Abridged Version

Health Care Seeking Behavior of Slum-Dwellers in Dhaka City

Results of a Household Survey

Institute of Health Economics
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EXECUTIVE SUMMARY

Background and Objectives

The slum population, whether slums are legally created or not and whether the dwellers live on the formal sector occupations or not, should get the basic amenities of life, including healthcare, for the benefit of the entire population of cities. The need for formulation of appropriate policy and proper implementation thereof for rapid improvement of health in the cities, especially in the slums of the cities, is urgent. That in turn requires information and evidence about the constraints on both demand and supply sides of healthcare use in the urban slums.

The pertinent issue of this study was what are the determinants of low demand for healthcare from the qualified providers in the slums of Dhaka city? The purpose of this study was to address the demand side of the issue using a household survey on slum population in the largest concentration of slums in the country- Dhaka city. The survey assessed the level of demand for health care and access to health care from qualified providers, and identified the determinants of health care seeking behavior. The results of this study will be useful for formulating the appropriate policies to increase the demand for health care as well as access to health care so that use of health care by the slum-dwellers rises to the desired level.

As mentioned in the ToR the objectives of the study are:

- To assess the socioeconomic status of the urban slum population of the Dhaka city.
- To assess the health status and care seeking pattern and preferences of the urban slum population of the Dhaka city.
- To determine the morbidity status of the urban slum population of the Dhaka city.
- To identify the health care seeking behavior of the urban slum population of the Dhaka city.

In addition to accomplishing these objectives, we also tried to identify the reasons for low use (if any) of health care.

Methodology

Method of sample selection

A two-stage cluster sampling design was used. In the first stage, 30 slums were selected from the list of all slums in Dhaka city applying the standard systematic random sampling technique. Then each of the selected slums was divided into some segments of about 90 households. Such segments were considered as the primary sampling units (PSUs) in the sampling process. Only one PSU in each slum was chosen randomly for household survey. In this manner 30 PSUs were selected from 30 slums. Each of these selected PSUs served as a cluster of households in our study.

After selection of PSUs, 30 households were chosen from each PSU by systematic random sampling in the second stage of the sampling process. The first household was selected at random from the first three households in the north-east corner of the segment of a selected slum. Afterwards every third household in each PSU was interviewed. Thus the required sample of 30 HHs×30 slums (clusters) = 900 households was selected in total. This procedure of selection ultimately produced a sample which was self-weighting in the slum area i.e. every household within the slum area had the equal probability of being selected.

Findings of the Study

Income inequity

Slum dwellers' monthly average household income is much lower and income inequity is considerably higher than the urban population of Bangladesh. The study reveals that the lowest 20 percent of slum households had only 6.7 percent of their total income, and the top 20 percent households had 64 percent of their total income. The Gini coefficient is 0.49 indicating high income inequity in slums as compared to the national Gini coefficient (0.32) of Bangladesh.

Reasons for Migration from Rural areas to Urban Slum

Lack of job opportunity in villages, landlessness in villages, higher chance of getting job in city, and river erosion were identified as the major reasons for people to migrate from villages to the city.

Disease Profile of Slum-dwellers

The slum-dwellers suffered mainly from some symptomatic diseases, such as fever (39.5 percent), cough (7.8 percent), headache (6.4 percent), physical weakness (3.9 percent), and high pressure (2.3 percent). Besides, they suffered from some other diseases, viz, gastric/peptic ulcer (9.7 percent), diarrhea (4.3 percent), skin diseases (2.3 percent), and diabetes (2 percent). The disease profile, access to health care, their health care seeking behavior, and reasons for choosing and not choosing the qualified providers were found for slum-dwellers almost same during the three months prior to the survey and during the nine months before the three months.

Health care Seeking Behavior

Majority of slum-dwellers (82.4 percent) seek health care from the informal providers. Pharmacist/ drug store (69.5 percent) was the main source of health care of the slum people. Only 13.9 percent of them seek care from modern public providers.

Maternal Care

The level of the use of maternal care is one of the most important indicators of health sector performances at present, since achieving the unachieved MDGs mostly depend on raising this level. Maternal care has several aspects: several ANCs, delivery care and PNC. Bangladesh is lagging behind the MDG targets in respect of the last two. Matter of great concern to the policy makers is the low level of the use of delivery care from the institutional sources. It is found that 87.8 percent of slum women received any ANC, 39.9 percent of them received ANC 4 times or more, about 39.9 percent of slum women delivered child at modern health facilities, mainly NGO clinic and private hospital; and more than half (56.3 percent)of slum women received PNC within 42 days of birth. Vast majority of slum households (91.7 percent) fully immunized their children against seven severe diseases and their main source of vaccination was the government EPI center (49.1 percent).

Reasons for Choosing Informal Facilities

Nearness of the facility from residence, availability of good services, availability of medicines (specially at pharmacy) good behavior of service providers, low cost of care, and short waiting time were identified as key reasons for choosing the informal providers.

Results of Regression Analysis

The multivariate logistic regression revealed that the major determinants of health care services from modern health facilities were: working in the garment industry (negative), income level (positive), gender (negative), distance to government/NGO facility (positive), and education of household head (positive).

Comparison of use of health services of slum-dwellers with that of urban people

The rate of healthcare use by the slum people is much lower than that by the urban areas: the current use of family planning is 54.4 percent for slum dwellers and 66 percent for urban people .The use of 4 or more ANCs is 39.9 percent in the slums and 45.5 percent in the urban areas. The use of institutional delivery is 39.9 percent for slum dwellers and 58 percent for urban people.

Conclusions and Recommendations

The conditions of slums, including sanitation and water supply, has to some extant improved in the recent years. Slum dweller's monthly average household income is much lower, income inequity is considerable higher, and the level of use of healthcare is much lower than the urban population of Bangladesh. Several factors constraint the demand and supply side of the healthcare, nevertheless, limited access to healthcare is their serious constraint to use of healthcare. This is also an important factor to have reduced the demand for healthcare from the qualified sources. Effective measures are needed to increase both demand and supply of services and thereby the equilibrium use of healthcare and obtain positive comparative statics.

The main contribution of this study is updating of data on demand for health care by the slum dwellers as well as to address certain issues, such as reasons for non-use of health care from qualified sources, determinants of demand for health care, and comparison of their present condition with the condition before migration.

The following recommendations directly stem from the findings. Since the demand for healthcare has been found lower among the slum dwellers than among the other inhabitants of Dhaka city, intensive BCC campaign has to be conducted in the urban slums. The logit analysis has revealed that distance to facility adversely affects demand for healthcare from the qualified sources. Hence, more facilities has to be established so as to provide access to healthcare closer to the slums. The logit has also shown that the women with secondary level of education uses healthcare more from the qualified sources. Hence emphasis should be attached on providing education to the women in the slums up to the secondary level.

1 INTRODUCTION:

The rapid growth of urban population is one of the stylized facts of the Bangladesh economy as of most developing societies. Evidence shows that there was a staggering increase in urban population- from 1951 to 2011, it has increased by about 18 folds (Islam N., 2013). Some estimates show that the urban population constitutes about 30% of the total population. By 2050 it will constitute 50% of the total population (Howlader S.R., 2011). The number of households in the urban slums has increased concomitantly. In Bangladesh, total population of the six major cities is 15.5 million and total slum population is 5.4 million. There are 1 million slum households living in 9000 slum clusters. Population density in slums is about 200000/sq km.

High inequity exist between the dwellers in slums and other inhabitants of Dhaka city in respect of use of healthcare (Bangladesh Urban Health Survey 2013). The pertinent issue of this study is; what are the determinants of low demand for healthcare from the qualified providers in the slums of Dhaka city? The purpose of this study is to address the demand side of the issue using a household survey on slum population in the largest concentration of slums in the country- Dhaka city. The survey assessed the level of demand for health care, access to health care from qualified providers, and to identify the determinants of health care seeking behavior. The latest statistic about the proportion of people demanding healthcare from the various sources in the urban slums is not available from current available research, which is a significant component of this study. Moreover, no study has so far identified the actual reasons for low demand for healthcare and for that matter low use of healthcare services based on adequate evidence.

As mentioned in the ToR the objectives of the study are

- To assess the socioeconomic status of the slum population of the Dhaka city. 2. To assess the magnitude of morbidity of the slum population of the Dhaka city.
- To assess the disease profile of the slum population of the Dhaka city.
- To identify the health care seeking behavior of the slum population of the Dhaka city.

In addition to accomplishing these objectives we also tried to identify the reasons for low use (if any) of health care.

The results of this study will be useful for formulating the appropriate policies to increase the demand for health care as well as access to health care so that use of health care by the slum-dwellers rises to the desired level.

The report is organized as follows. Section 2 is a review of literature on the issue. Section 3 discusses a conceptual framework and derives the hypothesis. Section 4 discusses the methodology of the survey. Section 5 discusses findings of survey. The last section will conclude and put forward some pertinent recommendations.

2 LEVEL AND DETERMINANTS OF HEALTHCARE USE IN URBAN SLUMS: A REVIEW OF DOCUMENTS AND LITERATURE

A brief review of the important studies and documents have been presented here with the objective of deriving the relevant hypothesis and appropriate methodology of the study. In addition, the review is expected to indicate the knowledge gap on the way to achieving our objective of determining the level and determinants of use of healthcare services among slum-dwellers in Dhaka. The review has been undertaken under the following sub-sections: demand side determinants of healthcare services and supply side determinants of healthcare services. The first sub-section embodies the demand side determinants to understand the context in which the issue under study is relevant. The second sub-section illustrates the supply side determinants in the health sector of Bangladesh.

2.1 LITERATURE REVIEW ON DEMAND SIDE DETERMINANTS OF HEALTHCARE SERVICES:

Bangladesh has experienced continued growth in the macroeconomic variables which encompasses the demand side determinants of healthcare services, eg- per capita GDP, infrastructure development, literacy rate, food security, life expectancy, sanitation facilities etc. Also the rate of growth of urbanization and accompanying the growth of urban slums meant an ever growing urban population as well as urban slum-dwellers, which also acts a determining factor for demand of healthcare services.

Over the years, despite many constraining factors, Bangladesh has experienced a steady growth in GDP per capita from $762.8 in 1995 to $862.1 in 20015, to the latest high of $957.8 (World Bank) while the standard deviation has continued to decline at a steady pace.

