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Factors Influencing Infant and Child Mortality: A Case Study of Cumilla District, Bangladesh

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Abstract

Infant and Child wellbeing is an approachable sign of enlargement and often reflects a country's excellence of living. The main purpose of the current study is to determine and analyze the factors which highly influence infant and child mortality. To complete the analysis this study conducted a questionnaire and interview method for data collections. The major findings of this study are the infant and child mortality used as independent variables and household income, education level of the mother, and sanitation used as independent variables. Whatever, the estimated result shows the level of income works to reduce infant and child mortality by ensuring the social standard. The sanitation facilities and mother education influence to reduce infant and child mortality, maternal health also has a significant impact. The current study works as the first effort to investigate the Influential factors of infant and child mortality in this study area.

1. Introduction

Children are regarded as a reflection of the future. Healthy children reflect a healthy nation. To achieve productive manpower in 2021, it is essential to secure a better life for children by increasing their survival rate along with the development of pediatric necessities (CPD, 2007). Infant Mortality Rate is defined as the chances of live births dying before reaching one year at age. It is further sectioned as early neonatal period, late neonatal period, and postneonatal period which consecutively ascertained as below 7 days, 7-28 days and 28-36 days. It is one of the most effective

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and delicate assessments for the health and socio-economic status of a native area. Child mortality, a referred chance of dying before reaching 5 years at age after birth, encloses neonatal and infant death. The world average was going downwards about 5.1% in 2021 from 8.7% in 1990. In 2012, 6.6 million, in 2011, 6.9 million children under five died.

Among various targets of Millennium Development Goals, child mortality rate reduction by two thirds in the year of 1990-2015 has been achieved and regarded as one of the most significant ones (UNICEF, 2006). IMR is counted as an exquisite marker demonstrating how far the act has moved forward towards its goal. Following with SVRS, the infant mortality rate in Bangladesh shows 94 per thousand newborns in 1990. This rate went downwards by 67 percent in 1991-2015. In this manner, the MDG (Indicator 14 of Target 4 under Goal 4) target is about 31 per thousand live births where the original decreasing rate up to 2020 is about 43.2%. So most probably, reaching the target will be possible by two years if this pace of reduction continues (Planning Commission, GoB (n.d.). Development of child health to enhance the quality of life is one of the most significant challenges while combating poverty (Hillemeier et al., 2003). Lower developing countries offer a wide range of policy options encompassing child mortality showing potentiality to improve child health.

The problem statement is that the Cumilla district is one of the populated cities in Bangladesh. Total populations at present are 5387,288 where the total area is 3146.30 km. The infant mortality rate at present is 33.6 and the child mortality rate is 41.5 at every 1000 living births (GDL, 2019). The major concern of this study is to analyze the influential factors behind the rate of infant mortality and child mortality. This paper analyses the factors influencing infant and child mortality in the selected study area. Besides a decline in children and the infant mortality rate is showing recently (Wang et al., 2014; Mondal et al., 2009; Amin and Li, 1997; Rahman and Majumder, 2020). The liable factors for reducing the mortality rate for both children and infants should be identified to potentiate the interventions. Children in Bangladesh have a severe lacking in finding scope and opportunities along with malnutrition problems (Suri, 2019; Islam et al., 2020). One-third of newborns are underweighted and about 70% of all under-five at age babies are malnourished (Roy et al., 1997; Roy et al., 2008; Nahar et al., 2012). But these days, the whole situation has been changing with the help of progressive medical facilities. That's why there has a stronghold over mortality. Mortality differentials are significantly originate in the residential area having the benefits of relatively approachable and receivable health services along with socio-economic factors like parents' education, occupation, family income, economic condition, etc. In consequence, there are some important selection issues that need to be considered which indicate future research and create new research scope.

In the next section, 2 presents a literature review, in section 3 present the objectives. The methodology of this study is present in section 4 and section 5 nearby the result analysis. In section 6 presents the major findings and recommendations and finally draw a summary and conclusion in section 7.

