UNMASKING THE INEQUITY OF CHILD SURVIVAL AMONG URBAN POOR IN BANGLADESH

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ABSTRACT

Despite significant improvements in child survival in recent decades, infant and under-five mortality in Bangladesh remain high with strong urban-rural difference. Nearly one in nine children dies before reaching age five. Neonatal mortality contributes to more than sixty percent of the infant mortality. Reducing poor-rich inequalities and survival of children within developing countries is a perquisite for achieving the MDG-4. However, using the data from Bangladesh Demographic and Health Survey, 2004 and applying Principal Component Analysis (PCA) for determining the relative economic condition of the household, it is evident that children from urban poor have the worse health condition than the rural poor as well as Bangladesh National. The urban extreme poor have the highest under-five, infant and neonatal mortality rates than the rural estimates. To achieve the child survival millennium development goal in Bangladesh better pro-poor policies and child survival interventions are required to reduce the rich-poor gap in survival among urban children.

Key words: Urban poor, Child Survival, Principal Component Analysis, Life Table, Millennium Development Goal

Introduction

Over the first 15 year under five mortality was almost half of 1975; life expectancy rose from 56 to 66 years and under weight children of under five years of age declined from 66 percent to about 48 percent in 2004. Most children attend primary school and gender parity has been achieved in primary and secondary education levels. Despite the significant improvement achieved, vast development challenges remain. This includes improving social services, improving good governance, reducing gap between the rich and the poor in public health care particularly in urban areas.

Child mortality rate is a reflection of the care, health and nutrition status of children below the age of five years and it also indicates the social, cultural, and economic progress in the country. Over the last two decades significant improvement in under five mortality has also been achieved (UNICEF, 2001). Despite this improvement rich poor has been widening causing concern to achieve MDG. To improve health of the people, the government has established health infrastructures and intensified health services all over the countryside. According to Child Survival Countdown 2015 task force, Bangladesh is one of seven countries that are on track with the target of achieving MDG-4. Despite the significant progress achieved, vast development challenges remain. This includes improving social services, improving good governance, reducing gap between the rich and the poor in public health care particularly in urban areas.

Urban population growth has been increasing rapidly in Bangladesh. Dhaka is the fastest growing mega-city in the world, with an estimated 300,000 to 400, 000 new migrants, mostly poor, arriving to the city annually. Its population is currently around 12 million and is projected to grow to 20 million by 2020, making it the world third largest city. Many migrants coming to Dhaka and other urban areas of Bangladesh end up in slums where living conditions are particularly grim. New migrants cite a number of major drawbacks once they arrive to urban areas: overpopulation, populated environment, lack of jobs, lack of health care and deteriorating law and order.

Most migrants come from rural areas in search of opportunities which can provide new livelihood options for millions, translating to improvements in living standards. Migrant's contribution to Dhaka's economic growth is significant, as they provide much needed labor to manufacturing, services, and other sectors. This migration, however also adds tremendous strain on an already crowded city with limited inhabitable land due to the city's topography, limited infrastructure, and a low level of public services.

For the city corporation, the dramatic growth of Dhaka has generated a number of problems including providing adequate water-supply, sanitation and basic services, the management of garbage, the increasing risk of criminality and violence, and the deterioration of environmental conditions. This is true for all the urban areas particularly for the big cities.

Due to this lack of basic needs and environmental hazards the health risk of urban children is much higher than the rural children.

Like other developing countries, child survival status has been consistently better in urban Bangladesh than that of rural areas. Children living in rural areas experience high mortality compared to their counterparts in urban settings. A number of studies have demonstrated this urban advantage in terms of childhood mortality in developing countries and this is mainly explained by better access to health care services including preventive and curative (Hobcraft et al., 1984). However, in recent years, there has been growing recognition that this urban advantage is misleading and inappropriate as a guide for national health strategies, insofar as it obscures enormous differences in health status and survival chances among and within urban areas of most developing countries (WHO, 1991; Brockerhoff, 1995).
In the light of above, the objective of this paper is to investigate the situation of under five mortality between the urban and rural poor and to determine the inequalities in the child health care services and survival chances of the children between rural poor and urban poor in Bangladesh.

