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# Health-Seeking Behavior of Mothers and Factors Affecting Infant and Child Mortality

## Introduction

THE rates of infant and child mortality of a country indicate the level of socio-economic development and improvement of the quality of life. Although levels of infant and child mortality are falling they are still considerably high in Bangladesh. The available information suggests that one in ten children did not reach their first birth day. There are several factors related to high infant and under-five mortality in Bangladesh. These include, among others, per capita income, poverty, sanitation, health care services, nutrition, breast-feeding pattern, contraceptive prevalence, female literacy, and immunization of the children. The main purpose of this article is to investigate how health-seeking behaviour of mothers is affecting infant and child mortality. The data used for this purpose were obtained from the 1993-94 DHS data. An assessment of the birth history data suggests that quality of information 15 years preceding the survey is reasonably good for detailed analysis of infant and child mortality (Brass and Hoda Rashad, 1980). The 1993-94 Bangladesh Demographic and Health Survey indicates that only 27.4 per cent of mothers had antenatal care services. This suggests that despite availability of health centers at lowest administrative level (at the Union level having a population between 20 to 25 thousands), the utilization of health center is poor. An important element in reducing health risks for mother and children is to increase the proportion of babies that are delivered in health facilities. Proper medical attention and hygienic

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conditions during delivery can reduce the risk of infections and facilitate management.! of complications that can cause death or serious illness for either the mother or the newbom (Mitra *et a!.,* 1994). The Demographic and Health Survey information on maternal and child health indicate more than 96 per cent birth are delivered at home and less than two thirds of the births (60 per cent) are assisted by traditional birth attendants followed by relatives/others 29 per cent. Professional doctors attend only 4 per cent births. Less than half of the children are fully immunized before their first birthday. Breast-feeding is universal in Bangladesh with 96 per cent mothers reported that they breastfed their children. The mean duration of breast-feeding has been 28 months. Previous research confirms the universality of breast-feeding in Bangladesh (Mitra *et al.,* 1994). The major goal of Fifth five-year Plan (FFYP) is the reductions of infant, child and under-five mortality.

In the light of goal and objectives set in the FFYP the main purpose of this paper is to examine how health-seeking behavior of mothers are affecting infant and child mortality. An effort will be made to determine important variables that affect mother's health-seeking behavior in Bangladesh context. The unit of analysis is children bom from one to fifteen years prior to the survey.

**Data and Methods**

The National Institute of Population Research and Training (NIPORT) conducted the 1993-94 BDHS. The 1993-94 BDHS employed a nationally-representative, two-stage sample. It was selected from the Integrated Multipurpose Master Sample (IMPS), newly created by the Bangladesh Bureau of Statistics. The IMPS is based on the 1991 census. Because the Primary sampling units in the IMPS were selected with probability proportional to size from the 1991 census frame, the units for the BDHS were subselected from the IMPS with equal probability to make the BDHS selection equivalent to selection with probability proportional to size. A systematic sample of households was then selected from the lists. All ever married women aged 10-49 were interviewed from the selected households. A total of 9640 ever-married women were successfully interviewed from the selected households. The women's questionnaire was used to collect information from ever-married women aged 10-49. From each selected woman birth history data were collected. The birth history data constitute the study of the paper. Besides collecting information for each birth regarding their survival and if dead age at death, age of mother at birth, sex of the child, birth interval, access to antenatal and postnatal care services, status of taking tetanus toxoid vaccinations, place of delivery and assistance during delivery, breast-feeding status and child vaccination coverage were also collected.

To investigate the health-seeking behaviour of mothers and infant and child mortality of their children univariate, bivariate and multivariate analyses were employed. To identify the influencing factors of infant and child mortality levels we used logistic

regression analysis because the response variable is binary. We did not use hazard model because dependent variable should be time dependent i.e., duration variable.

