characteristics at birth: Size of child, sex of the child and gestation period

Health of infant during 7 days: Whether treatment sought within 7 days after birth has been taken as the proxy variable.

Result and conclusion

Study shows that education, religion and work status of the mother have significant effects on the survival of infant in the first week of life. Besides this all the variables related to pregnancy and delivery, mother's demographic factors, mother's nutritional status and child characteristics have shown significant impact on outcome of pregnancy. By using logistic regression, successively adding the group of variables at different stages, the sequences of effects of different variables in the conceptual framework are established.

The results of the study may help realizing that with the improvement of socio-economic conditions, providing proper medical care and attention during pregnancy and improving the nutritional status of mothers, loss of human resource in first week of life can be reduced to a greater extent. So, Government may take initiative to provide basic maternal and child health services, identify the needy mothers and provide every bit of care they require to deliver a healthy child.