2. Material and Method

From the past to the present, numerous studies have speculated on the determinants of infant and child mortality. Caldwell (1994), Rammohan and Smith (2007), and Diamond (1995) have caught on an absolute connection between miscellaneous factors and infant-child mortality. Following various survey and census data analysis, miscellaneous socio-economic factors, demographic factors exhibit an ultimate relevance with infant child mortality. A report of the Planning Commission, Government of Bangladesh (GoB), and UNDP Bangladesh has displayed that mothers aged less than 18 years or over 34 years having delivery are at the highest risk. The live births of young or overly elder mothers have shown a tendency toward a high infant mortality rate (Czeizel,1988; Sullivan et al., 1994; Adhikari and Sawangdee, 2011). Birth spacing is negatively

associated with the IMR whereas birth order exposes positive results. The number of children, children's gender, residence place, etc has also an influence on infant child mortality rate. Stephen (1989) found an equivalent result in a study in Lesotho but the gender of the live births was a faint indicator of that.

Mondal et al. (2009) reveal the multivariate analysis accompanied by several socio-economic, demographic and health-related variables elicits the immunity, breastfeeding, birth interval. The mothers' age while giving birth is the most indicatory predictor of neonates and child mortality. Again, the child mortality risk is about 78.20% lesser in an immunized child against the child who never got immunization facility. Neonates having 36 months of the birth interval has 57.70% lower mortality risk than below 18 months. Educative parents, sanitary latrine facilities, and healthcare facilities work as indicative foreteller till neonatal and childhood periods. But the father's education is more important in the postneonatal period. For instance, about 31.40% lower in the case of primary level educated women and 52.30% less in secondary and higher level educated women results are found against uneducated ones (Dale, 2020; Anney et al., 2020). Household having a hygienic conditioned toilet facility displays a 32% lower risk. Similarly, female education and wider access to healthcare benefits have lesser risks.

Caldwell (1994), Ware, (1984), Desai and Alva, (1998) suggest that an educated father with his greater knowledge and affluence increases the child survival rate. Educated parents have a better ability to protect their children from various inversions such as military conflict, natural disasters, and socio-physical commotions. Educated parents are most likely to have better strategies and policies to cope up with this crisis (Shaik, 1984). Mother's independent avenues and father's education give a joint impact on the survival rate in such catastrophes. Rammohan and Smith (2007) found that male children have lesser chances of survival in their first year. On conditional survival cases, they have better height-for-age Z-scores. In the aspect of the policy, family properties and public healthcare activities such as vaccinations elicit as momentous predictors of better survival and nutritional outcomes.

Other studies are Hobcraft et al. (1985), Forste (1994), Gyimah (2002) has attempted to look into the effective determinants which have an influence on some biological and demographic indicators. Omariba et al. (2007) have upheld the demographic factors manifestations. Miscellaneous literature reviews suggest a few influencing factors regarding infant mortality. However, these determinants level of impact is going downwards due to day-to-day growing awareness among people.

The current study conducted to measure factors influencing infant and child mortality in Cumilla district Bangladesh. This study is the first attempt to investigate this subject and matter in the study area. That is why this study will play an important pro-vital role to add unique values in the existing literature. The objective of the perusal is to explore the impression of factors that have an impact on infant and child mortality in Cumilla district, Bangladesh. The specific objectives are: (1) To investigate the multidimensional influencing blueprint of infant and child mortality with the consideration of socio-economic, health-related and demographic characteristics; (2) To investigate the real impact scenario of different factors on infant and child mortality, and (3) To derive a few recommendations from the basic study findings.

Methodology

Cumilla district underlying in the Chittagong division holding a vast area of 3085.17 sq. km is encompassed by Brahmanbaria and Narayanganj districts on the northern side, The southern part consists of Noakhali and Feni districts, Tripura (state of India) on the east, Munshiganj and Chandpur districts on the west. Annually average city temperature range is from 34.3°C to 12.7°C; and rainfall is 2551 mm. Meghna, Gumti, and Dakota are the main flowing rivers. Cumilla City

standing on the Gumti Riverbank was formed in 2011. The Cumilla district has a distinct area of 3,146.30 sq km and the total population is 5,387,288. The City Corporation of this district consisting of 27 wards with a population of 8 lakh where male 52.56% and female 47.44%. About 60.3% of people are literate in the town (Banglapedia, 2019). We thought that we could have the data variation & comfortness from the selected region. That's why we choose 10 wards- Shasongacha (3 no. ward), Thakurpara (6 no. ward), Bagichagaon(9 no. ward), Kandirpar (10 and 11 no. ward), Chackbazar (16 no. Ward), Jangalia (22 no. ward), Changing (23 no. ward), Kotbari (24 no. ward), Nurpur (18 no. ward).

