

**DETERMINANTS OF CHILD MORTALITY: A COMPARATIVE
STUDY BETWEEN RURAL AND URBAN BANGLADESH**

*A Thesis Submitted to
University of Dhaka
for the Degree of*

GIFT

MASTER OF PHILOSOPHY

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SOCIOLOGY

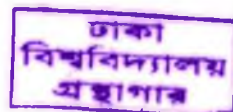
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ঢাকা
বিশ্ববিদ্যালয়
গ্রন্থাগার

.....DEDICATED TO MY PARENTS

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CERTIFICATE

This is to certify that Mrs. Selina Akter has worked for her M. Phil. dissertation under my guidance and supervision on the topic “**DETERMINANTS OF CHILD MORTALITY: A COMPARATIVE STUDY OF RURAL AND URBAN BANGLADESH**” to my satisfaction and his work is original.

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Selina Akter.
Selina Akter

Dhaka

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Chapter – One

INTRODUCTION

1.1. Statement of the problem

Bangladesh is an independent country. It is one of the least developing countries of the world. Her population is 12.93 crores and the density of population 834 per square kilometer and thus it is a highly populated country (Bangladesh Bureau of Statistics (BBS), 2001). About 85 percent of population lives in rural areas. Most of the people of Bangladesh are dependent on agriculture-based economy. Social services with respect to sanitation and education are very inadequate. Literacy rates, health, education, living standard and medical facilities are very poor. In fact Bangladesh faced with many problems including child mortality that became the burning question of development agenda (Banu, 1981).

Mortality studies have received increased attention in recent years. Child mortality, that is mortality from age 1 to 4, needs to be examined in addition to infant mortality. The child mortality in Bangladesh has long been of interest to population researchers because of its apparent relationship with fertility and indirectly with the acceptance of modern

contraception. The health benefits to mothers and their children resulting from the practice of contraception constitute a primary rationale for the health and survival of children has received particular attention. (National Institute of Population Research and Training (NIPORT), 1993)

Mortality is one of the three factors that contribute to population growth the other two being fertility and migration. It is the recent trends in mortality that have stimulated this emphasis. In addition to its direct and indirect effect on fertility and thus on various aspects of social and economic planning of nation, demographers are concerned with the mortality trends in the developing country.

An identification of reliable estimates of levels and trends of mortality are getting increased interest. As about 50% percent of the total number of deaths in many countries of developing world experienced with mortality under age five. So the renewed emphasis in mortality studies focuses more on infant and child mortality. There is no doubt that infant and child mortality have been considered as important indicators for describing mortality situation. In the context of about 75% to 80% percent of all children in developing countries have been surviving through age five (United nations children fund, 1984).

Infant and child mortality rates are basic indicators of a country's socioeconomic situation and quality of life. In fact socio-economic factors have strong influence on mortality level. Mortality is strongly related with development level of the country. Besides, the public health programme such as mass immunization, better water supplies, and improved sanitation has helped to reduce mortality to a greater extent. Although the child mortality depends on the social, economic, demographic and environmental factors in the developing countries, the demographic factors such as mother's age, sex, parity etc. are more crucial to the child mortality. Moreover the socio-economic factors such as father's education, mother's education, occupation, social class, life style for family also have strong influence on mortality rate (United Nations (UN), 1986)).

The rates of child mortality may also vary over time in relation to changes in epidemiological risks (exposure to disease), nutritional deficits (susceptibility to disease and death), and the extent to which a country's health and social service sectors prevent and mitigate these threats to health and survival (Mitra, et.al. 2000).

Health situation of children that characterizes of a country is closely related to the general health of the community. Child health has

traditionally been considered an important indicator for describing mortality conditions, health progress and indeed the over all social and economic well being of a country. Children under five years of age constitute about 15 percent of the population in most developing countries lies in their exposure and vulnerability to infective diseases.

The higher mortality rates in the rural compared to urban areas of developing countries have been attributed to the greater availability of health care services, higher income and educational level in urban areas. Nevertheless in Bangladesh in recent decades, childhood mortality has experienced dramatic reduction through the combined effect of improvements in standards of living, better environment and personal hygienic care, the extension of maternal and child welfare schemes as well as prevention. However, child mortality situation is still very high in the country.

Under five mortality rates in Bangladesh is one of the highest in Asian countries. Under five mortality is 94 per 1000 live births i.e. one in every thirteen children born during the years 1999-2000(NIPORT, 2000) died within the fifth year of their life. Most of the under five death occur due to prematurely, and bad handling by birth attendants leads injury and infection. In the Urban areas of some developing countries where there is

over-crowding situation and acute poverty syndromes due to rural-urban migration infant and child mortality rates are excessively high.

In recent years, in Bangladesh the health and family planning programs have successfully implemented that has helped in reducing fertility and mortality. Both family planning and EPI Program in Bangladesh are widely acclaimed as success stories.

Considering Bangladesh Government's Health Program, "Health for all" to means health service within reach of every one in the country. Yet health services and health care facilities provided by the government are still seriously under utilized and government's health programs are not operating in a coherent manner. Also access to health services is still poor and the services offered may be unused or used in terms of resource utilization. The under utilization may demonstrate a lack of effective management and lead to the future loss of support.

1.2. Justification

Considering the present high growth rate of population, wide spread family planning programme in a developing country, like Bangladesh is essential. The motivation slogan of the government is two children enough" This slogan is very appropriate for our country, but it is

not working well due to multivarious reasons of which high infant and child mortality is a significant one. Since the infant and child mortality rate is very high the parents feel insecure regarding their desired number of children.

Therefore, the parents generally go for a higher number of children than their actual desire. A lower level of infant and child mortality is necessary for achieving the goal of declining population growth rate. Infant and child mortality is a great problem for us and it is more so in our rural population compared to that of urban.

Majority of the people in rural areas suffer from malnutrition specially the children are the vulnerable group in this regard. Other important factors for high infant and child mortality are lack of medical services, socio-economic condition of the people, sanitation and hygienic condition, environment problem etc. therefore, a developing country like Bangladesh any study on child mortality is very essential. The present study therefore aims at to focus on the mortality determinants of rural and urban Bangladesh

1.3. Objective of the study

The broad objective of the study is to explore the trends and socio-economic and demographic differentials of child mortality both in rural and urban Bangladesh.

The specific objectives of the study are to

1. Examine the trends in child mortality in both rural and urban Bangladesh.
2. Identify the social, economic and demographic differentials of child mortality in both urban and rural Bangladesh.
3. Compare the child mortality of rural areas with urban areas of Bangladesh

1.4. Organization of the study.

The thesis has been organized into five chapters.

Chapter one of the thesis presents the statement of the problem, justification and objective of the study.

Chapter two presents the theoretical background, literature review; operational definition of mortality and under five-child mortality; analysis of the demographic, socio-economic and health related variables.

Chapter three presents the methodology of the study. It includes of sample design, questionnaire, methods of data collection and data analysis.

Chapter four presents the findings of the study. The study includes the trends in child mortality in both rural and urban Bangladesh, differentials of under five-child mortality by demographic and socio-economic characteristics and differentials of under five-child mortality by health related issues.

Chapter five presents the summary and conclusion of the study.

Chapter-two

Theoretical Background

2.1 Literature review:

A good number of studies have been done in the area of infant and child mortality in Bangladesh. Infant and child mortality have been widely accepted as an important and significant indicator of health achievement, because infancy has always been one of the most vulnerable periods of human life. The infant and child mortality in Bangladesh has long been a topic of interest to population researchers because of its apparent relationship with fertility and indirectly with acceptance of modern contraception. Child mortality patterns and differentials may bring precious knowledge that can help policy-makers for developing world's health planning. Most of the researchers concentrated on studying the levels, differentials and child mortality using traditional tabular analysis and life table techniques. Here, some of previous works of Bangladesh as well as of other countries have been presented in the context of the present study.

Child mortality – that is mortality from age 1 to 4 – needs to be examined in addition to infant mortality. First, child mortality is still very high in many countries, particularly in the less developed regions. About 15 million children under age 5 are estimated to have died annually in 1980 – 1985. This represents 30 percent of all annual deaths in the world. The majority of the deaths occurred to children in developing countries. High mortality of young children may therefore be considered to be one of the greatest health problems in the world and information on levels and trends of mortality under age 5's important for health planners and policy makers (UN, 1988).