**Maternal Education**

Distribution of births and probabilities of dying at neonatal, infant and child mortality by selected socioeconomic, demographic and housing characteristics are shown in Table 1. Caldwell and Reddy (1983) in their study found that maternal education is an important determinant of child survival. They mentioned that it is related to the greater role of an educated mother in family decision-making about allocation of resources, distribution of food among its members and recourse to modem medicine despite traditional beliefs about procreation and the causes of illness and their treatment. Jain's (1985) research in rural India identifies that mother's education as an important determinant of the use of medical services, together with the availability of those services. Tekce and Shorter (1984), in a study in Jordan, found that maternal education is associated with better personal hygiene, greater use of health services and better child nutrition. The effect of maternal education may increase with the age of child (Caldwell and P. Caldwell, 1993). Education may affect access to health facilities at the community level, thereby improve the health of children of educated as well as uneducated mothers in the communities where literacy level is high ( Kabir *et al.,* 1993). Caldwell (1979) demonstrated that mother's education was a more decisive determinant of child survival than other family characteristics such as husband's occupation and education. Lindenbaum *et al.,* (1985) found that in Bangladesh use of hygienic sanitation may be a powerful discriminate between the educated and uneducated mothers. Table 1 confirms that higher the level of educational attainment of the mother the lower is the infant and child mortality. The information presented in Table 1 demonstrates that educated mothers are more likely to use the health services, feed their children better and act in various ways to improve the traditional means of health care. These mothers may also use relatively higher contraception for birth spacing purposes. The use of immunization of the children is also higher by educated mothers because of their better exposure of immunization.

**Urban-Rural Differential**

In a poor social setting like Bangladesh uneducated mothers are at a far greater disadvantage compared with more educated mothers. Type of place of residence is also an important determinant of child survival because of differential service availability. Kabir *et al. (*1993) explained that urban-rural differential may be attributed to differential health care services including higher coverage of immunization, safe delivery of births and access to health care services. The analysis of the BDHS 1993-1994 data show that children in the rural areas experience 25 per cent higher risk of dying at neonatal stage

TABLE 1: TOTAL NUMBER OF BIRTHS AND COMPONENTS OF UNDER-FIVE MORTALITY (Per Thousand Births) BY SELECTED CHARACTERISTICS, BANGLADESH BDHS, 1993-1994

| *Variable* | | *Number of Deaths* | | | | *Probabilities* | |
|---|---|---|---|---|---|---|---|
| | *Total births* | | *Infant* | *Child* | *Neonatal* | *Infant* | *Child* |
| Maternal Education | | | | | | | |
| No Education | 14000 | 1056 | 1623 | 697 | 75.43 | 115.93 | 49.79 |
| Primary | 5782 | 348 | 547 | 174 | 60.19 | 94.60 | 30.09 |
| Secondary/Higher | 2496 | 114 | 154 | 63 | 45.67 | 61.70 | 25.24 |
| Place of Residence | | | | | | | |
| Urban | 3013 | 168 | 284 | 92 | 55.76 | 94.26 | 30.53 |
| Rural | 19265 | 1350 | 2040 | 842 | 70.08 | 105.89 | 43.71 |
| Toilet Facility | | | | | | | |
| Flush | 2104 | 142 | 203 | 79 | 67.49 | 96.48 | 37.55 |
| Others | 20174 | 1376 | 2121 | 855 | 68.21 | 105.14 | 43.38 |
| Antenatal Care | | | | | | | |
| Doctor/LHV/Nurse | 2629 | 157 | 244 | 71 | 59.72 | 92.81 | 27.01 |
| Traditional | 8945 | 669 | 1025 | 386 | 74.79 | 114.59 | 43.15 |
| Breastfed | | | | | | | |
| Yes | 11261 | 727 | 1153 | 448 | 64.56 | 102.39 | 39.78 |
| No | 313 | 99 | 116 | 9 | 316.29 | 370.61 | 28.75 |
| Age of Mother at Birth | | | | | | | |
| 15-19 | 5808 | 496 | 727 | 230 | 85.40 | 125.17 | 39.60 |
| 20-29 | 11758 | 700 | 1086 | 491 | 59.53 | 92.36 | 41.76 |
| 30-49 | 4345 | 266 | 437 | 194 | 61.22 | 100.58 | 44.65 |
| Sex of Child | | | | | | | |
| Male | 11355 | 855 | 1265 | 407 | 75.30 | 111.40 | 35.84 |
| Female | 10923 | 663 | 1059 | 527 | 60.70 | 96.95 | 48.25 |
| Immunization | | | | | | | |
| No | 3231 | 343 | 547 | 166 | 106.16 | 169.30 | 51.38 |
| Incomplete | 3530 | 199 | 301 | 138 | 56.37 | 85.27 | 39.09 |
| Complete | 4813 | 284 | 421 | 153 | 59.01 | 87.47 | 31.79 |
| BCG Vaccination | | | | | | | |
| No | 3271 | 346 | 551 | 166 | 105.78 | 168.45 | 50.75 |
| Yes | 8303 | 480 | 718 | 291 | 57.81 | 86.47 | 35.08 |
| Polio Vaccination | | | | | | | |
| No | 5667 | 482 | 764 | 267 | 85.05 | 134.82 | 47.11 |
| Yes | 5907 | 344 | 505 | 190 | 58.24 | 85.49 | 32.17 |
| DPT Vaccination | | | | | | | |
| No | 5705 | 479 | 764 | 264 | 83.96 | 133.92 | 46.28 |
| Yes | 5869 | 347 | 505 | 193 | 59.12 | 86.05 | 32.88 |
| Measles | | | | | | | |
| No | 5843 | 484 | 762 | 276 | 82.83 | 130.41 | 47.24 |
| Yes | 5731 | 342 | 507 | 181 | 59.68 | 88.47 | 31.58 |
| Birth Order | | | | | | | |
| 1 | 1465 | 68 | 106 | 14 | 46.42 | 72.35 | 9.56 |
| 2-3 | 6772 | 391 | 571 | 175 | 57.74 | 84.32 | 25.84 |
| 4+ | 14041 | 1059 | 1647 | 745 | 75.42 | 117.30 | 53.06 |
| Birth Interval | | | | | | | |
| <18 months | 1778 | 391 | 563 | 135 | 219.91 | 316,65 | 75.93 |
| 18+ months | 12278 | 798 | 1229 | 644 | 64.99 | 100.10 | 52.45 |
| Survival of Preceding Births | | | | | | | |
| Alive | 17666 | 858 | 1308 | 531 | 48.57 | 74.04 | 30.06 |
| Dead | 3253 | 594 | 919 | 383 | 182.60 | 282.51 | 117.74 |
| Delivery Help | | | | | | | |
| Doctor/LHV/Nurse | 970 | 60 | 100 | 28 | 61.86 | 103.09 | 28.87 |
| Traditional | 10604 | 766 | 1169 | 429 | 72.24 | 110.24 | 40.46 |
| Source of Drinking Water | | | | | | | |
| Piped/Public Yap | 20660 | 1398 | 2150 | 858 | 67.67 | 104.07 | 41.53 |
| Others | 1618 | 120 | 174 | 76 | 74.17 | 107.54 | 46.97 |