With the development of infrastructure, rise of food security and off-farm/non-farm employment, and the increase of literacy rate, Bangladesh have been involved in a continually-progressive sectoral shift for decades, and the ultimate result of that has been a rapid growth of urbanization and increased demand for healthcare services in urban centers. The per capita generation of electricity has increased from 95.85 kwh in 1999-00 to a whopping 213.12 kwh in 2012-13, indicating a significant improvement of the countries basic infrastructure. (SYB 2013)

According to FAO (2013), the prevalence of food inadequacy in Bangladesh has also come down from 41.2% in 1990-92 to 26.3% in 2012-14, indicating rise in food security, which may have led to the sectoral shift in employment, from agriculture to manufacture and service.

The life expectancy at birth also increased from 59 in 1994 to 69 in 2011. (Source: SVRS 2011)

There was also improvement in water and sanitation facilities throughout the county too. But here the improvement was more noticeable in the rural areas than in the urban areas. Whereas the percentage distribution of households by toilet facility in rural areas more than doubled from 25.42% in 1997 to 55% in 2011, the number only went up from 72.17% in 1997 to 78.3% in 2011.

The rate of growth of urbanization far out grew the rate of growth of the aforementioned socio-economic indicators. The percentage proportion of population residing in urban areas went up from 5035 Thousands in 1970 to 54984 Thousands in 2015, while the percentage proportion of population residing in rural areas went up from 61274 Thousands in 1970 to 105427 Thousand in 2015 (United Nations, Population Division, 2014). The United Nation predicts, by 2030, Dhaka will be home to more than 20 million people- larger than Mexico City, Beijing or Shanghai.

This is not to say that the world urbanization rate hasn't been increasing or that other countries in the world are not experiencing a healthy urban population growth, but the distinct fact is that the rate of growth of urbanization in Bangladesh exceeds that of the world as a whole.

Here, some factors are worth mentioning. The current situation in Bangladesh is not at all similar to what the developed countries of the world experiencing when they were undergoing the initial stages of urbanization. Furthermore, in case Bangladesh only one city is bearing the full burden of the ever growing magnitude of urban population: Dhaka. In Bangladesh, because population is so large, the sheer numbers of people coming into Dhaka is unprecedented. The social costs of a progressive overloading of housing and social services, not to mention increased crime, pollution, and congestion, is already outweighing this historical urban crowding.

2.2 LITERATURE REVIEW ON SUPPLY SIDE DETERMINANTS OF HEALTHCARE SERVICES:

Due to the rapidly growing population in the incessantly growing urban slums, there has been an alarming rate of growth of non-communicable diseases in these slums. The inhospitable and almost unhygienic environment of these slums sometimes works as an accelerant to the spread of diseases. Bangladesh has witnessed remarkable progress over the last few decades in health and population indicators, significant disparities exist within urban areas, between slum and non-slum-dwellers (NIPORT 2015; Roy et al. 2014). According to the Multiple Indicator Cluster Survey (MICS), the health indicators of slum residents are among the worst in the nation (MICS 2009) with an under-five mortality rate of 95 per 1000 births compared to 66 in rural areas, and only 15% of births delivered by a skilled attendant compared to the rural average of 19%. Diarrhea prevalence is also twofold greater among slum-dwellers than the rest of the population (State of the World's Cities 2006/7," 2006). Hence, there is a demand for healthcare existent in these slums, although this demand may well be unrealized.

In supply side for healthcare services also there is an inadequacy of appropriate policy and structure as well as misallocation of resources when it comes to the urban centers. This is a major obstacle to healthcare seeking behavior for urban slum-dwellers. The health challenges are exacerbated by the absence of functional policies or institutional structures to assure coordination of basic urban health services (Osman, 2009).

As diagnosed by the Asian Development Bank, the urban health system in Bangladesh is in crisis due to an inadequate physical infrastructure, uncoordinated and limited efforts by multiple actors and mixed authorities, lack of capacity within the health departments of the city corporations, insufficient public funding, mushrooming of health facilities mostly in the private sector, insufficient information on the availability and quality of health services provided in the facilities ("Report and Recommendation of the President of the Board of Directors on a Proposed Loan to the People's Republic of Bangladesh for the Urban Primary Health Care Project," 1997

Bangladesh government has always been applauded for its widespread family planning national campaigns. But if we compare the family planning situation between slum and non-slum areas, we see a depressing view. According to the Bangladesh Urban Health Survey 2013, total fertility rate is lowest (1.7 births per woman) in City Corporation non-slum, highest (2.0 births per woman) in City Corporation slum and 1.9 births per woman in other urban areas in 2010-2013. Also over almost one in five women began childbearing before age 20 in the slums and other urban areas compared to about one in eight in the non-slums. Contraceptive prevalence rate (CPR) is highest (70%) in the urban slums and lowest in non-slums (65%) in 2013.

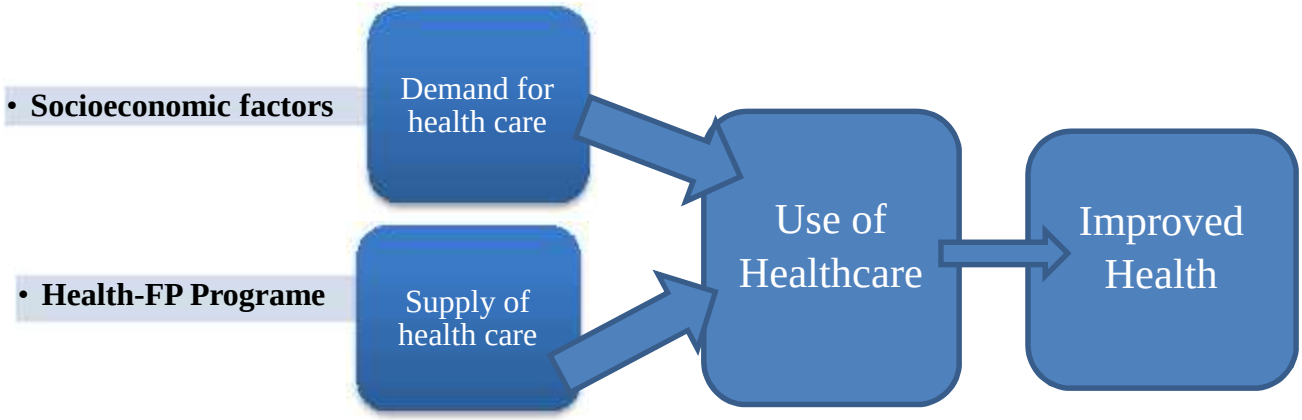
In the context of level and determinants of use of healthcare among slum-dwellers in Bangladesh, some studies have been conducted that have addressed the level of use of healthcare services and what determines the demand for and supply of healthcare separately. Uddin et al. (2009) found in their study on the healthcare seeking behavior of street-dwellers in Dhaka city that, not only most squatters have little to no knowledge about the location where to seek out healthcare service, but they didn't even visit any doctor or provider when they were ill in the year prior to the study. They posited that, *"…the survey data show that about half of the females and one- third of the males did not seek health care services during their episodes of illness.."*

S R Howlader found in his study titled *'Financing of Urban Primary Health Care in Bangladesh: Important Issues and A Framework for Analysis and Policy Formulation', "…At present UPHCP can cover less than half of these groups (about 25 lacs). Remaining 35 percent (about 40 lacs) of the entire population of Dhaka have unmet need."* Given this situation, it is safe to say that many slum-dwellers end up with lower healthcare than they had in rural areas before they migrated from there. But in the question of how much healthcare to provide to the slum-dwellers, this study warns about the ruralization effect of providing too much healthcare services the slum-dwellers. The paper by Lahiry et al. sheds some light about factors that work in determining the determinants of healthcare among slum-dwellers. Demand for healthcare among slum-dwellers depend not only their income, but also on other constrains that they face.

The review clearly shows that the economy of Bangladesh has been growing, poverty has been declining and social and health indicators have been improving. The rate of increase in urbanization both in size and population, has been increasing rapidly. So is the slums in the urban areas. The rate of growth of slums in Dhaka city is alarmingly high. The slum-dwellers are deprived of the basic amenities of life, especially health and education opportunities. Compared to the people in the rural areas, let alone those in the urban areas, the use of healthcare from the qualified sources in the urban slum is very low, and the situation regarding the healthcare use remains stagnant over time. The reasons for this remains both on the demand and supply side. However the available literature doesn't show the latest statistic about the proportion of people demanding healthcare from the various sources in the urban slums. Moreover, no study has so far identified the actual reasons for low demand for healthcare and for that matter low use of healthcare services based on adequate evidence.

3 CONCEPTUAL FRAMEWORK

A conceptual framework can be utilized to identify the determinants of use of healthcare. The following schema neatly depicts the framework.



Determinants of use of healthcare: A schema

In the schema, the socioeconomic factors include age, gender, education, occupation, income, housing condition, sanitation and perceived accessibility; and the program variables include system of health services, infrastructure, location of public facilities/NGO facilities and availability of inputs in public facilities. The socioeconomic factors determine demand for healthcare and the program factors determine the supply. Both supply and demand jointly determine the use of healthcare in equilibrium. The amount of use determines the health status of the people.

The study is confined to the analysis of the demand for healthcare in the slum households in Dhaka city. The hypothesis is that the demand for healthcare from qualified providers among the slum-dwellers is very low, even lower than in rural areas, due to certain constraints.

4 METHODOLOGY

4.1 DESIGN OF THE SURVEY

The survey was conducted on a cross-section of slum households in selected slums.

Quantitative data were collected from a sample of households of selected slums. Information on household members and household characteristics was collected from the household head or his/her representative through face to face interview.

4.2 SAMPLING METHOD

The sampling method has two broad components: determination of sample size and method of sample selection.

4.3 DETERMINATION OF SAMPLE SIZE

In order to permit scientifically grounded estimates to be made from the survey, the research team decided to adopt probability sampling, instead of non-probability sampling, although the latter is easier to apply in reality and less expensive. The requirements for probability sampling are: each element must have a known mathematical chance of being selected, chance must be positive, and numerically calculable.

The target population was defined as the households of slums in Dhaka city. Dhaka city is the only domain of survey.

The survey was devoted to a main specific issue: to estimate the proportion of households using healthcare from the qualified providers. This proportion was considered the main indicator of the survey. The Bangladesh Urban Health Survey 2013 has found that only half of the women living in slums receive ANC from medically trained providers. Considering this value of the relevant indicator, the value of probability (P) was assumed to be 0.538 in the sampling formula. In order to ensure sufficient reliability of the estimate, a margin of relative error (d) of 5% at the 95% confidence level was used.