Feeny (1976 and 1980) and Coale Trussell (1978) have developed equations to estimate the time to which each of the mortality estimates applies. Thus, the mortality estimates derived from the proportions of children dead observed among those ever borne by women in different age groups consist of two elements: The life table probabilities of dying between birth and age x (xq_0); and the time period to which each xq_0 value refers (UN, 1988).

Raihan (2001) shows that the children of well-nourished mother have lower risk of malnutrition and mortality compared to children with this mother. As the duration of breast-feeding increases, the risk of

malnutrition and prevalence of disease decrease. Previous birth interval and size at birth show significant relationship with the prevalence of childhood malnutrition and under-five mortality.

Mabud (1992) shows that the child mortality is closely related to desire for additional children. The level of infants and child mortality appears to be some where in the range of 115 – 120 per 1000 live births (BBS, 1988). Child mortality rate (i. e. children 1 – 4 years) estimated from 1985 CPS data, according to one analyst was 26.4 (kantner, 1988). Both infant and child mortality rates have declined since 1974 - 75 with concurrent decline in fertility.

Bangladesh as compared to several developing countries in Asia such as India, Srilanka, China and Indonesia has still very high infant and child mortality rates. Here, at least one out of ten children dies before completing the first anniversary. Child survival appears to play a major role in the acceptance and continuation of contraception (UNFPA, 1990).

David (1978) shows that, in recent years the situation of child mortality has been largely improved by the speedy transport of food to areas temporarily benefit of their own supply as the level of nutrition is still an important determinant of mortality. Recent studies have also

provided conclusive proof that a very important cause of high mortality levels among children under five is an inadequate diet, especially with respect to protein such as south Asian countries.

David (1978) found that mortality in 18th and 19th century was relatively high. But in the declining in mortality started later because of (a) improved agricultural productions (b) industrial goods services (c) improved transport and communication (d) social reforms (e) greater control of temperature and humidity (f) public sanitation (g) improved personal hygiene (h) developed immunology and (i) biological factors.

Kabir, Chowdhury and Amin (1995) examined the infant and child mortality levels and trends in Bangladesh by using data from the 1989 Bangladesh Fertility Survey and using life table analysis to confirm the changes in infant and child mortality. They observed that both infant and child mortality declined from the mid 1970's but comparatively infant mortality declined more quickly than child mortality. The level of infant mortality in 1989 was around 100 per 1000 live births while child mortality was 200 per 1000 live births. The declines in infant mortality are attributed to the introduction of improved public health measures and access to maternal and child health services.

Although mortality declined considerably in developing countries, there remain significant differences in mortality among population differences in mortality among population groups in nearly all countries. Studies of mortality differentials are useful in at least three ways. First such studies provide information for assessing inequalities among people with respect to longevity and health. Second data on mortality differentials help to identify those underprivileged segments of the population who experience higher mortality levels. These groups are an appropriate target of policies and programmes for improving health conditions and survival chances. Finally studies of mortality differentials improve our understanding of determinants of mortality and their interrelationships, on the basis of which proper policy measures for reducing mortality are developed selected and improved. (Socio-economic differentials in child mortality in developing countries (UN, 1985).

Hobcraft et.al. (1998) shows that infant and child mortality are determined by both the biological endowment of children at birth and their environment after birth. In developing countries background characteristics such as mothers literacy, urban/ rural residence and household economic status are likely to affect a child's condition at birth as well as its environment thus affecting infant and child mortality.

Palloni and Millman (1986) found that some characteristics of children are related to mother's fertility behavior such as mother's age at child birth, child's birth order previous and following birth intervals. These characteristics are known to affect neonatal and post neonatal infant and child mortality in developing countries. First born children and children of high birth orders are known to experience higher mortality than children of birth orders two to four. Children born to woman under age 20 and over age 35 are known to have higher mortality than those born to mothers age 20 – 34, most likely because a women's physical condition is most favorable to child bearing during her twenties and early thirties.

D. Souza, et.al. (1982) Showed from data obtained by the International centre for Diarriaheal Disease Research, Bangladesh (ICDDR) that in the neonatal period, male mortality exceeds female mortality, a sex differential consistent with the higher biological risks faced by male children during the post neonatal period and childhood (1 – 4 years) then is reversed with female death rates exceeding those for males. The lower mortality among boys has been attributed to the better care they receive compared with girls in terms of the distribution of food and preference for health care when they become ill.

Early childhood mortality levels also show substantial differences according to the social and economic characteristics of the population. The level of the mother's education shows a distinct influence on infant and child mortality, the rates being lower for mothers with some schooling. This phenomenon may be attributed to children of educated mothers enjoying better diets and better over all care than the children of non-educated mothers (Bairagi 1980). This is also consistent with the factors such as nutrition and hygiene which are further related to the education and socio-economic status of the parents. Even gender differentials in infant and child mortality are associated with cultural values (Chen et.al. 1981).

Infant and child mortality are also affected by the birth order the sex of child and length of interval between births. Child mortality shows different levels by birth order: starting high, then falling and rising again. Nutrition and economic factors may explain the differential mortality by birth order (NIPORT, 1993). The 1989 BFS data also show that child mortality is lower for boys than for girls. But infant mortality is higher for boys than for girls.

Empirical studies of infants and child mortality have often been found that mortality is more strongly correlated with demographic and

socio-economic factors, such as age, education occupation etc. Several rounds of study reports on mortality of BBS also corroborate the relation between mortality and socio-economic variables (BBS 1994, 1995, 1996).

Bhuiya and Streatfield (1991) found that except age all the variables like mother's education sex and economic condition of the household were significantly associated with risk of child death. The risk was 1.5 times higher for girls than boys.

Analyzing the data from the Matlab Field area of International Center for Diarrhoeal Diseases and Research. Bangladesh (ICDDR) D. Souza and Bhuiya (1982) indicated an inverse relationship between mortality of children aged 1 - 4 years and various socio-economic factors. The study showed that child mortality rates were substantially higher among the children whose mothers did not have any schooling.

Kabir, et. al. (1997) observed that the socio-economic factors correlate with infant and child mortality in Bangladesh. They have examined mortality differentials by place of residence, level of income, level of mothers education and access to safe drinking water and found that education of mother had a positive effect on child mortality.

Hill (1995) observed that mortality patterns are related with socio-economic status and no major difference emerged by socio-economic status but a slightly higher prevalence of measles, pneumonia and diarrhea among these with lower socioeconomic status.

Immunization is another factor, which is also related to infant and child mortality. Immunization initiative starts with an attack against six vaccine preventable diseases of children, which would serve as a catalyst in the development of primary health care in the developing world. In Bangladesh, four out of five pregnancies received TT shots in the urban areas while only two in three pregnancies being vaccinated in the rural areas (Chakrabarty et al. 1996).

From the above discussion it is evident that a number of factors are related to child mortality in Bangladesh. However, only a few studies have compared the urban-related differentials in child mortality. The present study is therefore an attempt to fill the gap in the area of study.

2.2 Definition of mortality and under five-child mortality.

Mortality is described as that branch of demographic analysis, which deals with the total process of death and the change it, brings about in a population.

In demography, mortality is defined as death. Usually it is believed that end of life is death. But what life birth is not understood in the same way in the entire place. In some countries including Spain and Cuba, a child who expires within 24 hours of his birth is not considered a live birth but is included in abortion. In some countries only such children are considered as live ones who are alive on the day of their registration and not others and in these countries registration of children is permissible even many days after the birth of the child (Raj, 1978).

The World Health Organization (WHO) has defined death by saying “All live born infants should be registered and counted as such irrespective of the period of gestation and if they die at any time following birth they should also be registered and counted as deaths (Raj, 1978).” But all the countries of the world have not accepted this definition of death, due to one reason or the other.

Hauser and Duncan (1978) have defined death by saying, “Death prior to complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy; the death is indicated by the fact that after such separation, the foetus does not breathe or show any other evidence of life, such as beating of the heart pulsation of the umbilical cord or definite movement of voluntary muscles.”

Under five-child mortality:

The term “child mortality often been used to refer to mortality at ages 1 – 4, although sometimes it denotes total mortality under age 5. In this report child mortality refers to the probability of dying between the exact ages 1 and 5. The expression “under age five (5) mortality refers to the probability of dying between birth and the fifth birthday or the exact age five (UN, 1988).