Material and Methods

This paper utilized the birth history data of the 2004 Bangladesh Demographic and Health Survey (BDHS); this is the fourth survey of this type conducted in Bangladesh. BDHS followed a two-stage cluster sampling design with samples from rural and urban areas. The data were also representative for each of the 6 division**.** Details of the survey have been reported elsewhere (NIPORT and ORC Macro, 2004). The 2004 BDHS is a nationally representative survey of 11,440 ever –married women aged 10-49. The survey has detailed information of birth and death of each child. For each live birth, information on the date of birth, sex, and survivorship status is collected. For living children, information about the age of child at his or her last birthday is recorded. For children who have died, the respondent is asked to provide the age at death. The number of children considering reference period 10 years preceding the survey for whom the survival status and basic information are known is 14209, 9886 and 4323 for national, rural and urban areas respectively.

The following figure shows that the under-five mortality in Bangladesh has come down from 133 per 1,000 live births in 1991 to 88 deaths per 1000 live births in 2001. Despite decline in infant, and under five mortality rich – poor gap is considerable. One of the reasons of the

poor-rich gap in infant and under-five mortality is income inequality. This is also supported by the statement of Gwatkin of World Bank. Gwatkin mentioned that " It is impossible to reach the MDGs with little or no improvement of the health condition of the poor" . The following figure 1 shows the trend in under five mortality since 1990s. Similarly figure 2 shows the rich –poor gap in under five mortality.

Figure1: Declining Under Five Mortality Since 1991

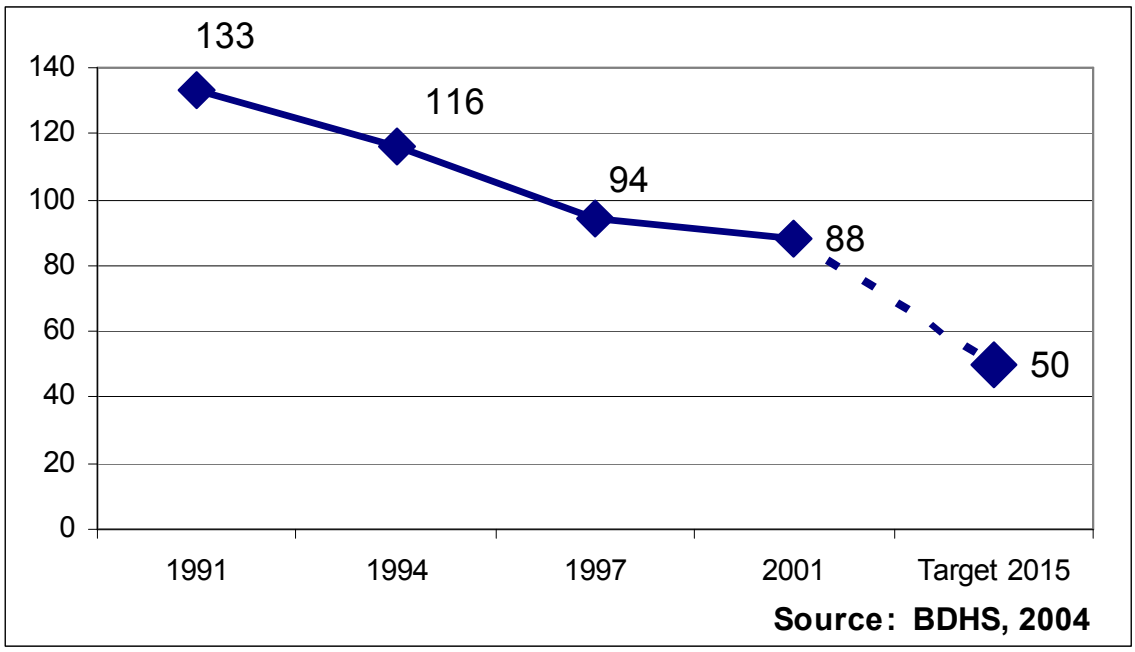
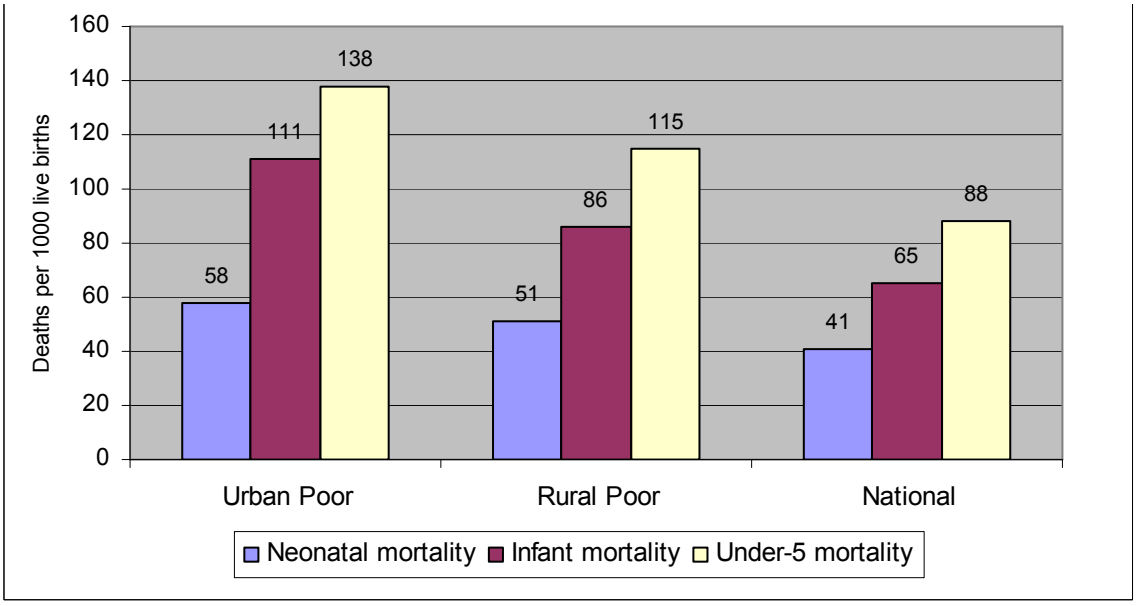