Given the unavailability of complete listing of households within each slum, it was necessary to divide the slums into a number of clusters and to choose the households from each cluster. However, attempt was made to keep the design effect of clustering very low in order to obtain reliable results. Since the value of design effect cannot be known before the survey is undertaken, we have used the maximum default value of 2.0 for the design effect (deff.).[1]

AS in most households survey, the possibility of some households not being willing or able to respond to the survey questionnaire remained in this survey. The team assumed the anticipated non-response rate as 10% and increased the sample size by that rate.

Based on the above assumptions, the following formula (WHO, 1991; Cochran, 1977) was used to calculate the size of sample:

$$n = \frac{Z^2 p(1-p)}{d^2} \times (deff.)$$

where,

n = size of the sample
Z = value of the standard normal variable, which is equal to 1.96 at 5% level of significance
p = expected use rate of health care
deff. = design effect
d = the level of precision required or maximum error deemed acceptable

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[1]When the population is divided into clusters and the sample, is chosen from the clusters instead of from the entire population a sampling bias can arise. In order to reduce that bias, the sample size obtained by using the standard formula is escalated by a parameter, tat parameter is known as the design affect. It is usually assumed between 1.5 to 2. We have assumed 2, so that sample is of maximum possible size. (Reference: Designing Household Survey Samples: Practical Guidelines, UN 2015 (page 41))

Using p = 0.538, deff. = 2 and d = .05, the required sample size was 768.32 households. The sample increased since we assumed 15% contingencies such as non-response or recording error. With additional 15%, the required sample size was = 768+ (768*15%) ≈ 883 households rounded to 900 households. Hence, the total sample in Dhaka city was 900 households. The sample design was: 30 slums ×30 households = 900 households.

4.4 METHOD OF SAMPLE SELECTION

A list of slums and the number of households therein was collected from the 2005 Census and Mapping of Slums in Bangladesh (USAID and CUS, 2005). According to this list, there are 4343 slums in Dhaka city.

A two-stage cluster sampling design was used. In the first stage, 30 slums were selected from the list of all slums in Dhaka city applying the standard systematic random sampling. Then each of the selected slums was divided into some segments of about 90 households. Every slum was divided into some segments for clustering it and every cluster was designed consisting of 90 households, so that every third household could be selected and interviewed to complete 30 households in a cluster. Such segments were considered as the primary sampling units (PSUs) in the sampling process. Only one PSU in each slum was chosen randomly for household survey. In this manner 30 PSUs was selected from 30 slums. Each of these selected PSUs served as a cluster of households in our study (Table-1).

After selection of PSUs, 30 households were chosen from each PSU by systematic random sampling in the second stage of the sampling process. The first household was selected at random from the first three households in the north-east corner of the segment of a selected slum. Afterwards every third household in each PSU was interviewed. Thus the required sample size of 30 HHs×30 slums (clusters) = 900 households was selected in total. This procedure of selection ultimately produced a sample which was self-weighting in the slum area i.e. every household within the slum area will have the equal probability of being selected.

Table 1: Selected slums, number of households and PSUs

Name of slums	No. of households	PSUs	PSUs covered
Madina slum & others, H-193-204, 5,6, Lane-15,16, Mirpur, Section-12, Block-Ta, Pallabi	668	7	1
H-55/1,56,57,58,60,61,62,63, North-west side of Dhansiri int. school, Avenue-1,block-B, Mirpur, Section-13, Block-B, Kafrul	165	1	1
Irani camp & Madrasha camp, Avenue-3, Block-B, Mirpur, Section-11, Block-B, Pallabi	2098	23	1
Beside the porshee apertment, Housing settlement Office, Mirpur, Section-2, Block-C, Mirpur	250	2	1
Jahanabad Bastee(ghat bastee), Bharibadh, Jahanabad, Mirpur	100	1	1

Name of slums	No. of households	PSUs	PSUs covered
Hamid Comissioner- er Bari, Monipur Part-1+2, Mirpur	100	1	1
Kader Mia-er Bari, West Bhasantek Raod, Bhashan Tek, Kafrul	90	1	1
Jahangir- er Bastee, Lalasharai Bhasantek Road (North side of th e CRP), Laleshori, Kafrul	150	1	1
Ka- 55, 56, 68, 67, 70, 71, Kha parar, mRoad, Khilkhet, Khilkhet	300	3	1
Zoar Shahara Middle Para, North of the Kuril school Road, Joar Shahara Bazar, Badda	350	3	1
T & T Colony, Gulshan lake Road, Karail (Part-2), Gulshan	6000	66	1
Ka- 42/5/A, 42/5, 42/1 (Woadud, Woahidur Rahaman, Rashid, Kafil), Daroga Bari More, Paschim Merul, Badda	130	1	1
43/2, 43/B/2 (Md. Younus Talukder & Others), East Hazi Para Rasta, Purba Hazipara, Khilgaon	100	1	1
Adarshobagh Bastee, Adarshobagh Road, Uttar Goran, Khilgaon	1000	11	1
House of Mohsin & House of Sohagh Company, house-841, 24/2, 24/a, South side of Meradia road, Meradia (Part-1+2), Khilgaon	1000	11	1
House of Tara Mia, house no-43/1,45/1/a,45/e, Hazi Kodom Ali road, Uttar Mughda Para, Sabujbag	125	1	1
AESP- 1, 2, 3, 4 & AB 5, 6, 7, 8, Beside Goli of the Islami Bank Hospital & Madinatul Ulum Madrasha, Dakshin Shahjahanpur, Motijheel	160	1	1
West side of Mohakhali bus stand, Purba Nakhal Para, Tejgaon	400	4	1
Japani Para, Sher-E-Bangla Nagar, Tejgaon	100	1	
Comfort Housing Bastee, Baitul Aman Housing, Mohammadpur	1500	16	1
Mr.Alam's slum, (broken mosque, Bharibandh), Mohammadi Housing Ltd., Mohammadpur	150	1	1

Name of slums	No. of households	PSUs	PSUs covered
Godighar goli, Sher-e-bangla road, Purba Jafrabad, Mohammadpur	1400	15	1
Pearabag no-12 slum, Pearabag road, Pearabagh, Ramna	200	2	1
H-45/1,37,39/A,37/5,37/1,45/3,45/3a,36/12,36/7, Ganaktuli lane, Baddanagar, Hazaribag	95	1	1
40/1-A, 40/C, 40/A/3, 39/40, 40/A/2, 40/1, 40/2, 28/2, 27/kh, 27/Ga (Babul Mia, Md. Jahangir, Md. Khademul Islam, Shahid Hossen, Md. Babul Mia), Raj Narayan Dhor Road, Rajnarayan Dhar Road, Lalbag	221	2	1
10/2- 19/2, Karatitola Lane, Karatitola, Demra	370	4	1
47/1, 47/2, 47, 46, 46/15 (Jamal, Badsha Mia, Nasir, Ful Meher, Nazma, Aziz Mia), Shahid Nagar, Dhalka Nagar (Part-2)Na, Shyampur	240	2	1
30, 31, 25/B, 34 (Lakshmi Kanto Das), Kazir Bagh, Rishi Para, Brahman Chiron, Demra	195	2	1
140,55,55/1,64,63/1, house of Yunus mia, Akbar Ali, Muradpur Madrasha road, Muradpur, Shyampur	123	1	1
249, (Hasibur), paipe Rastar purbo Pase, Munshi Bari Bastee, Paschim Jurain, Shyampur	180	2	1
Total	17960	188	30

4.5 VARIABLES

The data were collected from two broad groups of variables categories: socioeconomic status of households and health indicators of household members. Under socioeconomic status, we collected information about the members of each individual household, i.e. number of family members, age, education, occupation, income, expenditure pattern, etc. Under health indicators, we collected information about disease pattern of households, duration of illness, health care seeking behavior, source of care and access to care of households, the reason for choosing particular provider, amount of health care expenditure, type of nearest primary health care facility, the frequency of health and family planning campaigns in the area, etc.

The information on these variables were expected to unravel the key determinants of demand for health care , the existing level of use of healthcare services among slum-dwellers in Dhaka city, and indicate the measures needed to raise the use of healthcare services can be increased to the among this population to the required level.

4.6 DATA COLLECTION INSTRUMENTS

Household surveys were conducted in the slums of Dhaka city using a structured household survey questionnaire. The questionnaire included questions on all the variables mentioned above.

4.7 FIELD PLAN FOR DATA COLLECTION OPERATIONS

To implement the fieldwork part of this study, a team of field investigators was employed. The team consisted of seven members: six investigators and one supervisor. The team covered 30 households in one slum (cluster) in one day. The team needed 37 working days including revisits. A total of 45 days was devoted to data collection operations including training, pretesting of questionnaire, fieldwork, and weekends.

In addition to this, the research team held group discussion in selected 5 slums with 30 slum-dwellers in each and made intensive observations of the situation prevailing in the slums. The objective of holding group discussion was to unfold certain information not covered in the structured questionnaire, such as, reasons for migrating from rural to urban areas, use of healthcare in their rural residences, level of satisfaction with the healthcare use in the earlier residences, problems faced in the current settlements regarding healthcare use and so on. In these discussions attempts were made to understand the processes involved in the rural-urban migration, history of residing in the slums, social and economic constraints faced, and health care seeking behavior. These qualitative information were used in the analysis of quantitative data as and when deemed necessary and appropriate.

4.8 METHOD OF ANALYSIS

4.8.1 Logistic regression

After the dataset is collected through the household survey, the data were entered in STATA. Then the entire procedure of data cleaning and processing was carried out. Necessary tables or and other mode of data representation that are needed for statistical analysis of the dataset were constructed. In addition to bivariate tables, we prepared multivariate tables to show the association of the values of several related variables. We used a number of statistical tools for the analyses of our dataset. Primarily, STATA software was used for running the logistic regression using our dataset.

In order to identify the determinants of certain dependent variables (such as use of healthcare & prevalence of disease), a technique of multivariate analysis will be used. Since the dependent variable will take the binary form, the use of logistic regression is fully appropriate here. Logistic regression was conducted as our analysis had mainly the binary outcomes. The logit regression function used had the following form:

$$\text{logit}(p) = \log[p/(1-p)]$$

While explaining the coefficients of the logit regression, the standard interpretation method, use of odds and odds ratios, was adopted.

The logistic function can take an input with any value from negative to positive infinity, whereas the output always takes values between zero and one and hence is interpretable as a probability. The logistic function $\sigma(t)$ is defined as follows:

$$\sigma(t) = \frac{e^t}{e^t + 1} = \frac{1}{1 + e^{-t}}:$$

If t is viewed as a linear function of an explanatory variable x (or of a linear combination of explanatory variables), then we express t as follows:

$$t = \beta_0 + \beta_1 x$$

And the logistic function can now be written as:

$$F(x) = \frac{1}{1 + e^{-(\beta_0 + \beta_1 x)}}$$

Note that $F(x)$ is interpreted as the probability of the dependent variable equaling a "success" or "case" rather than a failure or non-case. It's clear that the response variables Y_i are not identically distributed: $P(Y_i = 1 \mid X)$ differs from one data point X_i to another, though they are independent given design matrix X and shared with parameters β.