Under five-mortality rate:

Under-five mortality may be defined as the ratio of the number of children who died before completing five years of their life, which occur within a given population during a specified period of time, to the number of live births under five years of age during that specified period.

$$\text{UMR} = \frac{D_0 - 59 \text{ months}}{B} \times 100$$

where, D₀ – 59 month = number of children who died before completing five years of their life.

B = human of live births under five years of age

2.3 Description of the variables

In any research, it is important to know the characteristics of the study or target population. It is also important to examine each variable individually and to decide whether any individual variable is correlated with the considered dependent variable of the study. In this chapter we have introduced the variables those are considered through out the study. Such the selection of variables is based on the availability of information in BDHS 1999 – 2000.

The main concern of this study is to determine the factors affecting child mortality. So we have focused on a large number of variables associated with the child mortality. In this study at least two variables has been considered as main variables for which the association has tested with some demographic and socioeconomic characteristics.

Dependent variable:

In this study the dependent variable is child death. Death is indicated by the fact that the child does not breathe, such as beating of the heart, pulsation of the umbilical cord or definite movement of voluntary muscles.

In this study we have selected the BDHS survey children where about 6,939 children were born in their five year preceding age and the BDHS data referred to the year 1999 – 2000 where 509 children died before reaching their fifth birthday. The urban areas 1059 children born and rural areas 5371 children born in the five year preceding the survey. Our analysis show that the under five mortality rate is 79 deaths per 1,000 live births during the 1995 – 2000 period and 1 in every 13 children died before reaching age 5.

Independent variables:

This study deals with a large number of explanatory variables. For the suitability of this study some variables were selected and extracted from the original BDHS data directly. The selected demographic socio-economic and health related variables used in this study.

The children whose age 1 to 4 years is known as child.

Demographic characteristics:

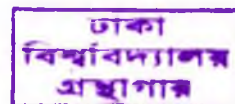
- **Sex of child:** Sex of child is often considered to be an important correlate of child mortality. According to 1999 – 2000 BDHS there are marked differences in mortality between male children and female children (98.1 & 99.3 respectively.) Mortality data compiled by United Nations reveal that in almost all countries male has higher mortality than females (U. N. 1953) So we consider sex as a potential indicator.
- **Mothers' age at birth:** The age structure of mothers at child's birth is very important factor to be considered for examining health care status among children. Children of younger mothers are expected to worse health order than those of older mothers. We recorded the variable into three categories as: less than 20 years, 20 – 34 years and 35 and above years of mother
- **Birth order:** Birth order may be considered as one of the most influencing demographic factors for child mortality. Child health is affected by birth order. Kabir (1984) found in his analysis using Bangladesh Fertility Survey data that the birth order of a child had a very strong effect on survival in the first year of life. By using

BDHS-1999 –2000 data we recorded birth order as 1, 2 – 3, 4 – 5 and 6+.

- **Previous birth interval:** The difference of time between two births is previous birth interval. Al-kabir (1984) found preceding birth interval had the strongest effect while analyzing the influence of community factors on child mortality in rural areas by using Bangladesh Fertility Survey data. It is a continuous variable. Koenig et al. (1990) identified the association between birth interval and child hood mortality. In this study we categorized birth interval of 0 – 23 months as 1st group (here 0 means less than one month) 24 – 47 month as 2nd group and 48 or above months as 3rd group.

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- **Size at birth:** An important of the survival chances of children is the baby's size at the time of birth. From BDHS 1996 – 97 data it is found that birth weight is approximate risk factor for child mortality (Mitra et al. 2000).



Socio-economic Characteristics: -

The socio-economic factors have strong influence on mortality level. The distribution of economic conditions and social benefits are closely related with morbidity patterns of a community. The variables reflecting the picture of social and economical status of a community are termed as socioeconomic variable. In present study same selected socio-economic variable have been discussed:

- **Mother's education:** Mother's education seems to be directly related with the life of a child. (Caldwell 1979). Education is the most influential factor in differentiating the infant and child mortality rates. Caldwell (1979) who found maternal education to be the single most important determinant of child mortality in two Nigerian settings. According to BDHS 1999 – 2000. We have educated categories of : (a) no education (b) primary education (c) secondary and higher.
- **Father's education:** In our society, father is the main earner and decision maker of a family. So his level of education plays an important role to ensure better health care. We have categories education level of father's into three categories (a) no education (b) primary (c) secondary or higher.

- **Father's occupation:** Father's occupation shows as a considerable indicator on mortality level. The unemployed father's hardly provides proper health care facilities to children to survive. An unhygienic environment carrying infectious diseases, which may cause death in the early stage of life. According to BDHS 1999 – 2000 data, we have categorised into four levels: did not work, professional work, agricultural work and others.
- **Religion:** Islam is the predominant religion in Bangladesh. Religion has coded into categories Muslim and non-Muslim. In this study Non - Muslim category includes Hindus, Buddhists and Christians.
- **Mass media exposure** (watches TV & listen to radio): Radio and Television are the most powerful mass media exposure broadcasts some programs concerning public health awareness. Mass media helps to acquire this knowledge and a family can take some measures for the protection of children health.
- **Electricity:** Electricity is an important index of modernity. The household having electric power is associated with low infant and

child mortality. In our study, we have categorized households according to: access to electricity and non-access to electricity.

- **Geographical Variation and Administrative Divisions:** Division is one of the key background variables, which need no justification because the relevance of the geographical variations in health care is obvious. Administrative Division has taken to be a potential factor in our study.

Mitra et al. (1997) found that children live in Sylhet division are somewhat vulnerable to childhood death. Barisal division has the lowest death rate. Sylhet has extremely high mortality rates. Thus mortality representing the administrative divisions that differs significantly among division those covered by BDHS 1999 – 2000 sample i.e. Barisal, Khulna, Chittagoang, Dhaka, Rajshahi and Sylhet.

Health Services:

- **Receive TT injection before and during Pregnancy:** Tetanus is a fatal disease cause by a pathogen transmitted under unhygienic conditions at childbirth. Tetanus injection is given during pregnancy for prevention of tetanus for new borns(BDHS 1999 –

2000). Therefore, there is a correlation between this variable and infant and child mortality. Our attempt is to examine how much risk of children whose mother completed the course of doses.

- **Antenatal care:** Antenatal care is an influential indicator in the variation of under five-child mortality. Maternal health care and antenatal care can improve birth weight of newborns. Babies with low birth weight have a higher risk of mortality (1999 – 2000) BDHS. In this study, Antenatal care has identified into two categories: (a) No visit (b) one or more visits.
- **Access to Toilet:** Type of toilet facility is one of the components of primary health care services.

Davanzo et al (1986) found that babies born to households with sanitary toilet were significantly less likely to die throughout their first year. Martin et al (1983) also analysed the relationship between infant mortality and sanitation facility. In their study, modern toilet facility was found to be strongly and negatively associated with high risk of death. Members of household with no sanitation facility are more likely to experience *diarrhea* diseases due to contamination of drinking and washing water. Moreover good sanitation facility reflects the mother's personal hygiene and the improved socio-economic

condition of the household. It is therefore seems justified to include this variable in this study.

- **Sources of drinking water:** Sources of drinking water is an influential indicator in the variation of infant and child mortality. In rural Bangladesh, mothers of children usually use tube well, tank, river and pond as their source of water for their household work. Tube well is considered to give the most purified water in a rural area of Bangladesh but in urban areas, pipe water is regarded as purified water (BDHS 1999 – 2000). Therefore, the source of drinking water has association with under five children's diseases and mortality, which, this study has examined.

Chapter – three

Research Methodology

3.1. Study population and sources of data:

This study utilizes the data extracted from Bangladesh Demographic and Health Survey, conducted in the year 1999 - 2000 (NIPORT, 2000), a nationally representative survey. The survey was conducted under the National Institute of Population Research and Training (NIPORT) of the ministry of Health and Family welfare. Mitra and Associates, a Bangladeshi Research firm located in Dhaka, implemented the survey. The fieldwork took place from November 1999 to March 2000.

In BDHS 1999 – 2000 survey various information were collected and child health was considered on of the major components of the study. A systematic sample of 10268 households was selected for the study. Every third household was selected for the survey. Moreover, the survey interviewed all ever married women age 10 – 49. The study also interviewed also interviewed all currently married men age 15 – 59 in those selected households. It was expected that the sample world yield interviews with approximately 10,000 ever-married women age between

10 – 49 years and 3,000 currently married men age between 15 – 59 years.