than the urban children (70 vs. 56 per 1000 births). Similarly infant and child mortality are also higher in the rural areas than that of the urban areas. However, urban-rural differential is not noteworthy. This may be attributed to the fact that about 80 percent of the population of Bangladesh live in rural areas.

**Sex Differential**

Sex differentials in child mortality are particularly important in the context of Bangladesh because traditional bias associated with son preference. It has been found that infant mortality is higher for male children while child mortality is higher for female children. The information in Table 1 indicates that at neonatal and infant stages male children's mortality is higher than those of the female children. However, child mortality is higher among female children than those of male children (48 vs. 36). The difference in child mortality may be explained in terms of biases towards health care, food distribution to the female children and treatment of female children in case of their illness.

**Place of Delivery**

An important determinant of child survival is the place of delivery. Due to lack of safe delivery many children die in Bangladesh. Traditional birth attendants attend most of the deliveries with risks to both mother and the newborn baby. The 1993-94 BDHS data show that neonatal, infant and child mortality rates are higher if the children born in unhealthy place and attended by traditional birth attendant than those who born in hygienic condition and attended by professional doctor/nurse. This information may imply that more counseling services during pregnancy may increase the mothers awareness regarding risks of having a baby by the assistance of a traditional birth attendant.

**Breast-feeding**

Breastfeeding saves the lives of million of infants. Infants who are breastfed for at least six months are significantly less likely to become ill or die due to diarrhoea and acute respiratory infections. Breastfeeding also improves women's health. For instance, breastfeeding can improve a woman's ability to space her births. Full breastfeeding is associated with lactational amenorrhoea, the natural breastfeeding suppresses the menstrual cycle causing delay in the resumption of menstrual cycle. Feeding practices are important determinant of children's nutritional status and many studies have shown the beneficial effects of breastfeeding on nutritional status, morbidity and mortality of young infants (Hobcraft *et a!.,* 1984; Benefo *et al.,* 1991). Breast-feeding also has an indirect effect on the postpartum fecundity of mothers. In particular, more frequent breast-feeding is

associated with longer periods of post postpartum amenohorrea, which in turn are related to longer birth intervals, and then lower fertility levels. The information presented in Table 1 suggests that those children who breastfed are likely to survive more than those who did not breastfed.