Figure 2: Rich and Poor Gap in under five mortality between Urban and Rural Poor



The above graph shows that under-5, infant and neonatal mortality rates are considerably higher among the urban poor as compared to the rural poor. For example under five mortality is higher by 20% for urban poor than rural poor. Similarly, among urban Poor, infant mortality rate is 111 per 1000 live births where as for rural poor IMR is 86 per 1000 live births. Among the Urban poor children, neonatal mortality rate is 58 per 1000 live births where as for rural poor NMR is 51 per 1000 live births

Figure 1.Urban-rural inequalities in infant mortality

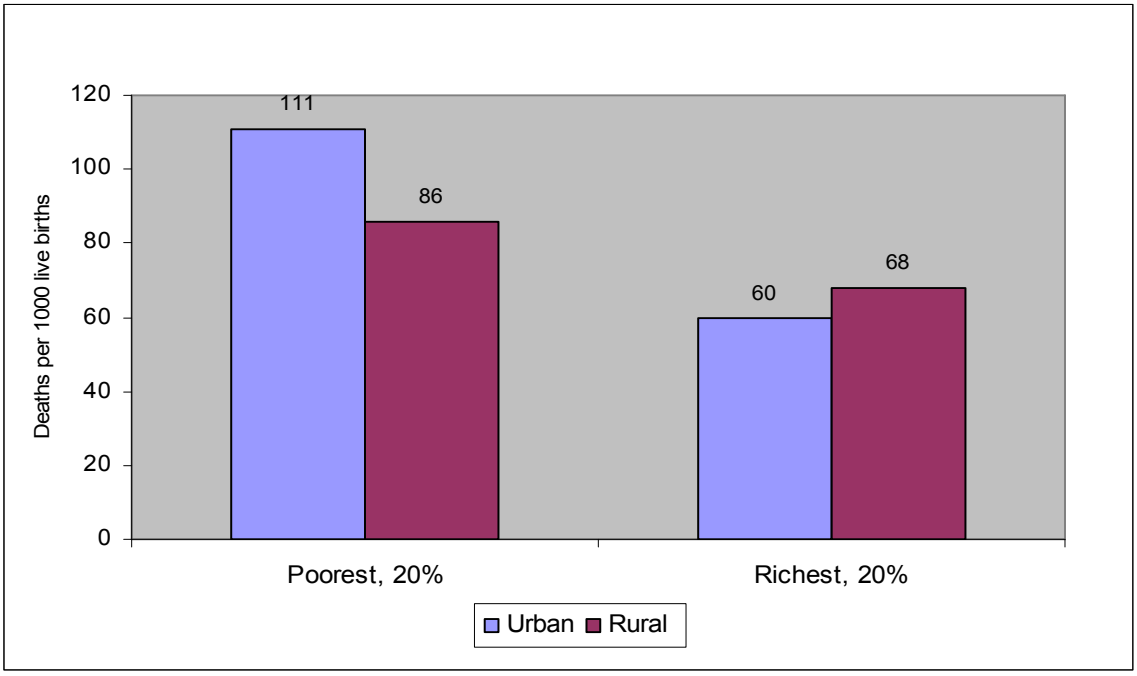
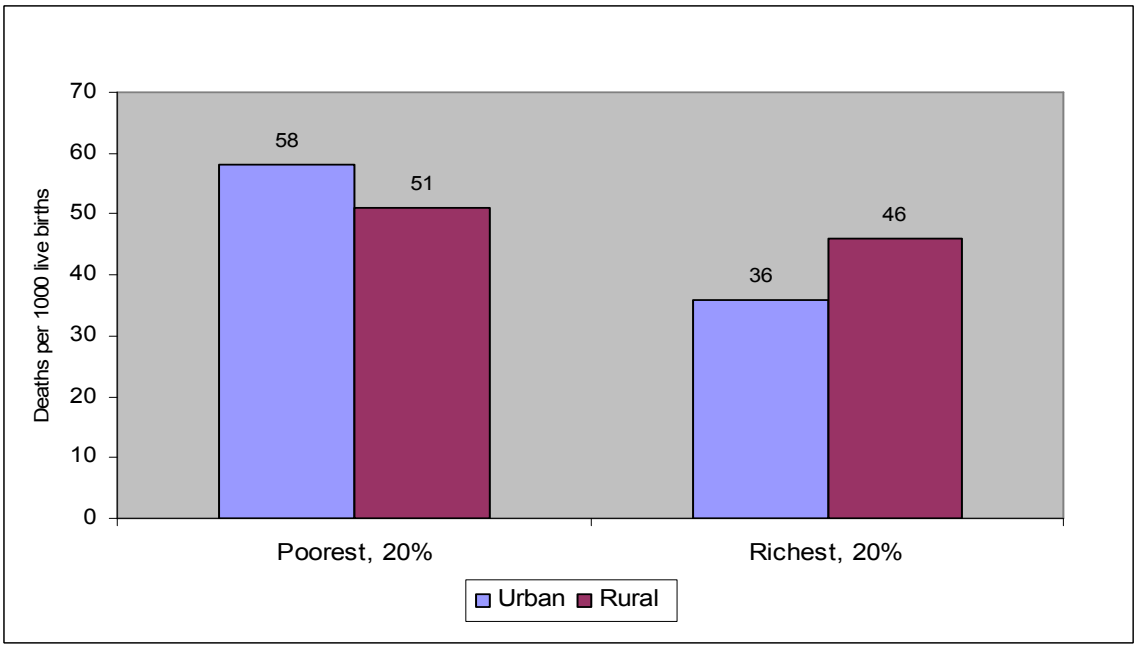


Figure 2.Urban- rural inequalities in neonatal mortality



Urban migrants appeared to be greatly disadvantaged in terms of newborn survival. Newborn mortality is 1.5 times higher among urban migrants compared to the children of urban natives (48 and 32 per 1000 live births respectively). On the other hand the neonatal mortality among the poorest segment of the native urban population is considerably high compared to the richest population (68 and 36 per thousand live births respectively). The neonatal mortality among the poorest and richest segment of the migrants is (51 and 46 per 1000 live births respectively showing little gap). The analysis implies that relatively poor people are migrated due to both "pull" and "push" factors.

Measurement of inequality in under five mortality

Household socio-economic status is defined here in term of assets, rather than income or consumption. The asset information was collected through the household questionnaire. These questions include ownership of a number of consumer items (radio, watch, etc), dwelling characteristics (wall and roof material), type of drinking water and toilet facilities. Household socio-economic status is measured in this study by constructing a wealth index using asset ownership as it was validated. Each household asset for which all information collected was assigned a weight or factor score generated through principal components analysis. The resulting asset scores were standardized in relation to a standard normal distribution with a mean of zero and a standard deviation of one. Each household was assigned a standardized score for each asset, where the score differed depending on whether or not the household owned the asset. These scores were summed according to household and individuals were ranked according to the total score of the household in which they resided. The household were then divided into five quintiles (Q1, Q2, Q3, Q4 and Q5) to understand the health inequality. Based on asset quintiles, three indicators of inequality are created: poor-rich ratio, concentration curve and concentration index. The ratio (poor-rich) does not provide any information about the middle three quintiles but provides a magnitude of differences between the poorest and the richest quintiles of the population.