Considering the time and other constraints the survey found 6,393 children born in the five year preceding the survey (BDHS, 1999 – 2000), 509 children died before reaching their fifth birthday. According to the survey findings, the under five mortality rates is 94, that is 94 deaths per 1000 live births during the 1995 – 2000 period. It may be mentioned here that one in every 13 children died before reaching age 5.

3.2. Sample Design:

In order to examine the objectives of the study the data were used from the 1999 – 2000 BDHS survey. A nationally representative, two stage sample was selected from the master sample designed by the Bureau of Statistics for the implementation of the Census, 2001. Bangladesh was divided into 6 administrative divisions, 64 districts and 490 thanas. In rural areas thanas were divided into unions and then mauzas. The urban areas were divided into wards and then mahallas. The master sample consists of 500 primary sampling units. In the rural areas, the primary sampling unit was the mauza, while in urban areas, it was the mahalla. A total of 341 primary sampling units were used for the BDHS survey (99 in urban area and 242 in rural areas)

3.3 Questionnaire: -

Four types of questionnaires were used for the survey: -

1. A households Questionnaire
2. Women's Questionnaire
3. Men's Questionnaire
4. Community Questionnaire

The household questionnaires were used to list all the usual members and division in selected households. Some basic information was collected including represent's age, sex educational attainment and relationship to he head of the household. The main purpose of the household questionnaire was to identify women and men who were eligible for the individual interview. In addition, information was collected about the dwelling such as the source of water, type of toilet facilities, materials used to construct the house and ownership of various consumer goods.

The woman's questionnaire was used to collect information from ever-married women age between 10 – 49 years. These women were asked questions on the following topics.

- Background (age, education, religion etc.)
- Reproductive history.

- Knowledge and use of family planning methods.
- Antenatal and delivery care.
- Breast feeding and weaning practices.
- Vaccinations and health of children under age five.
- Knowledge of HIV and AIDS.

The men's questionnaire was similar to that for women except that it omitted the sections on reproductive history, antenatal and delivery care, breast-feeding, vaccinations and height and weight.

3.4. Methodology:

To conduct this study we have used the BDHS 1999 – 2000 data. We have selected the data set containing information of children. Under five children mortality were identified. To gather information on under five children mortality, important a number of independent variables were selected. Main data file were divided into two stages. One data file contained the mortality of children of rural areas and another file contained the children of urban those who were children mortality under five. Children mortality of urban areas was separated from rural children mortality.

3.5. Data Analysis

The data were analyzed by the cross tabulation to measure the statistical relationship between the dependent and independent variables which does influence the demographic, socio-economic and health care factors with under five children mortality status of Bangladesh. The reasons for using cross tabulation in this study is given below:

Cross Tabulation: The cross tabs procedure forms two way and multi way tables and provides measures of association. A table displaying the number of cases falling into each combination of the categories of two or more categorical variables is known as cross table. Independent variables are specified in the rows and the dependent variables are specified in the columns in this study. The mortality rates of total number of cases are represented in the tables.

Package used for the analysis: All data analysis were done using the SPSS statistical software. Since this study deals with a large data set of 6,939 children born in the five year preceding the survey, 509 children died before reaching their fifth birthday, a suitable technological support was necessary for performing this analysis. The entire analysis was done

by computer which is one of the most effective and useful technological inventions of modern science.

A well-know statistical package SPSS was used to analyze the data. Cross-tables for every variable compared with the availability of under five children mortality rate was calculated. The independent variables were considered as row variables and dependent variables were considered as column variables in the cross tab procedure.

Chapter – four

Analysis and Interpretation

4.1: Trends and levels of child mortality in both rural and urban Bangladesh.

During last three or four decades the mortality level of many developing countries has declined. This decline has resulted from wide spread of modern medicine and medical technologies. Still now the mortality level of developing countries appear to be much higher than those of developed countries. This variation in mortality between developed and developing countries largely depends on the variation of accessibility of this scientific discovery in medical field. In many countries, it is observed that the mortality level is remaining at stagnant condition. Even sometimes a slight increasing trend has observed.

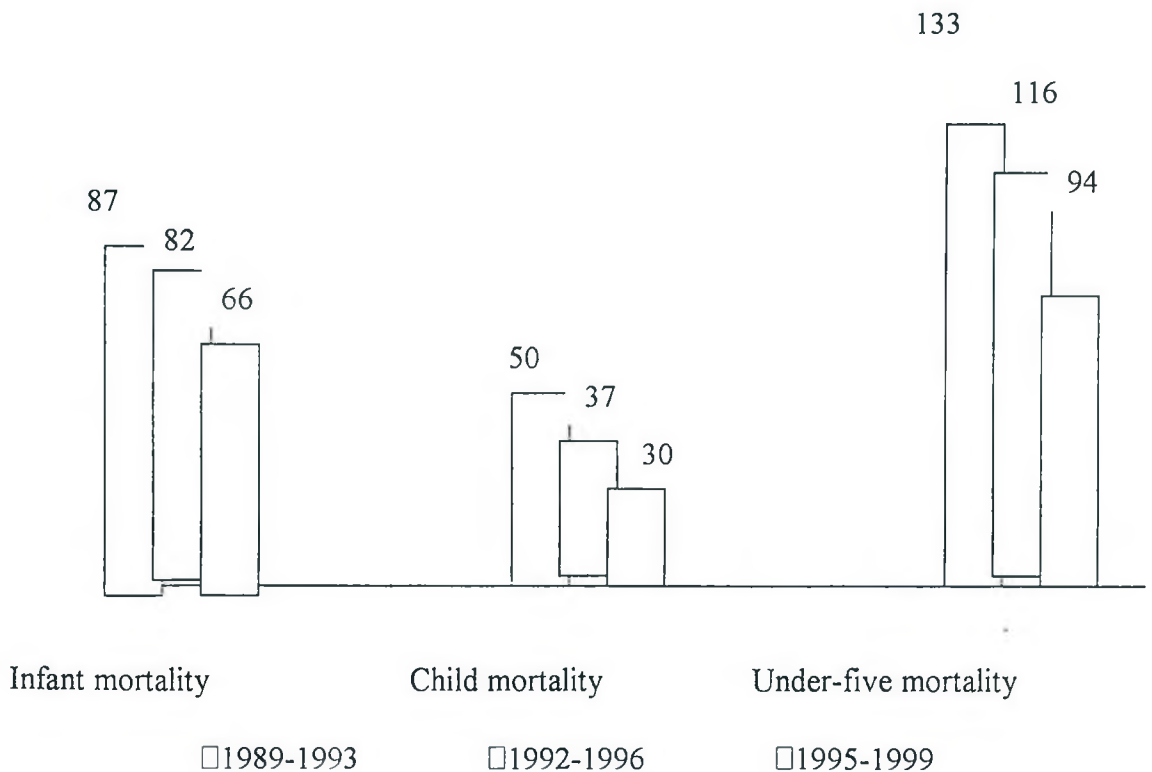
In recent years the mortality levels in Bangladesh has improved much, although the level is still much higher than many developing as well as developed countries (Asian Population Studies series no. 72 UN. 1986, Page –16).

According to the records from survey of BDHS the under five-child mortality rate has declined that is, 133 deaths per 1000 birth in 1993 – 94 to 116 in 1996 – 97 to 94 for the mortality declined over the same period: from 87 in 1993 – 94, to 82 in 1996 – 97 and to 66 in 1999 – 2000.

Despite overall declines in infant and child mortality, one in every fifteen children born during the years before 1999 – 2000, died within the first year of life and one in every 11 children died before reaching ages five (BDHS survey 1999 – 2000, Page – 101)

Figure: 4.1

Trends in infant and childhood mortality 1989 – 1993 to 1995 – 1999



(Source: BDHS 1999- 2000)

The levels and trends in child mortality of Bangladesh (national, rural and urban) are presented below:

Table 4.1:

Child death rate per 1000 children of Ages 1 – 4 years by sex and residence 1990 – 1998.