### Immunization Effect

Immunizations provide protection to the children against specific and serious infectious diseases. The level of immunization may be used not only to assess the prevalence of specific disease protection but also to provide an indicator of the parental attention given to children to protect their health and welfare (Tekce and Shorter, 1984). The immunization status of the children is a factor for differential survival status of the children. The effect of immunization in case of neonatal, infant and child mortality is higher than those children who **were** not immunized.

### Drinking Water Facility

Families with access to toilets and piped water had lower mortality rates inspite of reduced levels of breast-feeding (Butz *et al.,* 1982). The presence of electricity or piped water supply in the house is likely to reflect household characteristics as well as household income. Access to safe drinking water is also related to child survival status. Neonatal, infant and child mortality rates are lower among children whose parent's households use piped water than those who use from other sources (Table 1). It is assumed that piped water is safer and hygienic compared to water from other sources, especially water from the pond/'canal/river.

### Toilet Facility

As evident from Table 1 that there is a significant difference in the mortality by access to toilet facility. In particular, mortality among the children living with parents in households without toilet facility is considerably higher than those having flush type toilet facility. For example, children from the households whose parents possessed other type of toilet facility (Kutcha) their children's mortality is considerably higher than those having flush type of toilet facility. In particular, child mortality is higher among the children whose parents do not have flush toilet (38 as against 43).

### Age of the Mother at Birth

The age of mother also affects the risk of death for a child. Children born to mothers a under age 20 are more likely to die before their first birthday. Babies born to young

mothers are more likely to be premature, have low birth weights, and suffer from complications of delivery (Hobcraft *et al.,* 1984). Table 1 shows that both neonatal and infant mortality is lower for the children whose mothers are of aged between 20-29 years than for the children whose mothers are aged 40 years and above. Children born to mothers over age 40 years, about one fourth-of their children born are also likely to die. Older mothers are more likely to give birth to children with congenital abnormalities who may be less likely to survive childhood. The relationship between neonatal and infant and age of the mothers is somewhat a u-shaped. The child mortality increases with the increase age of the mothers. Infant mortality among the children born to mothers below age 20 years is higher than those born to mothers of ages 20-29 years.

**Birth Order of the Child**

The association between birth order and neonatal, infant and child mortality risks shows upward trend with the increase of birth order from 1 to 4+, the infant mortality also increases. For example, in Bangladesh generally birth order one belongs to young mothers of aged less than 20 years. Therefore, the higher is the birth order of a mother the higher is the age of the mother. Mortality risks are high among first births, which are predominately to younger mothers. Similarly higher order births belong to mothers of higher ages. Infant mortality is higher for mothers with age 35 years and above than mothers aged below 35 years.

**Birth Interval**

The interval between births is the most consistent reproductive factor associated with high infant and child mortality. Children born after short intervals (less than two years) are more likely to die than children born after relatively long birth intervals (two to three years). The present analysis shows that short birth intervals significantly reduce children's probabilities of survival. For instance, the neonatal, infant and child mortality rates for children born to mothers at short birth intervals are higher than those born at long birth intervals. The association (birth interval between two births) prevails in all the age groups of the children but it is most pronounced in case of neonatal mortality. The findings support the significance of child spacing practices as a means of reducing mortality of the under-five children.

**Logistic Regression Analysis**

The preceding analysis has demonstrated the relationships between components of under-five mortality and selected socio-economic, demographic and housing characteristics of the respondents. In the following section an effort has been made to identify the

significant variables which, have influence on mother's health-seeking behavior and consequently affect infant and child mortality. Our dependent variable is the survival status of the children. If the child is dead we considered it is one and if the child is survived we considered it is zero. For logistic regression analysis a number of socio-economic, demographic and health seeking variables are considered to assess their effects on the components of under-five mortality. The variables chosen for logistic regression analysis are drawn from socio-economic, health care related and demographic variables. It is hypothesized these variables directly or indirectly influence health care related variables which consequently influence demographic variables and thus infant and child mortality. For all the components same variables were used to assess their influences on the different components of under-five mortality.