On the other hand, the inequality in mortality was explained with the help of concentration curve. The curve labeled *L (p) (see* in Fig. 3) is a mortality concentration curve, showing the cumulative proportion of death (on the *y*-axis) against the cumulative proportion of children at risk i.e., births (on the *x*-axis), ranked by equivalent household wealth score, beginning with the most disadvantaged child. If *L (p)* lies coincides with the diagonal, all children, irrespective of their economic status, enjoy the same mortality rates. If, as is more likely the

case, *L (p)* lies above the diagonal, inequalities in mortality favor the better-off children; we shall call such inequalities pro-rich. If *L (p)* lies below the diagonal, we have pro-poor inequalities in mortality (inequalities to the disadvantage of the better-off). The further *L (p)* lies from the diagonal, the greater the degree of inequality in mortality across quintiles of economic status.

The numerical measure of inequality in mortality was measured by the *concentration index denoted* by C and defined as twice the area between *L (p)* and the diagonal. The concentration index, whose value can vary between -1 and 1, has frequently been used in the study of income related inequalities. Its negative values imply that the health variable is concentrated among disadvantaged people while the opposite is true for its positive values. When there is no inequality, the concentration index will be zero.

Inequalities in Child Survival between Rural Poor and Urban Poor

Table-1 shows the distribution of under-five, infant and neonatal mortality rate per 1000 live births respectively by urban–rural place of residence with 95 percent confidence interval (CI) and by asset quintiles.

Table-1: Distribution of Childhood mortality by Urban-Rural area and Asset quintiles

Under-five Mortality Rate (U5MR) per 1000 live births						
Asset Quintiles	Urban		Rural		Total	
	U5MR	95%CI	U5MR	95%CI	U5MR	95%CI
Q1(Poorest)	138	109-173	115	103-128	118	107-130
Q2	100	76-133	97	85-110	97	86-109
Q3	94	72-123	99	87-115	99	87-112
Q4	87	68-111	74	63-88	78	68-90
Q5(Richest)	63	53-75	74	58-94	66	58-76
Total	85	76-94	97	91-103	93	88-98
Poor: Rich (Q1:Q5)	2.2	-	1.5	-	1.8	-
Concentration Index	-0.1487	-	-0.0831	-	-0.1095	-
Infant Mortality Rate (IMR) per 1000 live births						
Asset Quintiles	Urban		Rural		Total	
	IMR	95%CI	IMR	95%CI	IMR	95%CI
Q1(Poorest)	111	86-143	86	76-97	90	80-100
Q2	71	51-98	68	58-79	68	60-78
Q3	63	46-87	77	66-90	74	65-85
Q4	63	47-83	58	48-70	59	51-70
Q5(Richest)	60	50-71	68	53-87	62	54-72
Total	68	61-76	73	68-79	72	67-76
Poor: Rich (Q1:Q5)	1.8	-	1.3	-	1.4	-
Concentration Index	-0.0915	-	-0.0593	-	-0.0760	-
Neonatal Mortality Rate (NMR) per 1000 live births						
Asset Quintiles	Urban		Rural		Total	
	NMR	95%CI	NMR	95%CI	NMR	95%CI
Q1(Poorest)	58	27-69	51	47-63	54	47-61
Q2	54	21-77	40	33-47	42	35-49
Q3	37	20-54	48	40-56	46	39-53
Q4	48	30-66	41	43-49	43	35-51
Q5(Richest)	38	27-49	41	27-55	40	31-49
Total	43	36-50	46	42-50	46	43-49
Poor: Rich (Q1:Q5)	1.5	-	1.2	-	1.3	-
Concentration Index	-0.0765	-	-0.0361	-	-0.0521	-

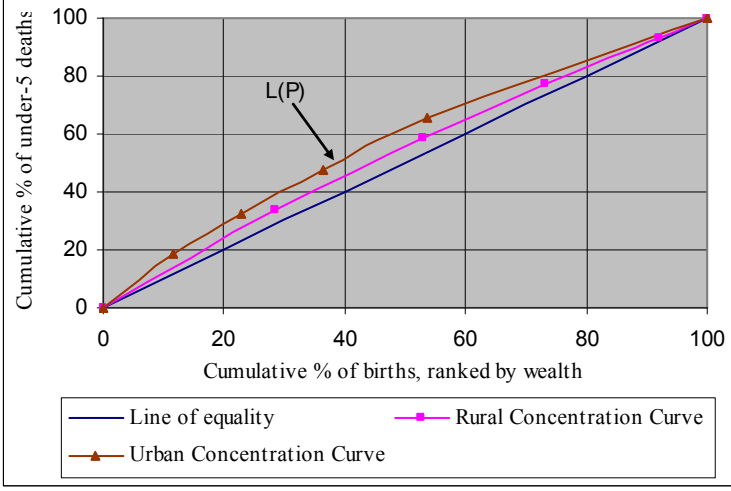
Note: Reference period considered for the calculation of Under-five, Infant and Neonatal mortality is 10 years preceding the survey.