The study was conducted in 10 wards of the Cumilla district. That is purposively selected considering time and resource limitations for this study. Simple random sampling methods were adopted to collect data. Both primary and secondary data were used to collect information. The primary data in this cram has been collected through an interview and questionnaire methods from general people. Quantity and qualitative data include village transect (geographical and physical characteristics), resource mapping (social/natural resources identification), social mapping (village/household characteristics), problem ranking (priorities and prospects), Venn diagram (social sector program identification), and household survey (individual household and related information). The secondary sources include study documents, BBS, Research documents, and other publications. The fieldwork was commenced within 20 days in mid-2019.

Development of Data Collection Tools

With a view to collecting primary data from the study sites, questionnaires and in-depth interviews were distinctly developed for collecting data. A number of issues including health disorders, family information, income source, health care facilities for the mother, educational qualification of the mother, sources of water supply and sanitation, etc. were strengthened in not only the questionnaire but also in the interview method.

Methods of Primary Data Collection

Two distinct methods were run to obtain primary data. These are as follows. First, Questionnaire survey, Second, In-depth interview. The questionnaire and interview survey schemed was to assemble all the related communications and data in a much structural arrangement. Focusing on open-ended judgments and diverse points of view of the targeted study groups, the other methods including in-depth interviews supply exquisite data. Mainly questionnaire and interview survey are as follows. The questionnaire and interview survey was carried out in households in Cumilla. The total number of samples was 50. Among 27 wards of the city corporations, 10 wards were selected. In the case of infant mortality, we survey 6, 9,10,23,24 no. ward and in case of child mortality rate we survey 3,11,16,18 and 22 no. ward. From each ward, we selected 5 households. The priority of responding personnel was consecutively the head of the family, the elder male/female, or any family member in the presence of the whole household. In some cases, they prefer discussing altogether before responding.

Limitations of the Study

Among the obstacles of the work, one of the most obstructive ones was the time deficiency and shortage of relevant information and data collection on some of the weighty matters particularly in infant and child mortality in the study area. The study aimed to collect infant and child mortality data on factors influencing diseases but a couple of diseases like dengue, malaria, etc related data was not easily obtainable at the Cumilla, Bangladesh. There are some limitations to the study.

i. The collection of primary data of a village could not exact information on influencing factors on child mortality in Bangladesh under the Sustainable Development Goal (SDG).
ii. Some of the data was missing, because responded time not available.
iii. The study is based on primary data, the collection of such data very difficult.
iv. There are also many factors related to the child mortality of Bangladesh which does not cover by this study.
v. Data from different sources on the identical issues are not matched, because of the Lack of information.

Analytical Technique: Regression Models

The regression model is developed based on the two several cases like as infant mortality and child mortality. The estimated model developed by using infant mortality and child mortality as a dependent variable where household income, mother education, and sanitation used as independent variables. The functional form is present in equations 1 and 2.

$$IM = \int (\text{Income, Mother Education, Sanitation}) \quad (1)$$

$$CM = \int (\text{Income, Mother Education, Sanitation}) \quad (2)$$

The model employed in the study includes the following.

$$I = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + U_i \quad (3)$$

$$CM_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + U_i \quad (4)$$

That is, $IM = \beta 0 + \beta_1$ income + $\beta 2$ mother education + β_3 sanitation + U_i

$CM_i = \beta 0 + \beta_1$ income + $\beta 2$ mother education + β_3 sanitation + U_i

Where IM is infant mortality, CM is Child mortality, X_1 presents household Income, X_2 presents mother education, X_3 = sanitation, and U is the stochastic error term where $\beta 1$, $\beta 2$, and β_3 = slope coefficient of the regression equation

Statistical Package for the Social Science (SPSS) is used for data analysis and result estimations of this study. After the completion of data entry, different tests including analysis are made for this study. Variable was translated into a percentage, average, median, mode, and range. Regression for empirical result slope coefficients, t stat, and p values was found out for taken verdict whether the result is significant or not where r^2 is the goodness of fitted quality of the model.