4.8.2 Inverse of the logistic function

We can now define the inverse of the logistic function, g, the logit (log odds):

$$g(F(x)) = \ln \frac{F(x)}{1 - F(x)} = \beta_0 + \beta_1 x,$$

and equivalently:

$$\frac{F(x)}{1 - F(x)} = e^{\beta_0 + \beta_1 x}.$$

In the above equations, the terms are as follows:

- $g(\cdot)$ refers to the logit function. The equation for $g(F(x))$ illustrates that the logit (i.e., log-odds or natural logarithm of the odds) is equivalent to the linear regression expression.
- $\ln$ denotes the natural logarithm.
- $F(x)$ is the probability that the dependent variable equals a case, given some linear combination x of the predictors. The formula for $F(x)$ illustrates that the probability of the dependent variable equaling a case is equal to the value of the logistic function of the linear regression expression. This is important in that it shows that the value of the linear regression expression can vary from negative to positive infinity and yet, after transformation, the resulting expression for the probability $F(x)$ ranges between 0 and 1.
- β_0 is the intercept from the linear regression equation (the value of the criterion when the predictor is equal to zero).
- $\beta_1 x$ is the regression coefficient multiplied by some value of the predictor.
- base e denotes the exponential function.

4.9 RELIABILITY AND VALIDITY CHECKS:

The validity checks were properly done. The reliability check was conducted using Cronbach's alpha and Guttman's split-half method.[2]

4.10 ETHICAL CONSIDERATION:

The study involved households of slums in Dhaka city. The household members are subjects. The study had no risk to subjects. It does not require any experiments or collection of blood or anything from the body. Verbal consent was sought from subjects before any observation or interview was conducted. Participation in the study was completely voluntary. Only the participants decided whether to participate in the study or not, and the participants could stop at any time without any obligation during discussion or interview if they felt uncomfortable. Refusal to take part in or withdrawal from the discussion or interview involved no penalty or loss of services. Privacy and confidentiality of the collected information was strictly mentioned.

The participants were verbally informed about the purpose of the study, type of information to be sought during the interview session, as well as risks and benefits, confidentiality, right to withdraw from the study, and additional study related information.

All data forms were kept in locked storage, allowing only investigators of the study to access the information. In the report, only aggregated information are presented, no individual information is reported by name. Particular care was taken during the presentation of the research findings so that the information presented is sufficiently aggregated. Interviewers for data collection were trained on the importance of confidentiality. Participants were informed that their names will not be recorded.

5. FINDINGS OF THE SURVEY

This section presents the findings of the survey in four subsections: first subsection deals with socioeconomic status of slum-dwellers; second subsections presents disease pattern, access to health care seeking behavior, and health care expenditures during the three months prior to the survey and also during the 9 months before the 3 months; and third subsection analyzes the estimation of logistic regression; and finally, fourth subsection four compares the use of health services of slum-dwellers with that of urban people.

5.1 SOCIOECONOMIC STATUS OF SLUM-DWELLERS IN DHAKA CITY

Demand for health care of the slum population depends to a great extent on the socio-economic characteristics of the households. Therefore, in order to identify the determinants of demand for health care, we have first analyzed the important characteristics of slum-dwellers in Dhaka city.

5.1.1 Background Characteristics of Slum-dwellers

Table A-1 shows the age distribution of slum-dwellers in Dhaka city. It shows that the proportions

[2] The detailed method has been discussed in Annex - III.

of males and females of the study population were same (50%). Considering the age group, the highest proportion (21.5%) was found in the age group of 15-24 years and in this age group the proportion of females was higher (25.5%) than that of males (17.5%). Almost similar scenario (18.2%) was observed for the age group of 25-34, where the proportions of males and females were nearly same. Around 16% of slum people were in the age below 4 and above 60 years. Half (50.4%) of the study population were married, 45.2% were unmarried, 3.5% were widowed, and only 0.8% were divorced (Table A-2).

The average level of education is very low in the slums of Dhaka city. This is quite naturally so, because the institutional opportunities for education is almost absent in the slums. Besides, it is quite plausible to assume that the persons who migrate to the cities and settled in the slums are mainly the most disadvantaged section of the rural people, who were bereft of education and employment opportunity (Hamid 2011, Howlader 2011, Lahiry 2011, Uddin et al 2009). About two-thirds (64.5%) of the household members, irrespective of their gender, had education below the primary level. Only 7.8% of them had completed secondary level and its above (Table A-3).

The slum dwellers are engaged mainly in the low grade jobs. This is expectedly so (Hamid 2011, Howlader 2011, Lahiry 2011, Uddin et al 2009). Most of the slum people could not be accommodated in the formal sectors due to the dearth of employment opportunities there (that is why they are in the slums) and had to find work in the low-return, low-status occupations in the informal sector. The major occupations of the survey population are: daily labor, such as rickshaw puller, van puller (13.6%), small business (9.6%), public and NGO services (9.2%), etc. The most important occupation of the male member is the small business (17.7%), while that of female members are working in garment factories (10.1%) [Table A-4].

Almost fifty percent (49.5%) of the slum dwellers work up to 8 hours per day. 46.6% of them work from 8.1 to 12 hours and only 3.9% work more than 12 hours on average per day (Figure A-1). The mean of working hour is 8.73 per day (Table A-5).

5.1.2 Income and Expenditure pattern of slum-dwellers

Among the household members (3723 persons), the proportion aged over 5 years who earn income was found 42% or 1571 persons. Among the earning members, 41.6% of the household members' monthly income was found below Tk 6000. Their monthly mean labor income was estimated as Tk 8388 (Table A-6). It should be mentioned here that if we consider all household members including below 5 years of age[*], then monthly per capita labor income of slum dwellers becomes Tk 3,539.

An interesting finding is that as the income group rises the proportion of female members in the successive group falls and it rises for the male members (Figure A-2). The underlying reason is that the female members of households are engaged mostly in low grade jobs, such as, work in garment factories, activities of a maid servant, sweeping, activities of construction worker and hawker etc.

Few household members (14.1%) reported that they did not have any other source of income than labor income (Table A-7). House rent (39%) and help from others (39%) were reported as major other sources of income by the slum dwellers in Dhaka city (Table A-8).If we consider all sources of income and all household members' income, then monthly per capita income of slum dwellers becomes Tk 4,109 (Table A-9). Monthly total income of around 42% of households monthly total income was between Tk 10,001 and Tk 15000 and 21% household's monthly income was between

Tk 15,001 to Tk 20000. The average monthly income of slum dwellers is estimated as Tk 16,098 (Table A-10). We can compare this income with the average monthly household income of urban people of Bangladesh. Monthly average urban household income was found Tk 16,477 in year 2010 (BHIES, 2010). During the period from 2010 to 2013, the average inflation rate was 7.6%. Escalating the average monthly income of urban households by the rate of inflation, the estimated monthly average income of urban households become Tk 22,086 in year 2014.Hence, it can be said that the average monthly household income of slum dwellers is 27% lower than the average monthly income of urban population of Bangladesh.

The slum households spent their earning mainly on food (on average Tk 6617 monthly) and house rent (on average Tk 3374 monthly). Their expenditure on health services was very low (on average Tk 597 per month), only 3.7% of their monthly average income (Table A-11). There might be two reasons for spending less on health care services: the household members did not suffer from acute illnesses or they ignored their diseases and were unwilling to spend money for health care.

5.1.3. Income inequity in slums: Gini coefficient and Lorenz curve

Gini coefficient measures the extent to which the distribution of income or consumption expenditure among individuals or households within an economy deviates from a perfectly equal distribution. A Lorenz curve plots the cumulative percentages of total income received against the cumulative number of recipients, starting with the poorest individual or household. The Gini index measures the area between the Lorenz curve and a hypothetical line of absolute equality, expressed as a percentage of the maximum area under the line. Thus, a Gini coefficient of 0 represents perfect equality, while a coefficient of 1 implies perfect inequality.
In the following figure, the red line shows the perfect income equality and the blue line represents the Lorenz curve for the slum-dwellers of Dhaka city (Figure 1).

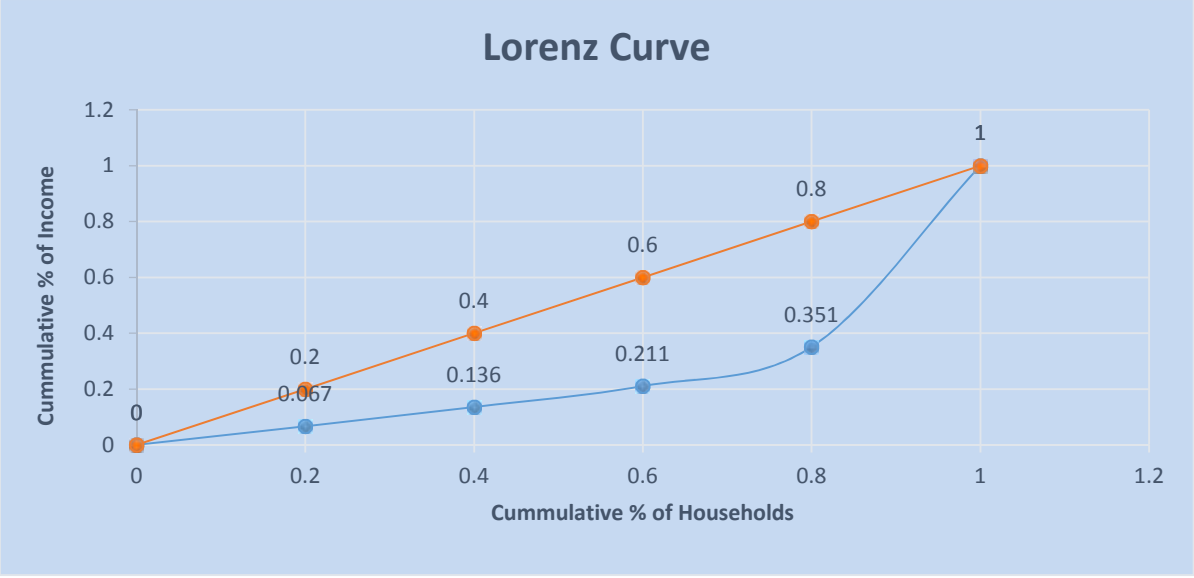

Figure 1: Lorenz curve for the slum-dwellers in Dhaka city

Income inequality for slum-dwellers of Dhaka city, as measured by the Gini coefficient, is found 49 percent (Details of Gini coefficient estimation is shown in Annex -II). For Bangladesh, the Gini coefficient is 32 percent, and it is higher in rural areas than in urban areas (30 percent vs. 24

percent.). The income inequality is highest in Dhaka division compared with other divisions of Bangladesh (41 percent) [BDHS, 2011].Compared with the national data of Bangladesh, considerable income inequity exists among the slum-dwellers of Dhaka city. The top 20% of slum households had 64% of their income, while this is 41% for whole Bangladesh (Figure A-3).