Analysis of Table 1 shows a sharp difference in childhood mortality between urban poor and rural poor as well as for the national. Figure-3 illustrate that under-five, infant and neonatal mortality rates are considerably higher among the urban poor as compared to national as well as rural poor. For example, U5MR is higher by 48 percent than national and 20 percent than rural poor. The urban extreme poor have the highest under-five, infant and neonatal mortality rate at 138, 111 and 58 per 1000 live births respectively; these are much above the rural and national level estimates. The comparable under-five, infant and neonatal mortality rates for urban richest are 63, 60 and 38 per 1000 live births respectively.

Inequalities in under-five mortality

In Bangladesh, under-five children in the poorest households are about 79 percent more likely to die than those in the richest or better off households. The concentration index for under-five mortality rate (U5MR) in Bangladesh is -0.1095, indicating poor-rich inequality in under-five mortality favors the rich families. In order to unravel the existing intra-urban and intra-rural disparities, data from the 2004 BDHS is disaggregated by type of place of residence. The negative value of concentration index i.e., -0.0831 and -0.1487 for rural and urban area respectively exposed that both in rural and urban area under-five mortality is concentrated with poorest families. Again, within urban areas, poor-rich ratio is 2.2 which imply that U5MR is about 2.2 times higher in the poorest quintile than the richest quintile. While in rural area poor-rich ratio of U5MR is 1.5. But figure-2 illustrate that the poor-rich inequality in terms of under-five mortality is more in urban area than rural area.

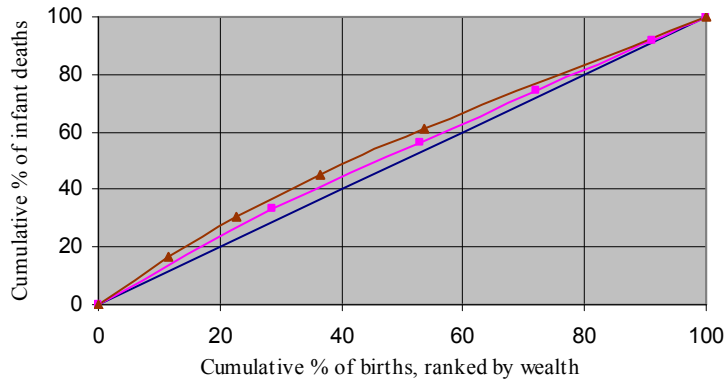
Figure-2: Rural and Urban Concentration Curve for Under-five Mortality Rate



Inequalities in Infant mortality

In Bangladesh, more than three-quarters of all under-five deaths occur during the infant period. Infants of the poorest households in Bangladesh are about 52 percent more likely to die than those in the richest households. The concentration index for infant mortality rate (IMR) in Bangladesh is -0.0760, indicating poor-rich inequality in infant mortality favors the rich families. The negative value of concentration index i.e., -0.0593 and -0.0915 for rural and urban area respectively exposed that both in rural and urban area infant mortality is concentrated with poorest families. Again, within urban areas, poor-rich ratio is 2.2 which imply that IMR is about 2.2 times higher in the poorest quintile than the richest quintile. While in rural area poor-rich ratio of U5MR is 1.5. But figure-3 illustrate that the poor-rich inequality is more in urban area than rural.