3. Result and Discussion

To analyze the influential factors of infant mortality and child mortality, the current study structured two several broad sections are discussed in this section. The first one is socio-economic factors and the second one is socio-demographic factors.

3.1 Socio-economic Factors

Mother Education

Education has long been recognized as a type of pointer of human resources and social development. It is beloved that education has a positive impact on people's behavior and access to

easy information to find out lacking and developed. On the other hand, the literacy of women has a major impact on their reproductive, productive, and community activated. Mother education has an affirmative impact on climate change on child mortality in Bangladesh, the first and most important issue.

Table 1: Mother Education in the Case of Infant Mortality

	Frequency	Percent
SSC	3	12.0
HSC	4	16.0
BA	3	12.0
MBBS	1	4.0
Below SSC	7	28.0
Illiterate	7	28.0
Total	25	100.0

Table 2: Mother Education the in Case of Child Mortality

	Frequency	*Percent*
Primary education	*2*	*8.0*
JSC	*1*	*4.0*
SSC	*6*	*24.0*
HSC	*5*	*20.0*
Above HSC	*10*	*40.0*
Illiterate	*1*	*4.0*
Total	*25*	*100.0*

One of the initial needs of a human being is education. Education works as the backbone of a nation. It is necessary to know that educated mothers only can give educated nations. The current study found that about 28% of females who had education up to below SSC in case of infant mortality (IM) and 8% of child mortality (CM) had education up to the primary level in the study area. This group of Secondary school certificate (SSC) includes females who have attended SSC in infant cases is 12% and 24% for child mortality cases respectively. The female who has passed higher secondary certificates (HSC) and students attending 11th and 12th grade of schooling have been included in this group. Data revealed that out of 25 females, 16% in the case of IM, and 20% in the case of CM. This study found that that 28% of respondents who have no education in the case of IM survey and 4% of CM survey. No schooling of the mother is a serious problem because it has a pessimistic upshot on the infant and child mortality rate of an area lastly of a country. So there is an awful effect of mother education on infant and child mortality.

Mother Occupation

Occupation is an important factor in the measurement of the socio-economic status of any society. Table-3 shows the main occupation of the respondents according to study areas. It is observed that most of the respondents are housewives. It is about 48% of respondents as housewives, 12 % are day labor, service holder, and teacher is 8% in the matter of infant mortality.

Table 3: Mother Occupation in the Case of Infant Mortality

Occupation	*Frequency*	*Percent*
Service holder	*2*	*8.0*
Business	*1*	*4.0*
Doctor	*1*	*4.0*
Teacher	*2*	*8.0*
Day laborer	*3*	*12.0*
Housewife	*12*	*48.0*
Others	*3*	*12.0*
Student	*1*	*4.0*
Total	*25*	*100.0*

Table 4: Mother Occupation in Case of Child Mortality

Occupation	*Frequency*	*Percent*
Housewife	*8*	*32.0*
Business	*2*	*8.0*
Government job	*4*	*16.0*
Private job	*5*	*20.0*
Day laborers	*2*	*8.0*
Student	*2*	*8.0*
Other	*2*	*8.0*
Total	*25*	*100.0*

Table-4 explains that the lowest numbers of respondents are involved in a business it takes 8% of respondents. The household, day labor, and private jobholder are 32%, 8%, and 16% respectively. One appealing thing is that due to intervention of the co-operative approach through infant and child mortality rate, diversification of occupation to the members was pronounced and agriculture as an occupation did not enjoy due importance to the respondents.

Average monthly income

From the selected wards, this study observed various kinds of income levels. From the collective data, we divided the income levels into five groups (IM) and six groups (CM) for the total number of respondents. From Table-5, in case of IM's highest income group is 6000-10000 and the lowest group is 16000-30000 where the respondent does not have the ability to get a sustainable amount of income.