5.1.4. Residential Environment of Slum-dwellers in Dhaka city

Most of the residences in slum areas of Dhaka city are owned by the land lords (80.2%), only 16.4% residences are owned by the households themselves (Table A-12). Majority of the slum dwellers (80.6%) live in one room house and 16.7% of them live in house of two rooms (Table A-13). They usually live in a house with pucca floor, brick wall and roof with CI sheet (Table A-14). The vast majority of them (about 90%) used water from supply water and pump water collected through tube well for all uses like drinking, cooking and bathing (Table A-15).Most of the households in slums used the sanitary latrine though 8% of them used hanging latrine. But in most cases, one latrine was used by many households. On average, one latrine was shared by 5.3 households (Table A-16).Majority of the households in slums use gas burner for cooking, have electricity connection, and use color television and mobile phone (Table A-17 and A-18).About 10%of the slum households do not have any fixed place to dispose their garbage, and 90% of them dispose it either in dustbin of city corporation or in a pot inside the house cleaned by the garbage man (Table A-19).

5.1.5 Reasons for migration and the present status of slum-dwellers in Dhaka city

About 23% of household heads were residing in the present slums for the last two years (Table A-20). Before coming to this slums, 59.6 % of them lived in other slums of the Dhaka city. The slum-dwellers migrated from any other cities or villages of Bangladesh (Table A-21). Easy access to work in cities (78.7%), inadequate job opportunity at village level (76.5%%), inappropriate shelter in villages (22.2%), increased opportunity of other family members to get job in the cities (14.5), and river erosion (7%) were identified as major reasons for migration of people from village to city/slum areas (TableA-22).

The people now residing in the slums, mostly lived earlier in the villages of different districts of the country. The areas where they lived earlier widely vary, covering almost all districts of the country. Among the survey households, the highest number (66) migrated from the villages of Barisal, followed by that of Bhola (54), Kishoregong (50), Comilla (45) and Mymensingh (42)[Table A-23]. This indicates that the people are migrating to the cities for diverse reasons as mentioned above. This is contrary to the notion in vogue that people mainly of certain pocket areas, such as Rangpur, Kurigram, Gaibhandha etc. migrate to the cities and constitute the slum-dwellers.

About two thirds of the households' ownership of land both before and after coming to Dhaka was below 10 decimal (Table A-24 and A-25). No significant change was found as regards. However, slum dwellers' income have increased after they have started living in the slums and working in cities. As a result, their living standard improved and majority (76.7 %) of them reported their economic condition at present is better than the past (Table A-26).

5.2. DISEASE PROFILE, ACCESS TO HEALTH CARE, HEALTH CARE SEEKING BEHAVIOR AND HEALTH CARE EXPENDITURE OF SLUM-DWELLERS

This subsection shows the disease profile, health care seeking behavior, access to maternal and child health care, and health care expenditure of slum-dwellers during the last three months prior to the survey and during nine months before the last three months.

5.2.1. Disease profile of slum-dwellers

Over 88 % of household members (98.9% of households) had suffered from any disease during the last 3 months (Table A-27).They suffered mainly from some symptomatic diseases, like fever (39.5%), cough (7.8%), headache (6.4%), physical weakness (3.9%), high blood pressure (2.3 %) etc. Beside these, they also suffered from some other diseases, like gastric/peptic ulcer (9.7%), diarrhea (4.3%), skin diseases (2.3%), and diabetes (2.0%) etc. (Table A-28).

Two- thirds of the household members reported that their duration of suffering from diseases was up to 15 days during the last three months, i.e. maximum 5 days per month. One fifth of them reported it as 31 days or more (Table A-29). About 18% of household members, who suffered for 8-15 days , were mainly contracted by fever, gastric/peptic ulcer, headache, diarrhea, cough, and physical weakness; 10% of household members whose duration of illness was 16 -30 days mainly suffered from gastric/ peptic ulcer, fever, cough, and different types of pain; one fifth of households whose duration was more than 30 days mainly suffered from diabetes, blood pressure, peptic ulcer and physical weakness (Table 30).

5.2.2. Access to health care and health care seeking behavior of slum-dwellers

Among the 98.9% of household members, who suffered from any disease during the last three months, 91.1% have sought care from any source of health care (Table A-31). Though 91.1 % of slum-dwellers have sought care when they suffered from any disease, majority of them (82.4 % of cases) did not seek care from modern health provider/facilities. Pharmacy/drug stores (69.5 %) were the main sources of health care of the slum dwellers. About 32.8 % of them received care from modern health facilities, of which only 13.9 % have sought health care from public health facilities (Table A-32).

5.2.3. Health care expenditure of slum-dwellers

Total cost of health services of slum people was not so high. Majority (70%) of the household's actual health care expenditure during the last 3 months was reported as Tk below 500, and 30 % of them reported it as Tk 500 or above (Table A-33). The mean cost of care per month was estimated as Tk 297, which is only 1.8% of their monthly average income (Table A-34).

5.2.4. Reasons for choosing the health facilities

As mentioned earlier, 82.4 % slum dwellers received health care from informal providers. Nearness of the providers from houses, availability of good services, availability of medicines (especially in pharmacies), good behavior of service providers, low treatment cost, and short waiting time were reported as the key reasons for choosing the informal providers by the slum dwellers. On the other hand, the reasons for seeking care from qualified providers were availability of qualified doctor, availability of diagnostic facilities, and low fees (Table A-35).

Most of the households (92.5 %) were satisfied with the health care they received from the facilities. A few of them (7.5 %) who expressed their dissatisfaction reported services being

inadequate and ineffective , high treatment cost, negative side effect of treatments as the major reasons for their dissatisfaction (Table A-36 and A-37).

The households were requested to mention whether they suffered from any diseases in the last nine months prior to the last three months. About 99.2% of households reported that they suffered (Table A-38).No significant differences in disease profile, health care seeking behavior, reasons for choosing the providers were found between the three months and nine months .The mean cost of care per month was Tk 152 for nine months and Tk 297 for last three months (Table A-39 to table A-44).

Since the selected slums were located from different parts of Dhaka city, the nearest government health facilities were different for different slums. The mean distance of government facilities and NGO facilities were found as 4.9 km and 0.9 km, respectively (Figure A-4). The NGO health facilities located near the slums were mainly Brac, Sobuj Chhata,Radda and Marry Stopes.
Fifty percent of the slum households reported that the health workers visited their homes (Table 45); it was visited mostly by the NGO health workers (85.6%) [Table A-46]. Majority of the health workers who visited slum dwellers were females (Table A-47).The health workers mainly discussed about family planning (61%), necessity of vaccination (23 %) and healthy life style (10.4%) [Table A-48]. Health workers' average duration of discussion was 11.23 minutes. Majority (82.8 %) of the households expressed their satisfaction with the duration of the discussion during home visit of the health workers. Fifty percent of them said that health workers also provided some items, mainly the family planning commodities (Table A-49 to A-52).
About 44% of slum households reported that satellite clinics were organized in their slums. The issues discussed in the satellite clinics were mainly family planning, maternal and child health care, immunization etc. (Table A-53 and A-54). The satellite clinics were mainly organized for child vaccination and maternal health services. However, the workers of the satellite clinics also gave some free medicines (Table A-55).

5.2.5 Maternal health services

The level of the use of maternal care is one of the most important indicators of health sector performances at present, since achieving the MDGs which are yet to be achieved mostly depend on raising this level. Maternal care has several aspects: different ANCs, delivery care and PNC. Bangladesh is lagging behind the MDG targets in respect of the last two. Matter of great concern to the policy makers is the rapid increase of the use of delivery care from the institutional sources.

It is important to mention here that 87.8% of slum women received any ANC, and 40% of them received ANC 4 times or more. Only 12.2% of them did not receive any ANC during pregnancy (Table A-56). Among the pregnant women of the slums who used ANC mostly (97%) received care from modern health providers, especially from NGO clinics (44.5%), private hospitals (19.2%) and Nagor Sasthayo Kendro (11.4%) [Figure A-5]. ANC not needed, bad behavior of staffs, lack of privacy, religious barrier, long waiting time were reported as the main reasons for not receiving any ANC by the 12.2% of pregnant women in slums (Table A-57). About 78% of pregnant women of slums received TT injection during pregnancy (Table A-58).

The results show that about 17% of the births in the slum areas were provided cesarean section (Table A-59). This finding is important as the proportion of births through C-section is sometimes considered to be a proxy indicator of women's access to skilled care for complicated cases (BDHS 2011).About 40% of slum women gave birth their child in modern health facilities, mainly in NGO

clinics and private hospitals. The remaining 60% of them gave births in their own residences (Table A-60).Only one fourth (24.3%) of home delivery were assisted by the skilled birth attendants (qualified doctor, nurse, FWV, and trained birth attendant), and majority of the attendants (75.7%) were in turn were assisted by the unskilled (untrained traditional attendant, quack, household members and without any assistance) birth attendant (Table A-61).More than half (56.3 %) of slum women received PNC within 42 days of birth. Slum women received PNC from modern health facilities especially from NGO clinic (38.1%), private hospitals (14.1%), Nagor sasthayo kendro (13%) and other public hospitals (9.2%) [Table A-62].Among the mother who did not receive any PNC, 94% felt that no PNC is required after delivery (Table A-63).

5.2.6. Child health

The findings show that only 86.7% of households in slums had children aged 1-2 years whose mean age was 16 months and the proportion of female children (52.5 %) was slightly higher than the male children (Table A-64 and A-65).A considerable proportion of slum households (91.7%) fully immunized their children against seven severe diseases and their main source of vaccination was government EPI center (49.1%) and NGO clinics (33.6%) (Table A-66). Among the households (8%) who did not vaccinate their children fully, most of them didn't know the need for vaccination and the place of vaccination (table A-67). About 54% of households reported that they were currently using family planning method and the 46% did not use it (Table A-68).Those who currently use family planning method mostly use female oriented methods (Table A-69).