Year	Residence	Both sex	Male	Female
1990	National	14.2	13.6	14.8
	Urban	8.3	3.5	8.2
	Rural	14.2	14.2	15.3
1991	National	13.6	13.2	14.0
	Urban	8.3	8.2	8.4
	Rural	14.4	14.0	15.0
1992	National	13.2	13.0	13.9
	Urban	8.0	7.9	8.2
	Rural	14.0	13.7	14.8
1993	National	12.6	12.4	12.8
	Urban	8.1	7.9	8.3
	Rural	12.9	12.7	13.5
1994	National	12.1	11.9	12.3
	Urban	7.7	8.0	7.5
	Rural	12.5	12.3	13.0
1995	National	11.8	11.4	12.0
	Urban	7.5	7.7	7.7
	Rural	12.0	11.8	12.3
1997	National	8.2	9.0	9.4
	Urban	5.8	7.2	6.5
	Rural	9.3	9.9	10.7
1998	National	6.3	5.8	6.6
	Urban	5.4	5.0	6.1
	Rural	7.3	7.0	7.5

Source: BBS. 2000

This table shows that, under five child mortality rate has declined in 1990 – 1998. But this decline rate is higher among rural areas than urban areas. According to report on sample vital registration system 1999 – 2001 the trend in child death rate shows by national, rural and urban.

Table 4.2:

Trend in child death rate 1991 – 2001

Years	National	Rural	Urban
1991	13.6	14.4	8.3
1995	12.0	12.3	7.6
1997	8.2	9.3	5.8
1998	6.3	7.3	5.4
1999	5.7	5.9	5.0
2000	4.2	4.5	3.8
2001	4.1	4.4	3.6

Source: Report on sample vital registration system 1999 – 2001 published June: 2003.

The data show that, child death rate is decreasing from 1991 – 2001. Child death rate for National is 4.1, for rural 4.4, and for urban 3.6 in year of 2001. The rate is higher for rural areas in comparison to urban areas.

Administrative division is one of the important factors in Bangladesh because the relevance of the geographical variation in health care is obvious relevance to policy priorities. So differences in mortality by division was also identified.

Table 4.3:

Under five child mortality by Administrative division

Division	Per 1000 of live birth
Khulna	79
Rajshahi	101
Barisal	109
Chittagong	110
Dhaka	115
Sylhet	162

Source: Demographic Health Survey – 2000

Table 4.3: Shows that, under five-child mortality is highest in Sylhet than other division and the Khulna division has the lowest rates childhood mortality (BDHS–2000).

Further evidence of a steady decline in childhood mortality comes from a comparison of these data with rates from the two previous BDHS Surveys (figure- 4.1) The comparison shows that infant child and under five mortality rates for 1999 – 2000 uniformly declined by 18 – 19 percent since 1996 – 1997. However, the decline since 1992 – 1993 survey has been sharper in child mortality rates 24 – 29 percent (BDHS – 2000).

One of the important objectives of the 1999 – 2000 BDHS was to measure levels and trends of mortality among children since infant and child mortality are basic indicators of a country's socio-economic condition and quality of life.

Rates of childhood mortality were also varied over time in relation to changes in epidemiological risks. The extent to which the country's health and social service sectors were able to prevented and mitigated these threats helped to improve the survival (BDHS – 2000).

The recent data indicate a decline of infant child and under five mortality per 1000 live birth in many years in the country. This may be conceived as an impact of number of socio-economic factors such as improved communication system, supply of increased food and cereals in

shortage, improvement of public health, treatment of epidemics and availability of improved health care facilities. The rate of child mortality in country has been decreased and the causes were identified as: massive progress attained in the agro – sector, more females in job sectors, increased the female literacy rate etc.

The empirical findings have proved an evidence of large variation in mortality levels between the division or regions because people of different divisions are not equally exposed to the modern medical facilities and other related facilities. Consequently, the variation in mortality appears to be very high even through the country is very small.

Inspite of the prevalence of modern facilities, under five mortality rates is still high in Bangladesh. Studies from other developing countries have also suggested that the child mortality is more closely associated with maternal education and with other socio-economic factors.

4.2: Differentials of under five-child (1-4 ages) mortality by demographic variables

The rate of infant and child mortality helps us to assess the overall health situation of a society. They may vary between different socio-economic and demographic characteristics. This section deals with differentials under-five child mortality by some selected factors. Mortality rates of under-five children reflect a country's level of socio-economic development and quality of life and also related to health care services and access. The demographic and socio-economic factors have strong influence on mortality levels. Mortality is strongly related with overall development factors of the country. Mortality trends are disaggregated by selected demographic, socio-economic and health related factors as found in the study.

Here the urban-rural differences of under five children mortality have examined. The results are based on child is alive and mother's response as conducted by BDHS Survey 1999 – 2000. The under five children mortality status has examined by sex of child, mothers age at birth, birth order, administrative divisions, religion, level of education of parents occupation of parents and other socio-economic characteristics.

The researcher has analysed the differential of under-five child mortality by demographic, socio-economic and health related characteristics both in urban and rural areas.

Differentials of under five-child mortality by demographic characteristics in urban-rural areas are discussed below:

Demographic variables play an important role in under five mortality. The present study going on to investigate the child mortality differentials by the following demographic factors such as:

- Sex of child
- Birth order
- Previous birth interval
- Size at birth and
- Mother age at birth.

- **Under five child mortality rate by sex of child:**

The related data of under five-child mortality has presented in table 4.4 according to the sex of child by rural - urban differentiation.

Table 4.4.

Under-five child mortality rates by sex of children in both urban and rural areas per 1000 of live birth

Sex of child	Urban	Rural	Total
Male	97.5	98.2	98.1
Female	78.3	103.5	99.3

Source: BDHS survey 1999 – 2000

Table 4.4 shows that the male child mortality rates in both urban and rural areas are 9.75% and 98.2% respectively. On the contrary, the female child mortality rates both in urban-rural areas are 7.8% and 1.03%. It is evident from the data that the female death rate is higher in rural areas than the males. On the other hand, the Male death rate is higher in urban areas than female.

- **Under five-mortality rate by birth order.**

Table 4.5

Mortality rate per 1000 live births at under five-child mortality by birth order in both urban and rural areas:

Birth order	Urban	Rural	Total
1	94.3	121.7	116.4
2 – 3	80.6	88.1	86.7
4 – 5	100.8	101.2	101.2
6 +	85.9	96.6	95.4

Source: BDHS- 1999 – 2000

According to the birth order as presented in table 4.5, it is evident that the child mortality rate (1 and 6+) is higher among rural areas than urban areas.

- **Under five child mortality rate by previous birth interval**

Table 4.6

Mortality rate per 1000 live births at under five child mortality by previous birth interval in both urban and rural areas.

Previous birth interval (month)	Urban	Rural	Total
0 – 23 Month	159.4	452.6	153.7
24 – 47 Month	84.2	86.6	86.3
48 +	43.9	56.7	54.2

Source: BDHS survey – 1999 – 2000

Here, we have categorized the birth interval according to 0 – 23 months as 1st group (0 means less than one months) 24 - 27 months as 2nd group and 48 or above months as 3rd group. According to the findings of previous birth interval, the under five children mortality rate is higher in

rural areas than urban areas and this variation is mostly concentrated in 1st group (0-23 months).

- **Under five-child mortality rate by size at birth.**

Table 4.7

Under five-child mortality rate per 1000 live births by size at birth in both urban and rural areas:

Size at birth	Urban	Rural	Total
Very small	18.5	125.0	108.2
Small than average	71.9	97.1	92.8
Average/ Large	71.2	65.1	66.1
Don't know	100.0	333.3	600.0

Source: BDHS survey, 1999 – 2000

It is evident from the table 4.7 that the under five-child mortality has significant effect with its size at birth. The data clearly indicate the differences between the urban and rural areas by the size at birth. In general, the data indicate that the under-five mortality rate is relatively higher in rural area. The only exception is average/large size where the urban mortality is little list higher than rural mortality.

- Under five child mortality by mother age at birth.

Table 4.8

Under five child mortality per thousand live births by mother age at birth

Mother age at birth (coded)	Urban	Rural	Total
< 20 years	118.7	124.1	123.2
20 - 34 years	77.8	94.0	91.2
35 + years	79.6	70.2	71.4

Source: BDHS 1999 – 2000

Table 4.8 shows that the under five-child mortality rates for mother's age at different age groups. The data clearly indicate that despite the age groups, the under-five mortality is higher in rural areas in comparison to urban area. The only exception is age group 35+ where the urban mortality is higher than rural mortality.