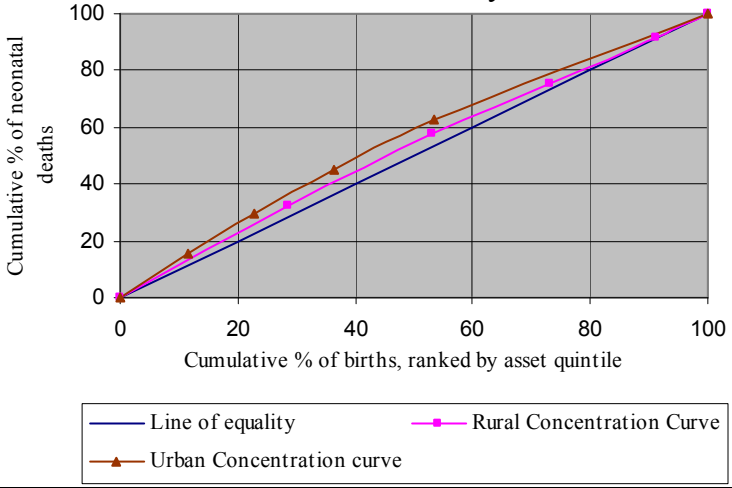
Figure-3: Rural and Urban Concentration Curve for Infant Mortality Rate



Inequalities in neonatal mortality

Almost half of all under-five deaths occur during the neonatal period. Neonatal mortality contributes to more than 60 percent of infant deaths. In Bangladesh, newborn children in the poorest households are about 35 percent more likely to die than those in the richest or better off households. The concentration index for neonatal mortality rate (NMR) in Bangladesh is -0.0521, indicating poor-rich inequality in neonatal mortality favors the rich families. The negative value of concentration index

Figure-4: Rural and Urban Concentration Curve for Neonatal Mortality Rate

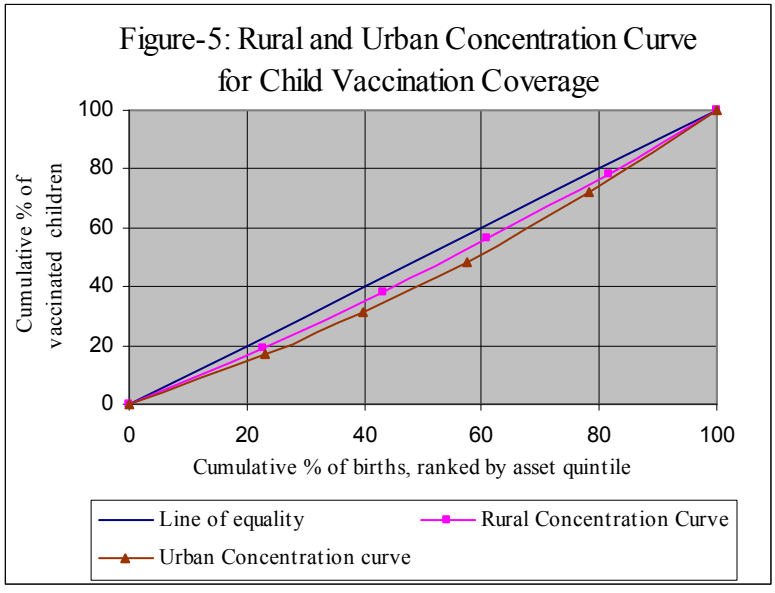


i.e. ., -0.0361 and -0.0765 for rural and urban area respectively exposed that both rural and urban area neonatal mortality is concentrated with poorest families. Again, within urban areas, poor-rich ratio of NMR is 1.6 which implies that NMR is about 1.6 times higher in the poorest quintile than the richest quintile. While in rural area poor-rich ratio of NMR is minimal. But figure-4 illustrate that although in both urban and rural area NMR is more in poor families but the poor-rich inequality is more in urban area than rural.

Inequalities in Child Health Status

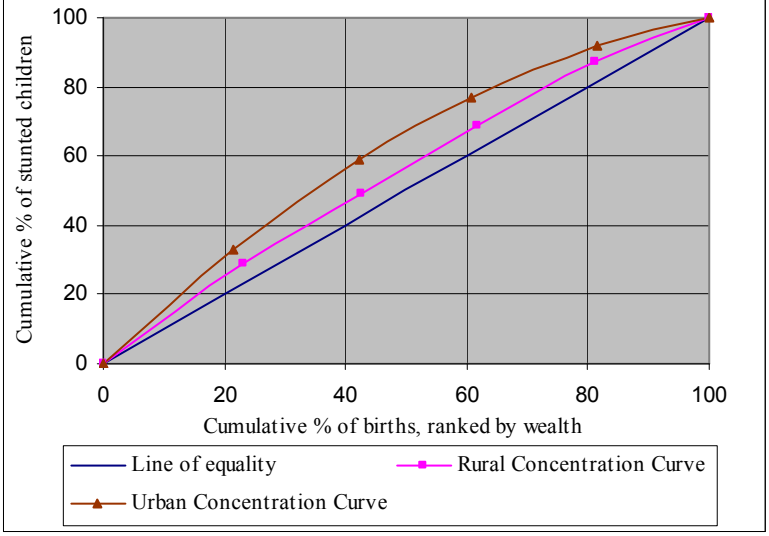
Despite better average health outcomes in urban areas, there is some evidence of little or no differences in health between rural and urban poor children in Bangladesh. In reducing infant and child morbidity and mortality, universal immunization of children under one year of age against the six vaccine-preventable diseases (tuberculosis; diphtheria, pertussis, and tetanus [DPT]; poliomyelitis; and measles) is one of the most cost-effective and successful programs in Bangladesh. As a whole the vaccination program has been more successful in urban areas than rural areas; vaccination coverage is 10 percentage points higher in urban areas compared to rural areas. However, Figure-5 visualized that poor-rich inequalities in terms of child vaccination coverage is higher in urban areas than rural areas. This indicates that though as a whole vaccination program has many successes but still it needs to be strengthened to cover the poorest segment of the urban areas.