5.3. LOGISTIC REGRESSION: OPERATIONAL METHOD

This section analyzes the regression estimation by using multivariate logistic regression analysis.

The odds of the dependent variable equaling a case (given some linear combination x of the predictors) is equivalent to the exponential function of the linear regression expression. This illustrates how the logit serves as a linking function between the probability and the linear regression expression. Given that the logit ranges between negative and positive infinity, it provides an adequate criterion upon which to conduct linear regression and the logit is easily converted back into the odds.

So we define odds of the dependent variable equaling a case (given some linear combination x of the predictors) as follows:

$$\text{odds} = e^{\beta_0+\beta_1 x}.$$

5.3.1 Definition of the odds ratio

The odds ratio can be defined as:

$$OR = \text{odds}(x+1)/\text{odds}(x) = \frac{\frac{F(x+1)}{1-F(x+1)}}{\frac{F(x)}{1-F(x)}} = e^{\beta_0+\beta_1(x+1)}/e^{\beta_0+\beta_1 x} = e^{\beta_1}$$

or for binary variable F(0) instead of F(x) and F(1) for F(x+1). This exponential relationship provides an interpretation for β_1: The odds multiply by e^{β_1} for every 1-unit increase in x.

5.3.2 Binomial Logistic Model

To determine the demand for healthcare among slum-dwellers a Binomial logit regression analysis was conducted. The model for the regression was specified as follows:

qual_prov = β + income_gr + gender + hhh_edu + hhh_occu1 + gov_fac + NGO_fac + HW_visit

here, *qual_prov* is the multivariate dependent variable, where,

qual_prov= 1, if the patient sought healthcare from a qualified provider and

qual_prov=0, if the patient sought healthcare from an unqualified provider or didn't seek healthcare services at all.

Income_gr= income group of the household head, categorical variable, divided into 6 groups,

where, the income groups are between 0-5000Tk, 5001-7500Tk, 7501-10000Tk, 10001-15000Tk, 15000-20000Tk and 20000-more.

gender = a dummy variable,

where, gender =0, if respondent is male and gender = 1, if respondent is female.

hhh_edu= educational qualification of the household head, categorical variable, divided into 4 groups,

where, the groups are primary incomplete, primary complete, secondary incomplete, secondary or above.

hhh.occu1= occupation of the household head, categorical variable, divided into 7 groups,

where, the occupation groups are between small/medium business, garment worker, house maid, Housewife, Day labourer, Unemployed, Others.

gov_fac= distance of the nearest governmet facilty,

NGO_distance= distance of the nearest NGO facilty,

HW_visit = a dummy variable,

where, HW_visit=1, if a health worker visited the household

HW_visit=2, if no health worker visited the household

Using this model, a binomial logistic regression was run in STATA 13.

Table 2: Binomial Logistic Regression for Demand for Healthcare in the Slums of Dhaka City

qual_prov	Coef.	Std. Err.	z	P>|z|
Income_gr				
Tk 5001-7500	-.0014796	.9606228	-0.00	0.999
7501-10000	-.1670913	.8740564	-0.19	0.848
Tk10001-15000	.0053438	.8578117	0.01	0.995
Tk15001-20000	.3316763	.8631673	0.38	0.701
Tk 20000 and more	.7389525	.8688926	0.85	0.395
gender	.1015321	.1885465	0.54	0.590
hhh_edu				
Primary incomplete	.1925598	.1961325	0.98	0.326
Primary complete	.2287534	.1846287	1.24	0.215
Secondary incomplete	.2987448	.2322976	1.29	0.198
Secondary or above	.3368793	.2123051	1.59	0.113
hhh_occu1				
Small/medium business	-.2910936	.2004221	-1.45	0.146
Garment worker	-.69365	.3102761	-2.24	0.025
Maid servant	-2.017176	1.050289	-1.92	0.055
Housewife	-.2688503	.4282851	-0.63	0.530
Labour (day/transp..)	-.3666621	.1956175	-1.87	0.061
Unemployed	-.2614096	.4185532	-0.62	0.532
Others (handicraft..)	-.6401706	.3388665	-1.89	0.059
govt_fac	.0232744	.0153456	1.52	0.129
NGO_fac	.2121635	.0834455	2.54	0.011
HW_visit	.1586657	.1507333	1.05	0.293
_cons	-1.337999	.9209888	-1.45	0.146

From the above binomial logit analysis, at the 5% level of significance, if the household head is a garment worker, we expect a 0.69 decrease in the log-odds of the dependent variable *qual_prov*. At the 5% level of significance, if the household is near to a NGO facility, we expect a 0.21 increase in the log-odds of the dependent variable *qual_prov*.

Table 3: Odds-Ratio for the Binomial Logistic Regression for Demand for Healthcare in the Slums of Dhaka City

qual_prov	Odds Ratio	Std. Err.	z	P>|z|
Income_gr				
Tk 5001-7500	.9985215	.9592025	-0.00	0.999
7501-10000	.8461224	.7395587	-0.19	0.848
Tk10001-15000	1.005358	.862408	0.01	0.995
Tk15001-20000	1.393302	1.202653	0.38	0.701
Tk 20000 and more	2.093741	1.819236	0.85	0.395
gender	1.106865	.2086956	0.54	0.590
hhh_edu				
Primary incomplete	1.212349	.237781	0.98	0.326
Primary complete	1.257032	.2320842	1.24	0.215
Secondary incomplete	1.348166	.3131756	1.29	0.198
Secondary or above	1.40057	.2973482	1.59	0.113
hhh_occu1				
Small/medium business	.7474457	.1498046	-1.45	0.146
Garment worker	.4997486	.1550601	-2.24	0.025
Maid servant	.1330307	.1397206	-1.92	0.055
Housewife	.7642577	.3273202	-0.63	0.530
Labour (day/transp..)	.6930438	.1355715	-1.87	0.061
Unemployed	.7699655	.3222716	-0.62	0.532
Others (handicraft..)	.5272025	.1786513	-1.89	0.059
govt_fac	1.023547	.015707	1.52	0.129
NGO_fac	1.23635	.1031678	2.54	0.011
HW_visit	1.171946	.1766513	1.05	0.293
_cons	.2623702	.24164	-1.45	0.146

From the above figure, we can say, at the 5% level of significance, if the household head is a garment worker, the odds of going to a qualified provider is 0.5 times than the odds of going to an unqualified provider or not going at all. Similarly, at the 5% level of significance, if the household is near to a NGO facility, the odds of going to a qualified provider is 1.23 times than the odds of going to an unqualified provider or not going at all.

5.4. COMPARISON OF USE OF HEALTH SERVICES OF SLUM-DWELLERS WITH THAT OF URBAN PEOPLE

This section compares use of health services of slum dwellers with that of urban people in Bangladesh.

The proportion of women of urban slums in Dhaka city using different types of health care is much lower than that of the urban population of the country; the current use of FP is 54% in the slums and 66% in the urban areas; the use of ANC is 39.9% in the slums and 45.5% in the urban areas; and the proportion of institutional delivery is 39% for slum dwellers and 58% for urban people in Bangladesh (Table 4).

Table 4: Percentage distribution of slum dwellers and urban people by use of health services

Health services	Slum dwellers	Urban people
Current use of family planning	54	66
ANC	39.9	45.5
Institutional delivery	39	58

Source: BDHS, 2014

6 CONCLUSIONS AND RECOMMENDATIONS

The conditions of slums, including sanitation and water supply, has to some extant improved in the recent years. Monthly average household income of slum dwellers in Dhaka city is much lower, income inequity is considerably higher, and the level of use of healthcare is much lower than that of for urban people of Bangladesh. Several factors constraint the demand and supply side of the healthcare, nevertheless, limited access to healthcare is their serious constraint to use of healthcare. This is also an important factor to have reduced the demand for healthcare from the qualified sources. Effective measures are needed to increase both demand and supply of services and thereby the equilibrium use of healthcare and obtain positive comparative statics.

The main contribution of this study is updating of data on demand for health care by the slum dwellers as well as to address certain issues, such as reasons for non-use of health care from qualified sources, determinants of demand for health care, and comparison of their present condition with the condition before migration.

The following recommendations directly stem from the findings. Since the demand for healthcare has been found lower among the slum dwellers than among the other inhabitants of Dhaka city, intensive BCC campaign has to be conducted in the urban slums. The logit analysis has revealed that distance to facility adversely affects demand for healthcare from the qualified sources. Hence, more facilities has to be established so as to provide access to healthcare closer to the slums. The logit has also shown that the women with secondary level of education uses healthcare more from the qualified sources. Hence emphasis should be attached on providing education to the women in the slums up to the secondary level.

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ANNEX – I

Table A-1: Percentage distribution of household members by age group

Age group (years)	Male		Female		Total	
	No.	%	No.	%	No.	%
0-4	226	12.1	217	11.7	443	11.9
5-9	188	10.1	196	10.5	384	10.3
10-14	221	11.9	162	8.7	383	10.3
15-24	325	17.5	474	25.5	799	21.5
25-34	350	18.8	329	17.7	679	18.2
35-44	246	13.2	220	11.8	466	12.5
45-59	219	11.8	203	10.9	422	11.3
60 +	87	4.7	60	3.2	147	3.9
Total	1862	100	1861	100	3723	100

Table A-2: Distribution of HH members by marital status

Marital Status	No.	Percent (%)
Married	1878	50.4
Unmarried	1684	45.2
Divorced	31	.8
Widowed	130	3.5
Total	3723	100.0

Table A-3: Percentage distribution of household members by level of education

Level of education	Female		Male		Total	
	No.	%	No	%	No.	%
Illiterate	466	25	362	19.4	828	22.2
Primary level incomplete	467	25.1	526	28.2	993	26.7
Primary level complete	298	16.0	284	15.3	582	15.6
Secondary level incomplete	258	13.9	246	13.2	504	13.5
Secondary level complete & above	112	6	177	9.5	289	7.8
Not applicable (for children below 6yrs)	260	14	267	14.3	527	14.2
Total	1861	100	1862	100	3723	100

Table A-4: Percentage distribution of household members by occupation

Occupation	Female	Male	Total

	No	%	No.	%	No.	%
Govt. job/ Semi-govt. / NGO service	60	3.8	228	14.5	288	9.2
Small/ medium business	24	1.5	278	17.7	302	9.6
Garment worker	158	10.1	96	6.1	254	8.1
Maid servant	146	9.3	0	0	146	4.6
House maker (Housewife)	692	44	0	0	692	22
Student	346	22	387	24.6	733	23.3
Labor (day/ Rikshaw / Van puler)	26	1.7	401	25.5	427	13.6
Unemployed	48	3.1	100	6.4	148	4.7
Others (Handicrafts/ Beggar/ Tokai)	71	4.5	82	5.2	153	4.9
Total	1571	100	1572	100	3143	100

Table A-5: Percentage distribution of household members by working hour

Work hours	No.	Valid percentage (%)
Up to 8 hours	777	49.5
8.1-12 hours	732	46.6
Above 12 hours	61	3.9
Totals	1571	100
No work	2152	
Mean working hour of employed household members	8.73 hrs	

Table A-6: Percentage distribution of household members (> 5 years and income earner) by monthly labor income

Income Group	**No. of household members**	**Valid Percentage (%)**
Upto Tk 4000	363	23.1
Tk 4001-6000	290	18.5
Tk 6001-8000	268	17.1
Tk 8001-10000	240	15.3
Tk >10000	410	26.1
Total	1571	100.0
Mean income of individual member = Tk 8388		
Median income of individual member = Tk 7500		

*a few children aged over 5 years are engaged in some income earning activities in the course of helping father and mother.