4.3: Differential of under five-child mortality by selected socio-economic characteristics:

The socio-economic condition of people in both the rural and urban community has strong impact on infant and child mortality. The socio economic condition of the people does create differential in access of basic necessities, the fact which has been observed by the experts of international organizations. The findings indicate that the high mortality rate in developing countries is associated with may factors like poverty, ignorance, malnutrition, inadequate quality of housing, lack of personal and environmental hygiene and low level of immunity. Bangladesh, several socio-economic factors have been identified which has strong relation with the infant and child mortality differentials. Among these, the place of residence, mother's education, father's education, parents occupation, religion, watching T.V, listening Radio, access to electricity etc are important. In the subsection, we have examined the mortality differentials by socio-economic determinants.

The socio-economic variables included in this section are:

- Mothers education
- Father's education
- Father's occupation
- Religion

- Watching TV
- Listening radio
- Access to electricity
- Administrative divisions.

• **Under five-child mortality rate by education of mother.**

Table 4.9

Under five child mortality rates per thousand 1000 live birth by mothers education in both urban and rural areas.

Education of mother	Urban	Rural	Total
No education	128.2	116.4	117.9
Primary	91.8	89.9	90.2
Secondary or higher	45.6	70.6	63.3

Source: BDHS survey 1999 – 2000

Mother's education is one of the important factors associated with declining the levels of infant and child mortality. Mother's education seems to be directly related with the health of a child. Hobcraft et.al. (1984) showed that increased levels of mother's education are associated with improved chances of child survival in a wide range in developing countries. Table 4.9 shows that under five-child mortality rate are decreasing with the increasing of mother's education in both urban and

rural areas. The rates for no education primary, secondary or higher education in urban areas are 128.2, 91.8 and 45.6 1000 of live birth respectively. In case of rural areas the rates are 116.4, 89.9 and 70.6 per thousand live births respectively. Therefore, the educational attainment of mother is closely associated with mortality status of children.

- **Under five-child mortality by father's education.**

Table 4.10

Under five-child mortality rate per 1000 live births by father's education in both rural and urban areas.

Father's education	Urban	Rural	Total
No education	122.3	115.8	116.5
Primary	96.8	98.2	98.0
Secondary or higher	62.8	76.7	101.6

(Source: BDHS survey 1999 – 2000)

In our society's, father is the main income earner and decision-maker of a family. So, father's education plays an important role earning income which, in turn assures nutrition, clothing, housing etc. In other words, there is a direct relationship between father's education and access to child health facilities. In this study we have correlated with different

educational attainment with under five mortality. It is evident from the data that the under five-child mortality rate is decreasing with the increasing of father's education in both urban and rural areas. As we know that the main cause of mortality is related to mother's physiological and biological causes but for the infant and child mortality, an inverse relationship between the mortality levels and education was found.

- **Under five child mortality rate by fathers occupation.**

Table 4.11

Under five child mortality rate per 1000 live births by father's occupation in both urban and rural areas.

Father's occupation	Urban	Rural	Total
Did not work	47.6	151.1	137.5
Professional work	57.3	93.2	83.8
Agricultural work	98.2	97.7	97.7
Others	112.3	106.4	107.6

Source: BDHS 1999 – 2000

Father occupation is an important predictor of infant and child mortality. One's occupational status is the reflection of 'the physical

environment his social milieu, educational background, income and life style'. For this reason, occupation is taken as an important index of socio-economic status. Father's occupation determines the economic status, nutrition, housing condition, access to health care facilities, clothing etc of a family. In other words it is related with health and life style of a child in a family.

Therefore, father's occupation may be counted as an important determinant of infant and child mortality in a population. Table 4.11 presents the under five child mortality rates which is much higher in rural areas than urban areas.

- **Under five child mortality rate by religion:**

Table 4.12

Under five child mortality rate per 1000 live births by religion for both urban and rural areas.

Religion	Urban	Rural	Total
Non Muslim	87.4	101.2	98.9
Muslim	90.9	97.4	96.4

BDHS – 1999 – 2000

Table 4.12 shows that the under five children mortality rate for non Muslim among rural areas is higher than urban areas. Under five mortality rate of Muslim among rural areas is higher than urban areas per 1000 live birth respectively.

- **Under five child mortality rate by watching T.V every week.**

Table 4.13

Under five-child mortality rate per 1000 live births by watching T.V every week for both urban and rural areas.

Watches T.V every week	Urban	Rural	Total
No	97.5	107.6	106.8
Yes	83.4	75.4	78.5

BDHS 1999 – 2000

Table, 4.13 shows that under five children mortality is higher among those who do not watch T.V every week both in urban and rural areas. In case of those who watch T.V every week mortality rate is lower both in urban and rural areas (83.4 and 75.4 per thousand live births respectively).

T.V is at present is of the most powerful media. It plays a very strong role for mass media as it broadcasts some programs concerning

public health awareness. If even an illiterate man watches these health-based programs, he will be able to perceive the important role of health and cleanliness. When households listen to T.V at least once a week, the members achieve some degree of awareness relating to health and various kind of diseases. This awareness leads a family to take some measures, which are beneficial for health. In a family where the children get some health facilities, protect them from various diseases and decreases the rate of infant and child mortality.

- **Under five mortality rate by listens to radio every week.**

Table 4.14

Under five child mortality rates per 1000 live births by listens to radio every week for both urban and rural areas.

Listen to radio every week	Urban	Rural	Total
No	98.3	105.8	102.4
Yes	83.5	84.9	87.7

BDHS 1999 – 2000

Radio is also the most introduced mass media. Now a day it has become an instrument of mere a few taka. Even the poorest quarter of the

population is able to manage a radio for its simplest enjoyment. When a household listen to radio once a week gets information concerning health hence achieve some quantity of health knowledge. Acquiring this knowledge a family can take some measures for the benefit of its children's health. In such a family we can assume that the rate of infant mortality reduces to a great extent. It apparent and child mortality rate is lower for the people who listen to radio once a week than those who did not listen.

Table 4.14 shows that under five-child mortality is higher among those who not listen to radio every week for both in urban and rural areas (98.3 and 105.8 per 1000 live births respectively). In case of listen to radio for under five mortality rates are lower (83.5 and 84.9) both in rural and urban areas per 1000 live births respectively.

- **Under five-child mortality by has electricity.**

Table. 4.15
Under five-child mortality rate per 1000 live births by has electricity both in urban and rural areas.

Has electricity	Urban	Rural	Total
No	118.7	107.0	107.7
Yes	78.9	75.2	76.8

BDHS 1999 – 2000

A household having access to electricity in general indicates of higher socio-economic status. The households having access to electricity

is associated with lower infant and child mortality. In this study, the results indicated that better the household sanitation and electricity, the lower the under five child mortality.

Table 4.15 represents the under five-child mortality rate by two categories: household having access to electricity and no access to electricity. The data indicate that the under five child mortality rate in households without access to electricity is higher both in urban (118.7 and 107.0) and rural areas. On the other hand, households having access to electricity have in low under five child mortality (78.9 and 75.2) both for urban and rural areas.

- **Under five child mortality rate by divisions.**

Table 4.16

Under five child mortality rate per 1000 live births by divisions both in urban and rural areas.

Division	Urban	Rural	Total
Barisal	71.4	100.0	96.7
Chittagong	102.0	94.3	95.7
Dhaka	91.8	106.2	102.8
Khulna	47.4	75.4	70.6
Rajshahi	81.6	95.5	94.1
Sylhet	119.4	145.3	143.6

BDHS 1999 – 2000

The infant and child mortality varies from division to division. Table 4.16 shows that the under five children mortality rate is highest (119.4 and 145.3) in Sylhet division both in rural and urban areas in comparison to other divisions. On the other hand, under five-child mortality rate is lowest in Khulna irrespective of urban and rural differences.

4.4. Differentials of under five-child mortality by health related variables.

‘Health for all by the year 2000’ is the target set by the government so that all people get the better access to health services. The policy of health care services include: First, the policy aims to bridge rural and urban gap and to improve quality and coverage of the health care service with a view to providing minimum medical care to all. Second, the policy attempts for effective control of major communicable diseases and expand preventive measures. Third, it aims to improve health and family planning services in a package to all with a view to increasing family welfare and ensuring population control. Fourth, it aims to ensure availability and quality of drugs. Lastly, it strongly emphasize on developing and integrating indigenous and homeopathic systems of medicines with the overall health care services. The government is also

determined to do everything possible for child health care. The achievement of this goal again depends on the facilities available or resources available for this target.