**Results of Logistic Regression Analysis:**
**Neonatal Mortality**

The logistic regression coefficients suggest that a number of variables have influence on the survival status of the neonatal mortality. Education of the mother is an important determinant of child survival. Place of residence also affects neonatal mortality. This is possibly attributed to the lack of facilities of health care services in rural areas than that of the urban areas. Breastfeeding to the newly born babies improves their survival status. Survival of the preceding child also influence survival status of the newly born child. Short birth interval has negative effect on the survival status of the children. If the preceding birth interval is higher then it shows lower risk of death (Table 2). Mothers whose children born with a birth interval of 18 months and above the risk of dying of their children is 0.89 times lower compared to reference category. For newly born babies breast-feeding is an important for their survival. Mothers who did not breastfed their children had five times higher risk of dying than those who were breastfed. Age of mothers at the birth of their children has negative influence on the survival status of the children. The lower is the age of the mother the higher is the neonatal mortality. The negative coefficient associated with sex indicates that at neonatal stage the risk of dying is higher for male children than the female children (Table 2). Short birth interval is associated with higher neonatal mortality is also confirmed. Similarly, the higher is the birth order the higher is the mortality of the children.

**Infant Mortality**

The predictors of infant mortality as found from logistic regression analysis were secondary education, antenatal care, breastfeeding status, age of the mother at birth, sex of the child, immunization status of the children, birth order, delivery place, birth interval and survival status of the preceding child. The coefficient of the logistic regression

TABLE 2: LOGISTIC REGRESSION COEFFICIENTS OF THE EFFECT OF SELECTED INDEPENDENT VARIABLES ON THE SURVIVAL STATUS OF NEONATAL MORTALITY: BANGLADESH, BDHS 1993-1994

| *Variables* | *Neonatal* | *Odds Ratio* |
|---|---|---|
| Maternal Education | | |
| No Education | 0.0000. | — |
| Primary | -0.0888 | 0.9150 |
| Secondary/Higher | -0.2288 ** | 0.7955 |
| Place of Residence | | |
| Urban | 0.0000 | — |
| Rural | 0.2050 ** | 1.2275 |
| Toilet Facility | | |
| Flush | 0.0000 | - |
| Others | - 0.0998 | 0.9050 |
| Antenatal Care | | |
| Doctor/LHV/Nurse | 0.0000 | - |
| Traditional | 0.0528 | 1.0542 |
| Ever Breastfed | | |
| Yes | 0.0000 | - |
| No | 1.6472 * | 5.1926 |
| Age of Mother at Birth | | |
| 15-19 | - | - |
| 20-29 | - 0.6856* | 0.5038 |
| 30-49 | - 0.9288* | 0.3950 |
| Sex of Child | | |
| Male | | — |
| Female | -0.2717, * | 0.7621 |
| Immunization | | |
| No | - | - |
| Incomplete | - 0.4095 | 0.6640 |
| Complete | -02484 • | 0.7800 |
| Birth Order | | |
| 1 | - | - |
| 2-3 | 0.4996 • | 1.6481 |
| 4+ | 0.9730 • | 2.6458 |
| Birth Interval | | |
| <18 months | 0.0000 | 0.6923 |
| 18+ months | -0.3677 * | 0.8881 |
| Survival of Preceding Births | | |
| Alive | 00000 | - |
| Dead | 1.3894 • | 4.2429 |
| Delivery Help | | |
| Doctor/LHV/Nurse | 0.0000 | - |
| Traditional | 0.1136 | 1.0100 |
| Source of Drinking Water | | |
| Piped/Public yap | 0.0000 | - |
| Others | 0.0359 | 1.0790 |
| Constant | -2.9612* | |
| Chi-square | 8004.917 | |
| Degrees of Freedom | 17 | |
| N | 17774 | |

*/' < .001 •* *P* < .005

TABLE 3: LOGISTIC REGRESSION COEFFICIENTS OF THE EFFECT OF SELECTED PREDICTORS ON THE SURVIVAL OF INFANTS MORTALITY: BANGLADESH, BDHS 1993-1994