Table A-7: Percentage distribution of households by any other (than labor) source of income

Is there any other source of income	No.	Percentage (%)

Yes	127	14.1
No	773	85.9
Total	900	100.0

Table A-8: Distribution of households by other sources of income

Other sources of income	No.	Percentage	Percentage of cases
House rent	55	39	43.3
Shop rent	5	3.5	3.9
Help from others	55	39	43.3
Remittance	7	5	5.5
Others	19	13.5	15
Total	141	100%	111%

Table A-9: Per capita monthly income of slum dwellers

N	Valid	900
	Missing	0
Mean		4108.9645
Median		3683.3333

Table A-10: Percentage distribution of households by total monthly income (all sources)

Income Group (Tk)	No.	Percentage (%)
0-5000	9	1
5001-7500	29	3.2
7501- 10000	146	16.2
10001-15000	375	41.7
15001-20000	189	21.0
20001 and more	152	16.9
Total	900	100.0
Monthly Mean income	Tk 16,098	

Table A-11: Item wise monthly mean expenditure of the slum HHs

Items	Monthly mean expenditure (Tk)
HHs monthly expenditure on rice	1894

HHs monthly expenditure other foods	4723
HHs monthly expenditure on house rent	3374
HHs monthly expenditure on water	299
HHs monthly expenditure on electricity	917
HHs monthly expenditure on fuel	656
HHs monthly expenditure on education	1752
HHs monthly expenditure on health	597
HHs monthly expenditure on clothing	689
HHs monthly expenditure on conveyance	678
HHs monthly expenditure on other items	1046

Table A-12: Distribution of HHs by ownership of residence

ownership of residence	No. of HHs	Percentage (%)
Owned by himself	147	16.3
Owned by landlord	722	80.2
Owned by govt.	31	3.4
Total	900	100.0

Table A-13: Distribution of HHs by no. of living rooms

No. of living rooms	No. of HHs	Percentage (%)
1 room	725	80.6
2 rooms	150	16.7
3-5 rooms	25	2.8
Total	900	100.0

Table A-14: Percentage distribution of HHs by dwelling materials

Characteristics		No. of HHs	Percentage (%)
Main material of floor	Kucha	79	8.8
	Pucca	821	91.2
	Total	900	100.0
Main wall materials	Straw/jute sack/polythene	3	.3
	Fence	25	2.8
	CI sheet	335	37.2
	Brick wall	509	56.6
	CI sheet + brick wall	28	3.1
	Total	900	100.0
Main roof material	Straw/jute sack/polythene	4	.4
	Polythene + fence	2	.2
	CI sheet	837	93.0
	Brick+rod+cement	57	6.3
	Total	900	100.0

Table A-15: Percentage distribution of households by source of water

Characteristics		No. of HHs	Percentage (%)
Source of drinking water	Tube well	20	2.2
	supply water	353	39.2
	Electric motor/ pump water collected through tube well	416	46.2
	Filter water	38	4.2
	Others	73	8.1
	Total	900	100.0
Source of cooking water	Tubewell	14	1.6
	supply water	404	44.9
	Electric motor/ pump water collected through tube well	474	52.7
	Other	8	.9
	Total	900	100.0
Source of bathing water	Tube well	12	1.3
	supply water	400	44.4
	Electric motor/ pump water collected through tube well	476	52.9
	Other	12	1.3
	Total	900	100.0

Table.A-16: Percentage distribution of households by sanitation facility

Characteristics		No. of households	Percentage (%)
Type of toilet	Sanitary toilet	789	87.7
	Pit latrine	39	4.3
	Hanging toilet	71	7.9
	Total	900	100
Average no. of HHs per toilet	5.3		

Table A-17: Percentage distribution of HHs by different home facilities

Characteristics		No. of HHs	Percentage (%)
Cooking facilities	Gas oven	741	82.3
	Electric hitter	44	4.9
	Kerosene oven	7	.8
	Earthen oven	107	11.9
	Total	900	100
Average Number of HHs per stove	2.6		
	Yes	894	99.3

Electricity connection	No	6	.7
	Total	900	100
Average No. of electric lights/ bulbs per HHs	1.3		

Table A-18: Percentage distribution of HHs by possession of TV and mobile phone

Characteristics		No.	%
Possession of TV	Color television	659	73.2
	Black & white TV	11	1.2
	None	229	25.4
	Total	900	100
Average no. of mobile phone per HHS	1.74		

Table A-19: Percentage distribution of households by method of garbage disposal

Means of Garbage disposal	No. of households	Percentage (%)
City Corporation dustbin	90	10.0
Fixed place in slum	105	11.7
No fixed place	87	9.7
Pot inside house cleaned by garbage man	603	67.0
Other	14	1.6
Total	900	100

Table A-20: Percentage distribution of HHs by duration of HH head's staying in the current slum

Duration of stay (years) in slums	No. of HHs	%
Upto 2 yrs	210	23.3
2-5	130	20.4
5-10	103	16.2
10-15	59	9.3
15-20	69	10.8
20 yrs	67	10.2
Total	636	100.0

Table A-21: Percentage distribution of HH head by lived in other cities or slums before this slum.

	Frequency	%
Yes	379	59.6

No	257	40.4
	636	100

Table A-22: Distribution of HHs by reasons for migration to Dhaka city.

Reasons for migration to Dhaka city	No. of HHs	Valid percentage*
River erosion	42	7
Natural calamity	6	1
Burden of loan	25	4.2
Lack of shelter/place to live in village	135	22.2
Lack of work opportunity in village	459	76.5
To get a work in town easy	472	78.7
More scope of work of HH members in town	87	14.5
Death of guardian	1	.2
Divorce/newly married	2	0.3
Others	19	3.2
Total	636	1207.7%

*Multiple responses

Table A-23: Percentage distribution of households' head by permanent residence

Name of the Districts	No. of households	Valid Percentage
Barisal	66	10.4
Bhola	54	8.5
Kishorejang	50	7.9
Comilla	45	7.1
Mymansingh	42	6.6
Madripur	26	4.1
Shariotpur	25	3.9
Borguna	24	3.8
Netrokona	21	3.3
Patuakhali	20	3.1
Noakhali	18	2.6
Chandpur	18	2.8
Munshiganj	18	2.8
Faridpur	15	2.4
Jamalpur	14	2.2
Brahmanbaria	14	2.2
Jhalokhati	13	2
Other districts	153	24.1
Total	636	100.0

Table A-24: Distribution of HHs by land ownership before coming to Dhaka.

Ownership of land ( )	No. of HHs	Valid percentage
<1 decimal	165	26.0
1-5 decimal	144	22.6
6-10 decimal	114	18.0
11-20 decimal	84	13.2
21-40 decimal	83	13.0
>40 decimal	36	5.6
Do not know	10	1.6
Total	636	100.0

Table A-25: Distribution of HHs by land ownership after coming to Dhaka.

Ownerships of land (Decimals)	No. of HHs	Valid percentage
<1 decimal	155	24.3
1-5 decimal	145	22.7
6-10 decimal	119	18.7
11-20 decimal	95	14.9
21-40 decimal	80	12.5
>40 decimal	36	5.6
Do not know	8	1.3
Total	638	100.0

Table A-26: Percentage distribution of households by self-reported change in economic status.

Economic status	No. of households	Percentage
Better than before	488	76.7
Same as before	95	14.9
Worse than before	53	8.4
Total	636	100.0

Table A-27: Percentage distribution of HHs suffered from any diseases during the last 3months

Suffering from any diseases	No. of household members	Percentage
Yes	890	98.9
No	10	1.1
Total	900	100.0

Table A-28: Percentage distribution of household members by disease pattern in the last 3months

Disease profile	No of people with disease	Percentage of households
Fever	1302	39.5

Gastric/Peptic ulcer	319	9.7
Cough	256	7.8
Headache	212	6.4
Diarrhea/loose motion	143	4.3
Physical weakness	129	3.9
High pressure	107	2.3
Pain in hand/leg/waist	91	2.8
Skin disease	77	2.3
Diabetes	67	2.0
Other diseases	591	18.8
Total	3294	100.0

Table A-29: Percentage distribution of household members by duration of illnesses in the last 3 months

duration of illnesses in the last 3 months		No. of household members	Percentage
	Up to 3 days	629	19.1
	3-7	990	30.1
	8-15	584	17.7
	16-30	339	10.3
	31 or more	752	22.8
	Total	3294	100.0

Table A-30: Percentage Distribution of households by disease/symptom suffered from in last 3 months and duration of disease (days)

Name/Symptom of diseases		Duration of disease (days))					Total
		Up to 3 days	3-7	8-15	16-30	31 or more	
Name of disease/symptom suffered from in last 3 months	Fever	385	633	240	37	7	1302
	Typhoid	2	5	10	6	1	24
	Malaria	2	0	2	1	2	7
	Dengue	1	1	1	0	1	4
	Headache	64	73	41	18	16	212
	Cough	41	114	63	24	14	256
	ENT problem	3	9	14	7	23	56
	Tuberculosis	0	0	2	0	8	10
	Asthma	4	7	16	12	27	66
	Heart attack	0	4	3	2	16	25
	Stroke	0	0	0	2	0	2