Table 5: Family Income (tk) in Case of Infant Mortality

Amount BDT	*Frequency*	*Percent*

One to five thousand	*7*	*28.0*
Six to ten thousand	*8*	*32.0*
Eleven to fifteen thousand	*6*	*24.0*
Sixteen to thirty thousand	*1*	*4.0*
Above thirty thousand	*3*	*12.0*
Total	*25*	*100.0*

Table 6: Family Income (tk) *in Case of Infant Mortality*

Amount BDT	*Frequency*	*Percent*
One to five thousand	*8*	*32.0*
Six to ten thousand	*10*	*46.0*
Eleven to fifteen thousand	*2*	*8.0*
Sixteen to thirty thousand	*3*	*12.0*
Above thirty thousand	*2*	*8.0*
Total	*25*	*100.0*

Table-6 presents that in the case of CM highest income group is 6000-10000 and the lowest group is above 30000 BDT. It is about 325 respondents who have substantially lower-income to maintain their basic needs. Income increases tremendously in the last few years in Bangladesh. The study suggests that the impact of infant and child mortality in this study area has significantly reduced by increasing the income level. The similar statement was given by (Huque et al., 2012; Zaman et al., 2019).

Sanitation

Proper sanitary disposal of human excreta through using sanitary latrine can effectively reduce many fecal transmitted diseases like gastrointestinal and parasitic infections. Table-7 and 8 demonstrate that 36% (IM) and 48% (CM) households were better using the sanitary toilets.

Table 7: Sanitation facilities in Case of Infant Mortality

	Frequency	*Percent*
Septic tank/modern toilet	*9*	*36.0*
Slab latrine	*8*	*32.0*
Hanging latrine	*6*	*24.0*
Other	*2*	*8.0*
Total	*25*	*100.0*

Table 8: Sanitation Facilities in Case of Child Mortality

	Frequency	*Percent*
Septic tank/modern toilet	*12*	*48.0*
Slab latrine	*10*	*40.0*
Hanging latrine	*2*	*8.0*

Other	*1*	*4.0*
Total	*25*	*100.0*

It is almost 8% of the respondents use hanging latrine in the study area. Those kinds of households without safe toilet facilities create vulnerability for infant and child health (Trussell and Hammerslough, 1983; Hong, 2006)

3.2 Socio-demographic Factors

Maternal Health Treatment

Maternal health of treatment is an important factor in the measurement of the impact on infant and child mortality of any society. Table-9 presents that 24% of respondents are taken treatment from local doctors. 12% of respondents taken Ayurvedic treatment and the highest frequency shows that 40% of respondents taken treatment from the hospital. It is necessary to increase the hospital facilities, antenatal care and postnatal care (Islam et al., 2006; Shahjahan et al., 2012)

Table 9: Treatment During Pregnancy in the Case of Infant Mortality

	Frequency	*Percent*
Local doctor	*6*	*24.0*
Homeopathic	*3*	*12.0*
Ayurvedic	*3*	*12.0*
Hospital	*10*	*40.0*
MBBS doctor(non-hospital)	*2*	*8.0*
Total	*24*	*96.0*
Missing System	*1*	*4.0*
Total	*25*	*100.0*

Table 10: Where Delivered (New Born Child) in Case of Child Mortality

	Frequency	*Percent*
House	*8*	*32.0*
Hospital	*15*	*60.0*
Total	*23*	*92.0*
Missing System	*2*	*8.0*
Total	*25*	*100.0*

From Table-10, it is clear that the percentage of mother health treatment increasing from the local doctor to hospital treatment. It is observed that 60% of the respondents are taking treatment from hospitals in this area. About 32% of respondents take treatment with stay home in case of child mortality. Paul and Rumsey (2002) demonstrated that the quality of child and mother health can be ensured by sufficient hospital treatment facilities.

Sources of Water

Source of water is a significant factor in infant and child health (Galiani et al., 2005). From the questionnaire and in-depth interview, the result shows the significance of water in this study area. Table-11 demonstrate that About 56% of respondent collects their useable and drinking water from deep tube-well and 36% collect from the general tube well. 8% collect from other water supplier's sources whatever Table 12 presents the sources of water in the matter of child mortality in studied areas.

Table11: Source of Water in the Case of Infant Mortality

	Frequency	*Percent*
Deep tube-well	*14*	*56.0*
Tube-well	*9*	*36.0*
Others	*2*	*8.0*
Total	*25*	*100.0*

Table12: Source of Water in the Case of Child Mortality

	Frequency	*Percent*
Pond	*3*	*12.0*
Deep tube-well	*9*	*36.0*
Tube-well	*7*	*28.0*
Other	*6*	*24.0*
Total	*25*	*100.0*

Regression Results Analysis

The regression results on Infant Mortality (IM) and Child Mortality (CM_i), Income(X_1), and Mother Education (X_2), sanitation (X_3), for the sample of our study area the data presented in the table is presented below.