Bangladesh has been experiencing a significant decline in infant and child mortality in recent years. Most of the childhood mortality has declined due to successful public health care interventions. However, the available evidence suggests that such public health interventions had only a limited role. The survey data indicate that the mortality rates had declined in the year 1999-2000, a remarkable achievement by any measure.

The present study has analysed the differentials of under five-child mortality by health care variable in relation to urban and rural areas. Health care factors are also importance in analyzing the under five-child mortality. The variables taken here are:

- TT injection before pregnancy
- TT injection during pregnancy
- Number of antenatal care visits
- Type of Toilet
- Sources of drinking water
- Place of delivery

- Under five child mortality rates by received TT injection before pregnancy.

Table 4.17

Under five child mortality rates by received TT injection before pregnancy in both rural and urban areas.

TT injection before pregnancy	Urban	Rural	Total
No	47.3	57.0	55.3
Yes	31.3	36.3	37.1

BDHS 1999-2000

Table 4.17 indicates that the mothers who received the TT injection before pregnancy had the lowest under five child mortality rate in comparison to those who did not receive the TT injection before pregnancy.

- Under five child mortality rates by received TT injection during pregnancy in both urban and rural areas.

Table 4.18

Under five child mortality rates by received TT injection during pregnancy in both rural and urban areas.

Received TT injection	Urban	Rural	Total
None	57.1	64.1	61.0
One or more	37.1	41.5	41.6

BDHS 1999 – 2000

Table 4.18 presents the information on mothers who received the the TT injection during pregnancy period. It is evident that those who received one or more TT injection have experienced lowest mortality in comparison to those who did not received any TT injection during pregnancy irrespective of urban and rural differentiation.

- **Under five mortality rate by antenatal care.**

Table 4.19

Under five-mortality rate by antenatal care in both urban and rural areas.

Antenatal care	Urban	Rural	Total
No visit/care	109.8	85.4	88.2
One or more visit/care	53.9	46.0	47.5

BDHS- 1999 – 2000

Table 4.19 Shows that under five child mortality rate is higher in case of no visit comparing to one or more visits for antenatal care both in rural and urban areas. The rates in case of no visit are 109.8 and 85.4 (per

1000 live birth) for urban and rural areas. Antenatal care from a trained provider is important to monitor the pregnancy and reduce the risks for the mother and child during pregnancy and at delivery. To be most effective there should be regular antenatal care through out pregnancy.

- **Under five-mortality rate by access to toilets**

Table 4.20

under five mortality rates by type of toilet for both rural and urban areas.

Type of Toilet	Urban	Rural	Total
Hygienic	77.6	89.6	86.8
Unhygienic	116.7	110.6	111.2

BDHS: 1999 – 2000

Hygienic and unhygienic sanitations are important determinants of infant and child mortality. It is evident from various research findings that people who use sanitary or hygienic latrine have lower mortality rate than people who do not use the sanitary latrine irrespective of urban and rural differences.

Table 4.20 indicates that the under five children mortality rate is higher in rural areas especially those who use unhygienic toilet or latrine.

The data further indicate that those who use unhygienic toilets have the highest under child mortality rate in comparison to the respondents who use hygienic toilets. Moreover there is urban-rural differentiation.

- **Under five mortality rate by sources of drinking water**

Table 4.21

Under five child mortality rate by sources of drinking water in both rural and urban areas:

Sources of Drinking Water	Urban	Rural	Total
Tube-well	68.2	95.2	90.2
Others (piped, surface Water etc.)	30.6	24.6	27.6

BDHS: 1999 – 2000

Sources of drinking water is an important indicator in determining the infant and under five-child mortality, one may expect that as the access to pure drinking water increases the child mortality well be decreases. It is evident from the table 4.21 that the child mortality rate is lowest who drink piped water in both urban and rural areas (30.6 and 24.6) than urban areas that drink tube well water (68.2 and 95.2).

- **Under five child mortality by place of delivery.**

Table 4.22

under five child mortality by place of delivery in both urban and rural areas.

Place of delivery	Urban	Rural	Total
At home	74.3	71.7	72.0
Any modern health care centre	49.0	29.0	40.9

BDHS: 1999 – 2000

Table 4.22 shows the interrelation between place of delivery and mortality rate. The data indicate that more the delivery of children at home, more the rate of under five child mortality. The differentials with slight differences in urban and rural environment. In contrast, there is a evidence of less mortality rate for those children who were delivered in any modern health care center.

Under five child situation are:

- Water borne diseases: 10000 children die of water borne disease in city a year.

- Pneumonia and Diarrhoea: A large number of under five children die of pneumonia and Diarrhoea through out the country (Source: Ajker Kagoj, Date: 05 March, 2002).

- Lack of vitamin A supplementation vitamin A deficiency is a leading case of preventable childhood blindness, as well as being a major contributing factor to the severity of several other childhood causes of morbidity and mortality. The BDHS data indicate that 73 percent of children under five had received at last one capsule of vitamin A. The rest 27% percent have not received vitamin A supplementation. So, A large number of children died due to lack of vitamin A.

Chapter – V

Summary and Conclusion

Discussion & Conclusion

Infant and child mortality is powerful indicators to assess overall health situation of a society. They may vary between different socioeconomic strata. These variations may be employed in explaining differentials, in deciding priorities for child health action in designing intervention programs and in assessment and monitoring of child health problems and programs. Socioeconomic factors have strong influence on mortality levels. Besides a minimum number of public health programs such as immunization better water supplies and improved sanitation can reduce mortality drastically.

This study analyzes the factors affecting mortality among under five children of Bangladesh. The data of Bangladesh Demographic and Health Survey (BDHS 1999-2000) has used for analysis of differential impact of some demographic, socio-economic and health factors on survival status of children under age five. The findings indicate that the demographic factors are more important in the early stage of development, and then socio-economic and environmental factors gain relative importance as

development proceeds.

Our main objective was to identify the risk factors of mortality among children under five years of age in both rural and urban areas. Important risk factors such as demographic, socio-economic, and health related factors have been identified as explanatory variables on the basis of collected data.

The purpose of this chapter is to summarize some general and specific findings found in earlier chapter and to draw some conclusions.

5.1. Discussion

Demographic factors:

Among the demographic factors sex of child, birth order, previous birth interval, size at birth, mother's age at birth of child appeared to be the significant differentials of under five-child mortality.

Sex of the child is one of the important demographic characteristics. Some research findings showed that the females had higher mortality than the males at most ages except during the first months of life. In this analysis we have observed that under five-child mortality is higher in males than the female of urban areas. But the

female mortality is higher than male in rural areas. The birth order is highly significant of under five mortality in rural areas. The under five-child mortality for birth order 1 and 6 above is higher among rural areas than urban areas. The risk of death is very high for 4-5 birth orders among both areas.

Previous birth interval is significant association under five mortality. The timing of successive births has a powerful effect on the survival chances of children in Bangladesh. This study found that under five mortality rate is higher at short birth intervals than at long birth intervals. It is the highest at an interval of 0-23 months and lowest at an interval of 48 months above among rural and urban areas.

Size at birth emerged as an important risk factor for under five mortality. Children who are very small in size at birth have higher mortality risk than children of average or larger birth size. The reason may be that children who are very small in size at birth are suffered from physiological problems, chronic diseases and malnutrition which are the causes of death.

Another most important factor, mothers age at birth is highly related under five mortality. The higher mortality of mothers less than 20 years for both urban and rural areas are related to several causes.

Unwanted pregnancies, lack of knowledge and experience in child care threaten the survival of children born to younger mothers.

Socio-economic factors or differentials

Like others developing countries, Bangladesh shares with the problems of poor socio-economic conditions. In this study differential impact of some socio-economic characteristics on child mortality have been investigated by using data from BDHS 1999-2000. These are mother's education, father's education, father's occupation, regional variation, religion, listen to radio, watches TV every week, electricity etc. Mothers' educational level is most significant indicator of child mortality. Educated mother takes proper care of their children. Children born to illiterate mothers, their mortality rate is higher than higher educated mother in both rural and urban areas. Under five-child mortality rate is decreasing with the increasing of mothers' education for both in rural and urban areas. Educational attainment of mother is closely associated with health status of children. Education has become more widespread over time in Bangladesh. Despite this improvement, Levels of educational attainment remained low in Bangladesh.