| *Variables* | *Neonatal* | *Odds Ratio* |
|---|---|---|
| Maternal Education | | |
| No Education | 0.0000 | - |
| Primary | - 0.0642 | 0.9378 |
| Secondary/Higher | -0.3801 * | 0.6838 |
| Place of Residence | | |
| Urban | 0.0000 | - |
| Rural | 0.0051 •• | 1.0052 |
| Toilet Facility | | |
| Flush | 0.0000 | - |
| Others | 0.0479 | 1.0492 |
| Antenatal Care | | |
| Doctor/LHV/Nurse | 0.0000 | - |
| Traditional | 0.1500 •* | 1.1619 |
| Ever Breastfed | | |
| Yes | 0.0000 | - |
| No | 1.3781 * | 3.9672 |
| Age of Mother at Birth | | |
| 15-19 | - | - |
| 20-29 | -0.6361 * | 0.5294 |
| 30-49 | -0.8117 * | 0.4441 |
| Sex of Child | | |
| Male | - | - |
| Female | -0.1412 • | 0.8683 |
| Immunization | | |
| No | | |
| Incomplete | -0.6121 * | 0.5422 |
| Complete | -0.4323 * | 0.6490 |
| Birth Order | | |
| 1 | - | |
| 2-3 | 0.2861 •• | 1.3312 |
| 4+ | 0.8322 * | 2.2984 |
| Birth Interval | | |
| <18 months | 0.0000 | 0.6923 |
| 18+ months | -0.2592 • | 0.7717 |
| Survival of Preceding Births | | |
| Alive | 0.0000 | - |
| Dead | 1.7246 * | 5.6101 |
| Delivery Help | | |
| Doctor/LHV/Nurse | 0.0000 | - |
| Traditional | 0.2235 *• | 1.2504 |
| Source of Drinking Water | | |
| Piped/Public yap | 0.0270 | 1.0274 |
| Others | -02428 | |
| Constant | -2.278* | |
| Chi-square | 10419.945 | |
| Degrees of Freedom | 17 | |
| N | 16843 | |

*P < .001 ** *P* < .005

TABLE 4: LOGISTIC REGRESSION COEFFICIENTS OF THE EFFECT OF SELECTED PREDICTORS ON THE SURVIVAL OF CHILD MORTALITY: BANGLADESH, BDHS 1993-1994

| *Variables* | *Child* | *Odds Ratio* |
|---|---|---|
| Maternal Education | | |
| No Education | 0.0000 | - |
| Primary | -0.2491 *• | 0.7795 |
| Secondary/Higher | -0.3134 • | 0.7310 |
| Place of Residence | | |
| Urban | 0.0000 | - |
| Rural | 0.1514 | 1.1635 |
| Toilet Facility | | |
| Flush | 0.0000 | - |
| Others | -0.0041 | 0.9959 |
| Antenatal Care | | |
| Doctor/LHV/Nurse | 0.0000 | - |
| Traditional | 0.2865 * | 1.3317 |
| Ever Breastfed | | |
| Yes | 0.0000 | - |
| No | 0.0575 | 1.0591 |
| Age of Mother at Birth | | |
| 15-19 | - | - |
| 20-29 | -2296 ** | 0.7948 |
| 30-49 | -4224 * | 0.6555 |
| Sex of Child | | |
| Male | - | - |
| Female | 0.3358 • | 1.3991 |
| Immunization | | |
| No | — | - |
| Incomplete | -0.3374 * | 0.7!36 |
| Complete | -0.4946 * | 0.6098 |
| Birth Order | | |
| 1 | - | |
| | 0.4548 • | |
| 2-3 | 1.1017 ** | 1.5759 |
| 4+ | | 3.0092 |
| **Birth Interval** | 0.0000 | 1.6011 |
| <18 months | 0.4707 * | |
| 18+ months | | |
| **Survival of Preceding Births** | 0.0000 - | 5.9833 |
| Alive | 1.7890 * | |
| Dead | | |
| **Delivery Help** | 0.0000 - | |
| Doctor/LHV/Nurse | 0.0235 | 0.9768 |
| Traditional | | |
| **Source of Drinking Water** | 0.0000 | 1.1369 |
| Piped/Public yap | 0.1283 | |
| Others | | |
| **Constant** | -4.5600* | |
| **Chi-square** | 5417.885 | |
| **Degrees of Freedom** | 17 | |
| **N** | 16843 | |

***P* < .001** ** *P* < .005

indicates that if a mother experienced a dead child of the preceding birth then it increases the risk of death by almost six times compared with an alive child. Children whose mother's age is between 20-29 years are 0.53 times less likely to die than the mothers who are between 15-19 age group. Children who are not breastfed are four times more I likely to die than those who are breastfed. The higher survival status of the children is found among the mothers who had birth interval of 18+ months than mothers whose children had birth interval less than 18 months. The children who were given immunization have higher chance of survival than those children who were not given immunization. Similarly, birth order has positive influence on the survival status of the children.