Regression analysis for infant mortality present in equation-1.

$$I = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + U_i \qquad (5)$$

Table 13: Estimated Result for Infant Mortality

		Unstandardized Coefficients		*Standardized Coefficients*		
Model	*Coefficients*	*B*	*Std. Error*	*Beta*	*T*	*Sig. pro.*
1	*(Constant)*	*2.569*	*.386*		*6.657*	*.000*
	family income	*0.043*	*.055*	*0.168*	*.791*	*.438*
	Mother education	*-0.053*	*.025*	*-0.421*	*-2.155*	*.043*
	Sanitation	*-0.026*	*.074*	*-0.078*	*-.358*	*.724*

Model	Coefficients	Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig. pro.
1	(Constant)	2.569	.386		6.657	.000
	family income	0.043	.055	0.168	.791	.438
	Mother education	-0.053	.025	-0.421	-2.155	.043
	Sanitation	-0.026	.074	-0.078	-.358	.724

a. Dependent Variable: Death of child under one year age

$$IM_i = 2.569 + 0.043\ X_1 - 0.053X_2 - 0.026X_3 \quad (6)$$

Se = (0 .386) (0.055) (0.025) (.074)

t = (6.657) (.791) (-2.155) (-.358)

$R^2 = 0.241$ $\overline{R^2} = 0.132$

Table-13 presents the regression results that shows the estimated coefficient of β_0, β_1, β_2, β_2 , and β_3 are 2.569, 0.043, -0.054, and 0.026 respectively. The regression result of the intercept term (β_0) 2.569 suggests that when the level of Income and mother education was zero, the infant mortality was 2.569. This displays the relationship between the constant parameter and infant mortality is indeed positive. Whatever, the constant having no exclusive meaning in the model, it rather reflects the value of infant mortality when other explanatory variables are retained constantly.

The coefficient of determination R^2 is 0.241Which means that the goodness of feet is like 24.1%. Whatever, the variations in the infant mortality are explained in conjugation with all other varied explanatory variables- household income, mother education, and sanitation as 13%. There is a positive relationship between infant mortality and household income. If the income level increase 1% then infant mortality reduced by 0.043%. On the other hand, a 1% increase in the level of schooling for mothers can reduce infant mortality by 0.053%. Sanitation and mother education gives a negative sign that means those factors should be improved to reduces infant mortality (Howlader and Bhuiyan,1999; Razzaque et al., 2007).

Regression analysis for child mortality present in equation-3.

$$CM_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + U_i \quad (7)$$

Table 14: Estimated Result for Child Mortality

Model	Coefficients	Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.pro.
1	(Constant)	1.516	.396		3.828	.001
	Family income	0.049	.054	0.213	.896	.381
	Mother education	0.054	.064	0.191	.856	.402
	Sanitation	-0.004	.102	0-.008	-.035	.972

a. Dependent Variable: Death last five years age

$$CM_i = 1.516 + 0.049 X_1 + 0.0534 X_2 - 0.004 X_3 \quad (8)$$

Se = (.396) (0.054) (0.064) (.102)

t = (3.828) (.896) (.856) (-.035)

$R^2 = 0.094$ $\overline{R^2} = .049$

Table-14 shows the regression results show the estimated coefficient of β_0, β_1, β_2, β_2 , and β_3 are 1.516, 0.05, -0.053, and -0.004 respectively. The regression result of the intercept term is 1.516 which suggests that the level of Income, mother education and sanitation were zero, the child mortality was 1.516. This indicates a positive relationship between the constant parameter and child mortality. The coefficient of determination R^2 is 0.094 which means that the goodness of feet is like 9.4%. Whatever, the variations in the infant mortality is jointly explained by the variation in all the explanatory variables- household income, mother education, and sanitation as 0.049%. There is a positive relationship between infant mortality and household income and mother education. If the income level increases 1% then infant mortality will reduce 0.05%. On the other hand, an insignificant result shows that a 1% increase in the level of schooling for mothers can reduce infant mortality by 5%.