Education plays an important role in diffusing knowledge of medical and sanitary requirements. This knowledge can range from simple elements of child care involving cleanliness and sterilization to

more complex knowledge of what drugs and vaccination required and the ability to find and use services. In most societies, it is the mother who is directly involved in the care of her young children and mother's education's is therefore, more likely to have direct effect on survival.

Father's education is most significance of child mortality in urban and rural areas. The present study, under five-mortality rate is decreasing with the increasing of father's education for both in urban and rural areas. Educated fathers takes proper care of their children's health status. Father's occupation has a potential affect on childhood mortality. Father's occupation shows significant relationship with under five mortality, especially in urban areas. Death rate for under five is high to children born to fathers engaged in agricultural profession. The lowest mortality rate belongs to children of professional fathers and the highest for children of non-working fathers. The reason may be that unemployed fathers cannot provide proper nutrition and health care facilities to children.

Child mortality is highest in Sylhet among the six administrative divisions in both urban and rural areas. Among the Muslims child mortality is low than non-Muslim in both urban and rural areas.

Radio and Television (TV) are the most introduced and powerful media. When a house listens to radio and watches television at least once a week, achieve some degree of awareness relating to health and various kinds of disease. This awareness leads a family to take some measures, which are beneficial for health. In such a family the children gets some health facilities, which protect them from various diseases, and decreases the rate of under five-child mortality. According to BDHS data we can assume that a family watch and listen to television and radio at least once a week is conscious about the health of its children for which the rate of infant and child mortality is lower in both urban and rural areas.

Access to electricity is related to reduction of overall levels of child mortality. Household with electricity are associated with lower child mortality for both urban and rural areas.

Health care facilities

In the health care section, antenatal care visits, toilet facilities, TT injections during pregnancy, sources of drinking water etc.

Antenatal Care (ANC) Is, undoubtedly an important component of the safe delivery. It is higher significant effect at mortality rate for both in

urban and rural areas. An early report of ANC visits can reduce the mortality rates. ANC visit is an influential indicator in the variation of under five mortality. The under five mortality are lower 22.0 and 17.9 per thousand among mothers who went for ANC visits during pregnancy for both urban and rural areas.

Thus, children whose mothers take antenatal care before birth to any recommended health care centre have lower mortality compared to children whose mothers do not take any ANC. Without any ANC visits under five child mortality rate is higher (109.8 and 85.4) for both urban and rural areas. Tetanus toxoid (TT) vaccination during pregnancy and before pregnancy able to reduce under five mortality. According to BDHS TT vaccination taken during pregnancy under five mortality rates is lower (42.1 and 41.6) deaths per thousand live births for both rural and urban areas.

This study shows that better source of drinking water reduces the child mortality. Children living in households getting their drinking water from a piped source have much lower mortality risks than children getting their water from tube wells or other sources for both urban and rural areas.

5.2. Major Findings:

- A major observation of this study is mothers' age at birth is an important factor for childhood mortality. Mothers, who are aged below 20, give birth to children with the lowest survival potentialities. This is true for both urban and rural areas under reference.

- Another important finding of this study is that the higher the maternal education level, the lower is the childhood death rate and vice-versa. Even a child born to a mother with simple primary education has a higher chance of survival comparing to a child born to an illiterate mother for both urban and rural areas.

- Interval between two births has been the most important factor affecting childhood death. The shorter the gap-period between two births by a mother, the higher is the death rate for under five mortality. An interval less or shorter than 24 months between two births has been responsible for the highest death rate in both urban and rural areas.

- Childhood mortality rate at first and sixth birth order is higher. For under five mortality a child born at 4 - 5 birth order death rate is

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- Childhood mortality rate at first and sixth birth order is higher. For under five mortality a child born at 4 - 5 birth order death rate is

recorded to 100.8 and 101.2 per thousand in both urban and rural areas.

- This study reveals a sort of significant relationship between under five mortality and administrative division, Among six divisions, Sylhet records the highest death rates for under five death.

- Father's working status is also related in under five-child mortality. This study reveals that, under five children mortality rates are much higher in rural areas than urban areas for not working fathers. Under five-child mortality rates is lower in rural areas for agricultural and labour working father.

- Better sanitation condition reduces the child mortality. Present study found that respondents who use hygienic toilet have the lowest under five child mortality rate than who use unhygienic toilet for both urban and rural areas.

- Awareness for and availability of antenatal care and services also has a tremendous affect on childhood death rates. Timely taking ante-tetanus vaccination and regular ANC visits may reduce childhood mortality.

- Radio and television plays a vital and most important role to make the people aware concerning among public related affairs like health education etc. When the members of a household listen radio or television at least once week achieve some degree of awareness relating to health and various kinds of disease. This study shows that most of the households respondents who do not listen to radio or television at least once a week for both urban and rural areas their child mortality is high.

- Better sources of drinking water reduce child mortality. In rural Bangladesh, Families usually use tube well, river and pond as their source of water for their household work. Tube well is considered to give the most purified water in rural areas. But in urban areas, pipe water is regarded as purified water. In this study we found that most of the families who respondent their sources of drinking water are not purified or piped/ tube well. For this child mortality is higher in urban and rural Bangladesh.

5.3. Conclusion

Bangladesh a small country of 147,570 square kilometers and more than 120 million people is known as a developing country from her birth period. Like other developing countries it shares with the problems of poor-economic conditions, imbalance of demographic situation, illiteracy, shortage of trained, personal and high pre-valance of infections and preventable disease.

In urban and rural Bangladesh, many children are as increased risk of death due to the environmental conditions and the housing.

From many study it is found that under five children death rate is higher in rural areas than urban areas. But in this study, affected by many variables, the death rate is higher in urban areas than rural areas. It may be happened, because all kinds of government and non-government organization are working hardly to reduce death rate in rural areas.

The policy implications of this findings are that to increase child survival, greater attention must be given to the consequence of rapid, specifically the provision of sanitation and water supply services.

Although this study suggests some of the important determinants of child mortality for both urban and rural areas in Bangladesh, there is also further investigation using appropriate methodology to estimate the actual effect of demographic, socio-economic, environmental and health related factors on mortality among children under age five.

5.4. Policy implication and Recommendations:

Based on the study findings some policy implications, comments and recommendations have been suggested that would help the government, development partners, individual researcher and policy makers to take initiatives to promote child health and survival status.

- Births should be reduced to very young <20 years mothers for postponement of premature birth, unwanted pregnancies and to older mothers 35 years to avoid pregnancy complications due to reductions in reproductive capacity and other biological factors to higher pregnancy order.
- Higher order births should be decreased. Children with higher birth order have a higher probability of death because of the effect of repeated pregnancies in depleting a women's resources and straining her reproductive system. These effects are likely to be

compounded by the fact that higher parity women are more likely to have closely spaced births.

- The present study depicts that mortality among the under five-child mortality rate of educated mother's and fathers, especially educated mother is lower than that of illiterate mothers. So it can be suggested that policy maker should take an effective program for giving a general idea of child-care among illiterate mothers. Educational facilities should be increased to extend illiterate mothers to every doorstep by and through formal and informal institutions. Because, education will create awareness about marriage and child bearing age interval between births, antenatal health care and other socioeconomic factors responsible for high childhood death rates.

- Antenatal care (ANC) and early timing of ANC visits can improve the birth outcome and also can improve the survival status of children. It is therefore essential to ensure maternal health service for all mothers. Antenatal care facilities should be made available to all expectant mothers free of cost or at affordable costing both urban and rural areas, especially in rural Bangladesh.

- Efforts of health care services in Sylhet division should be intensified, as mortality rate are significantly high in Sylhet division as compared with other divisions.

- Mass-media promotion program should be taken to understand about diseases and encourage of taking treatment. Mass media like television and radio have a tremendous influence on mother's awareness about disease, hygiene and child care, which will reduce child mortality.

- Toilet facility should be develop and encourage people to build hygienic toilet at their home.

- Pure drinking water in the household should be ascertained so that children do not suffer from infectious diseases liked diarrhea. So Government should take necessary steps in this regard to undertake necessary steps for child survival.

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