While there is considerable evidence that malnutrition is an informative health indicator in developing countries and a good predictor of mortality (Pelletier, Frongillo, & Habicht, 1993; Pelletier, Frongillo, Schroeder, & Habicht, 1995; Schroeder & Brown, 1994), the magnitude and the explanation of the rural-urban disparities in the two indicators may differ. Most of the literature documented that on average,



urban children are better nourished; they are less likely to suffer from chronic malnourishment (stunting) and to be severely underweight (Fotso, 2006, 2007). The BDHS data also shows that children living in urban areas are less likely to be stunted than children in rural areas (38 and 44 percent, respectively). However, figure-6 illustrates that inequalities in terms of chronic malnourishment (stunting) is more among urban children than rural children.

Figure-6: Rural and Urban Concentration Curve for Child Nutritional Status (Stunting)



DISCUSSION AND CONCLUSION

In Bangladesh, income inequality rose during the nineties particularly in urban areas (MDG Progress Report 2005). On average, rural areas did better than urban areas in reducing the depth and severity of poverty, which implies that growth in rural areas was more pro-poor than in urban areas. Higher mortality rates in rural than urban areas have been documented in many developing countries (Hobcraft, McDonald, Rutstein, 1984). Although the overall child mortality is consistently lower in urban areas of Bangladesh, the rapid urban population growth and its poverty is gradually eroding, the urban-rural difference in childhood mortality. Due to the lack of basic needs and environmental hazards the health risk of urban children of poor families is much higher than the rural children.

Initiation of breast feeding within 1 hour after birth is an important determinant of child survival. It can save 37000 newborns in Bangladesh yearly. But we see**,** initiation of breast feeding within 1 hour after birth is very low among urban poor compared to rural poor.

This study also documents a sharp difference in childhood mortality between urban poor and rural poor in Bangladesh. In Bangladesh government primary health care system is mainly focused to rural based. Urban primary health care system in Bangladesh is almost ignored especially in the sub-district level municipality. Primary health care services for urban poor

dwellers, responsibly under Ministry of Local Government through respective City Corporations. . But this ministry has limited technical expertise, resource and skills. While primary health care services offered at the rural areas by Ministry of Health and Family Welfare (MOHFW). The MOHFW is overall responsible for the country's health policy formulation, planning and decision making. Recently local government with the financial support from Asian Development Bank (ADB), Department for International Development (DFID), Swedish International Development Co-operation Agency (SIDA), United Nations Population Fund Activities (UNFPA) and Orbis Bangladesh are offering primary health care services targeted to the poor. But these services are limited to six City Corporations and five district level municipalities only. It is a public–private partnership project. The success of the project depends on many factors such as timely implementation of the project components, monitoring and expertise of the project management officials. It is a public–private partnership project. The Child Survival Countdown 2015 task force calls for an 8 percent annual reduction in under-five mortality rates in the 60 most affected countries, including Bangladesh, in order to obtain the MDG 4 of a 2/3 reduction in child deaths. Bangladesh is one of seven countries that are on track with this target. However, in order to maintain this pace, Bangladesh must tackle both the equity gap of coverage of child health services. So, to address the urban–rural inequality, as well as to improve the survival status of children in the country as a whole, there is a crucial need to strengthen the urban primary health care system in Bangladesh. Policymaker, Donor Community and Health implementers should concentrate on the urban poor health care services because 30 percent of the urban population are poor.

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