Major Findings and Recommendations

Findings

The current study demonstrates that infant and child mortality scenarios in Cumilla district, Bangladesh. From the above discussion this study observed the following findings.

i. Most of the household's income level is at a medium level. Some of the households have higher earning source.

ii. The regression analysis indicates that education and income level support to reduce infant and child mortality.

iii. Most of the households earning sources from foreign remittance and business.

iv. About 28 percent of the mother's education is below the S.S.C level (IM) and 40 percent of the mother's education is above HSC (CM).

v. Half of the respondents' mothers are taking health treatment from the hospital.

vi. Family income support to reduce infant and child mortality.

vii. One-third of respondents' mothers are taking health treatment from local doctors which are known as a traditional treatment.

viii. Some respondent mothers are taking treatment from Gynecologist which is known as a modern treatment.

ix. About 56 percent of respondent families are using water from a deep tube well.

x. Sanitation facilities are available for most of the respondent households.

Recommendations

The following recommendations are suggested based on the estimated result and analysis.

i. It is necessary to increase the education level for mothers because almost 28% of the respondents are illiterate in the case of infant mortality and 4% of child mortality cases in this study area.
ii. The government safe sanitation program should be increased in this area. Whatever, it is about a total of 16% of people have a lack of proper sanitation.
iii. Government and legal authority must increase the welfare and public awareness program of infant and child care to the housewife because 485 of the respondent are housewives.
iv. The hospital facilities especially child care institutions should be developed more. Whatever only 405 of respondent gets the hospital facilities.
v. The superior water sources should be ensured by 100% in this study area to reduce or protect the child and infant mortality where 36% of respondents use the deep tube-well and 28% of tube-well.
vi. Increase the substitute income source to reduce temporary unemployment and increase the level of household income.

4. Conclusion

The population of Bangladesh is quite large with comparing the resource and total geographic area; on the contrary, the increment of resources is indeed slower. In this way, the large portion of the population of the country is getting poorer day by day due to income inequality (Zaman and Akita, 2012; Iqbal et al., 2019). This poverty is leading them towards illiteracy, day labor, and sometimes other intense complications that abuse the infant and child mortality. There has enough evidence from the findings that endogenous factors are holding a great role in neonatal mortality, whereas exogenous factors influence the mortality in postneonatal cases. Maternal education as an exogenous factor seems to have the most likely powerful negative impact on child mortality unbiased with child age. On the other side, exogenous birth interval time and the noticeable findings that come out from this analysis strengthen the necessity of the mother's education, appropriate age of giving birth, fathers' as well as mothers' occupation, family income, sources of water and sanitation facility, good communication facilities, all of which has aroused as a strong correlation with the infant and child mortality. From this study, it is derived that despite having engaged with miscellaneous healthcare amenities, the infant and child mortality level is still considered as high and thriving in Cumilla, Bangladesh. In Bangladesh, women are very often the initial decision-makers on the subject of child health care, family health, and nutrition. The analysis presented in this paper suggests that women's status has an impact on the survival chances of their children. Many independent women have superior authority to take their children to healthcare centers for precautionary services as well as remedial services, which makes a burl collision on the health and survival of children (Adams et al., 2013).

The estimated data has been collected from a structured questionnaire and interview surveys. All possible measures were made to collect accurate data and various techniques of crosschecking were adopted to confirm that accuracy. The socio-economic characteristics of the study samples very good in sanitation, food habit, literacy rate, and so on. The study reveals that the majority of members have the intention to pursue higher education for a better life. Neonate survival rate increasing is highlighted as important by analyzing the dominative contribution of neonatal death matter. Neonatal tetanus, diarrhea, measles, injury, birth asphyxia/birth injury, postneonatal pneumonia, and malnutrition all that display a noticeable decrease in mortality rates, and the related controlling factors still needed to be understood better. The regression estimation

investigated that the mother's education, household income, source of water, sanitation, and mother's education hold a remarkable impact on reducing infant and child mortality. The study consolidates the fact that infant and child mortality death is higher in poor children than the richer one where the higher income reduces infant and child mortality (Hossain et al., 2007; Abdullah et al., 2007). Especially children below the extreme poverty line suffer the most due to lack of basic human needs including health facilities. Fathers' occupation put up the occurrence more clearly. Income instability and inequality have stood out as a profound factor in the leading causes of child mortality. The current study contributes as the pioneer one in this subject and areas. The incremental knowledge and practices of this perusal help to create awareness and wellbeing of newborns by considering the influential factors.

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