The higher is the number of birth order of mothers the higher is the risk dying of children. High order mothers are from high ages. Biologically, mothers greater than age 35 and above have risk of their pregnancies and consequently their children also run high risk of dying.

## Child Mortality

The variables which have significant influence on child mortality are level of education of the mothers, antenatal care, survival status of the previous child, sex of the child, immunization, age at birth of the mothers, birth order and birth interval. The coefficients indicate that if the previous child is died then it increases the risk of death by almost six times compared to those mothers who experienced no death of their children. The children who had incomplete (children were not given specified doses of immunization) and complete immunization (children who were given specified number dozes against each immunization) have lowered the risk of death by 0.71 and 0.61 times the risk than those children who were not immunized at all. After the first year life, girls in Bangladesh are at significantly greater risk of dying than the boys. Mortality after the first year is influenced more strongly by environmental factors - such as nutrition and health care - than biological factors, which suggests that girls in Bangladesh receive poorer care than do boys. The logistic regression coefficient confirms this. For example, female children have 1.40 times higher mortality than the male children. Education level of the mothers has a consistent relationship with the child survival status. The higher is the level of education of the mothers the higher is the likelihood that their children would be immunized against all the deadly six diseases of the children. Both birth interval and birth order has significant positive influences on the child mortality. Age of mother at the birth is also negatively associated with child mortality. The higher is number of birth order the higher is the age of the mother since these two variables are correlated.

## Discussion and Conclusion

In the bivariate and logistic regression analyses we identified some important determinants of child survival of different components of under-five mortality (such **as**

neonatal mortality, infant mortality and child mortality). The results suggest that risk of dying for neonatal and infants is higher if childrem are bom to mothers below age 20 years. There is a strong association between the survival status of the preceding child and the components of under-five mortality. The death of a preceding child probably indicates the importance of biological factors, including physiological deficiencies in the mother and environmental problems that could carry over to later births. The logistic regression analysis suggests age of the mothers at birth and number's births are important predictors of neonatal mortality. In Bangladesh child bearing begins at younger ages and they have many pregnancies within short period with potential risks to both mothers and the children. Child mortality is higher for female children than male children but neonatal and infant mortality are higher for male children than for female children. The mortality risk declines with the increase in birth interval. Maternal education appears to affect child health in a number of ways. Educated mothers are aware what to do when their children are sick and because of their better exposure and knowledge they utilize health care services more often than their counterparts. Among educated mothers also may have enough status and power in the family to take appropriate action when her child needs health care. The more educated a mother is, the more likely she is to use maternal and child health services - specifically parental care, delivery care, childhood immunization, and oral rehydration therapy for diarrhoea.

The logistic regression analysis demonstrates that among potentially strong predictors of the components of under-five mortality are education, age of the mothers at birth, sex of the child, immunization status of the child, birth order, birth interval, delivery place, birth interval, antenatal care and survival status of the previous child. These relationships have also been confirmed by the bivariate analysis. The strong and consistent link between maternal education and child survival has important implications for health policy. The findings may suggest that family planning programs, coupled with national policies to discourage early marriage and early child bearing at younger ages can considerably reduce infant and child mortality by preventing births to high-risk mothers (Kabir and Amin, 1993). The magnitude of the reduction will, of course, depend upon the proportion of births in the population associated with these risk factors. Although it is difficult to quantify the effects but less tangible are the indirect effects of family planning programs on maternal and child health. Efforts to reduce under-five mortality in Bangladesh should focus on family planning programs that target young mothers. In addition, children born to less than 18 months after a previous birth face especially high mortality risks. The relatively high mortality rates for girls after the first year of life provide strong evidence that health and nutrition programs need to pay particular attention to girls. Sex discrimination in the distribution of household food is also a factor why girls have higher child mortality than the boys. Finally, four matternal health care interventions could play a significant role in reducing the first year of life —antenatal and postnatal checkup, tetanus toxoid injection and safe delivery of baby.

The logistic regression analysis suggests that first-born children and children whose mothers are over age 40 are at a particularly high risk of mortality. Similarly mothers with first order births are generally very young and their children also have high-risk mortality than mothers who are over age 20.

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