	Diarrhoea/loose motion	75	40	19	5	4	143
	Food poisoning	1	1	0	0	0	2
	Vomiting	6	5	1	1	0	13
	Idigestion	2	1	1	1	3	8
	Gastric/Peptic ulser	5	14	40	61	199	319
	Liver problems	0	1	1	2	4	8
	Joundice	1	13	7	5	9	35
	Diabetes	0	1	0	4	62	67
	Kidney/renal disease	0	1	3	6	12	22
	Appendecitis	0	0	2	0	0	2
	Sexual & reproductive health problems	1	2	8	6	22	39
	Pregnancy related problems	2	4	1	2	7	16
	Delivery complications/reasons	2	2	2	2	1	9
	Orthopedic problems	0	3	5	12	25	45
	Accident related injury	2	11	13	4	7	37
	Paralysis	0	0	1	0	5	6
	Skin disease	2	9	18	20	28	77
	Oedema	0	0	1	0	10	11
	Anaemia	0	0	2	2	7	11
	Physical weakness	4	8	26	47	44	129
	Cancer	0	0	0	0	1	1
	Eye/Opthalmologic problem	1	5	3	5	17	31
	Others	1	0	0	0	2	3
	Tumor	0	0	0	2	8	10
	Heart problem	0	0	2	2	12	16
	Pain in hand/leg/waist	9	6	17	21	38	91

	Convulsion	2	1	2	1	0	6
	Piles	0	0	1	2	7	10
	Pain in chest	4	3	3	4	7	21
	Pain in teeth	2	4	5	2	3	16
	High pressure	3	2	0	5	66	76
	Low pressure	1	2	4	5	19	31
	Chicken pox	1	5	3	1	0	10
	Sore in mouth	0	0	0	0	2	2
	Leprosy	0	0	0	0	1	1
	Stone in gall bladdar	0	0	1	0	1	2
	Hernia	0	0	0	0	2	2
	Autism	0	0	0	0	1	1
	Hydrocele	0	0	0	0	1	1
Total		629	990	584	339	752	3294

Table A-31: Percentage distribution of household members by health care seeking behavior in the last 3 months

Seek care from any source of health facilities	No. of household members	Percentage
Yes	3001	91.1
No	293	8.9
Total	3294	100.0

Table A-32: Percentage distribution of household members by source of seeking healthcare services

Source of Health Care services	Numbers	Percentage of cases*
Nagar Sasthyo Kendro	45	1.5%
Govt. Medical College Hospital	157	5.2%
Govt. Specialized Hospital	215	7.2%
Private hospital/clinic/nursing home	148	4.9%
Private medical college hospital	10	0.3%
NGO clinic	22	0.7%
Qualified doctor's chamber	390	13.0%
Quack/homeopath/herbal/unani	188	6.3%

	Consulting a pharmacist at a drug store	2085	69.5%
	Self-medication	188	6.3%
	Others	9	0.3%
N		3001	115.2%
***multiple responses**			

Table A-33: Percentage distribution of household members by cost of health care services

Total treatment cost			
		Frequency	Percentage
	No cost	11	0.4
	Tk. <100	659	22.0
	Tk. 100-199	720	24.0
	Tk. 200-499	690	23.0
	Tk. 500 or more	886	29.5
	Could not remember	35	1.2
	Total	**3001**	**100**

Table A-34: Percentage distribution of household members by average Cost of Seeking Healthcare Services

	Average cost of Treatment for 3 months	Average cost of Treatment for 1 month
Mean	890	297
Median	200	67
Minimum	0	0
Maximum	80000	80000

Table A-35: Percentage distribution of household members by reasons for choosing the health facility

Reason for choosing the source of HC		Responses	Percent of Cases*
		Numbers	
	Nearness of the facility	2429	81 %
	Service providers are cordial	542	18.1%
	Good service available	1158	38.6%
	Short waiting time	376	12.5 %
	Qualified doctors available	531	17.7 %
	Low fees/low treatment cost	289	9.6 %
	Good waiting arrangement	12	0.4%
	Confidentiality is maintained	21	0.7%
	Do not know where else to go	16	0.6%
	Medicine is also available	168	5.6%

	Availability of diagnostics services	42	1.4%
	Others	5	0.2%
N		3001	186.4 %*

*multiple responses

Table A-36: Percentage distribution of household members by Percentage of People Satisfied with Service from the Health Facilities

		Frequency	Valid Percent
	Satisfied	2776	92.5
	Not satisfied	225	7.5
	Total	301	100.0

Table A-37: Percentage distribution of household members by Reason for Dissatisfaction with Health
Facility Services

Reason for dissatisfaction		Responses Number	Percent of Cases*
	Not cured/ineffective service	193	85.8
	Negative side-effects of treatment	11	4.9
	Treatment expensive	39	17.3
	No cordial/sincere care	5	2.0
	Had to go other places for diagnosis	3	1.3
	Medicine not available/inadequate	1	0.4
	Others	1	0.4
N		225	112.4

*Multiple responses

Table A-38: Percentage distribution of household members Suffered from disease in 9 months before last 3 months

Suffered from any diseases		Frequency	Percent
	Yes	893	99.2
	No	7	.8
	Total	900	100

Table A-39: Percentage distribution of household members by Disease Pattern in the Last 9 Months

Disease	No of persons with disease	Percentage
Fever	1215	41.0
Gastric/Peptic ulcer	295	9.9
Cough	230	7.8

Headache	198	6.7
Diarrhea/loose motion	172	5.8
Physical weakness	88	3.0
High or low blood pressure	86	2.9
Diabetes	60	2.0
Pain in hand/leg/waist	58	2.0
Asthma	54	1.8
Others	511	17.2
Total	2967	100

Table A-40: Percentage distribution of household members by Days spent with disease in the last 9 months

Days of sufferings		Frequency	Percentage
	Up to 3 days	494	16.6
	3-7	898	30.3
	8-15	533	18.0
	16-30	296	10.0
	31 or more	746	25.1
	Total	2967	100.0

Table A-41: Percentage distribution of household members by Seeking Healthcare Services in the Last 9 Months

Health care seeking behavior		Frequency	Valid Percent
	Yes	2781	93.7
	No	186	6.3
	Total	2967	100.0

Table A-42: Percentage distribution of household members by Reasons for not seeking Healthcare services in the last 9 months

Reasons for not seeking HC services		Responses	Percentage of Cases
		N	
	To travel long distance to get care	39	1.4%
	Bad behavior of health center staff	154	5.5%
	To maintain confidentiality	204	7.3%
	Long waiting time	128	4.6%
	Lack of money	8	.3%
	Religious barrier	26	.9%
	Didn’t feel the need	324	11.7%
	Others	148	5.3%

N	186	37.0

Table A-43: Percentage distribution of household members by Cost of Seeking Healthcare Services

Cost of health care		Frequency	Valid Percent
	No cost	5	.2
	Tk. <100	661	22.3
	Tk. 100-199	673	22.7
	Tk. 200-499	460	15.5
	Tk. 500 or more	962	32.4
	Cannot remember	206	6.9
	Total	3001	100.0

Table A-44: Percentage distribution of household members by Average Cost of Seeking Healthcare Services

	Average cost of Treatment for 9 months	Average cost of Treatment for per month
Mean	1366.62	151.8
Median	200.00	22.2
Minimum	0	0
Maximum	80000	80000

Table A-45: Percentage distribution of HHs by home visit from a health worker

Visited health worker		Frequency	Percent
	Yes	443	49.2
	No	457	50.8
	Total	900	100.0

Table A-46: Percentage distribution of HHs by name of the organization of health worker who visit

Name of the organization		Frequency	Valid Percent
	Govt.	63	14.2
	NGO	379	85.6
	Other	1	.2
	Total	443	100.0

Table A-47: Percentage distribution of HHs by sex of the health worker who visit

Gender of worker		Frequency	Valid Percent	Cumulative Percent
	Male	140	31.6	37.3
	Female	303	68.4	100.0
	Total	443	100.0	

Table A-48: Percentage distribution of households by topics discussed during the visit of health worker

Issues health worker discusses when visits	Frequency	Valid Percentage
Family planning	271	61.2
Healthy life-style (using clean water for drinking	46	10.4
Advice for common illness	8	1.8
Necessity of vaccines for pregnant women and children	102	23.0
Diet and nutrition	1	0.2
Others	2	0.5
No response	13	2.9
Total	443	100.0

Table A-49: Average duration of time discuss on the issues by the health workers

	N	Minimum	Maximum	Mean	Std. Deviation
Length of time health worker discusses on these issues	443	0	30	11.23	5.324
Valid N	443				

Table A-50: Percentage distribution of HHs by satisfaction about the duration of the visit of health worker

Satisfaction about the duration of the visit	Frequency	Valid Percent
Yes	367	83.8
No	76	16.2
Total	443	100.0

Table A-51: Percentage distribution of HHs by distribution of health materials health worker

Distribution of health materials	Frequency	Valid Percent
Yes	216	48.8
No	227	49.2
Total	443	100.0

Table A-52: Percentage distribution of HHs by nature of health materials distributed by the health worker

Nature of health materials distributed	Frequency	Valid Percent
Family planning materials	159	73.6
De-worming tablets	36	16.3

	Medicine for common cold, fever	21	9.7
	Vitamin	59	27.3
	Calcium	57	26.4
	Iron tablet	25	12
	Total	216	100.0

Table A-53: Percentage distribution of HHs by Satellite Clinics organized in their slum

Satellite Clinics organized		Frequency	Valid Percent
	Yes	393	43.8
	No	505	56.2
	Total	898	100.0
	Missing	2	
	Total	900	

Table A-54: Percentage distribution of HHs by issues discussed in Satellite Clinics

Issues discussed		Frequency	Valid Percent
	Family planning	198	50.4
	Healthy life-style (using clean water for drinking	7	1.8
	Advice for common illness	2	.5
	Maternal health care	82	21
	Paediatric care and child vaccination	100	25.3
	Others	4	1
	Total	393	100

Table A-55: Percentage distribution of households by health care provided by Satellite Clinics (SC)

Health care provided by SC		Responses	Percentage of cases*
	Family planning and reproductive health	211	53.7
	Treatment of communicable disease, preliminary curative care	5	1.3
	Pediatrics Care	26	6.6
	Limited pathology	7	1.8
	Free medicine	15	3.8
	Child vaccination	371	94.4
	Others	6	1.5
	N	393	163.1%

*multiple responses

Table A-56: Distribution of households by no. of ANC visits during last pregnancy

No. of ANC visits	Frequency	Valid Percentage
1 (Once)	46	7.0
2 (twice)	122	18.6
3 (3 times)	147	22.4
4 (4 times)	140	21.3
>4 times	122	18.6
No ANC received	80	12.2
Total	657	100.0

Table A-57: Distribution of households by reasons for no ANC visits during last pregnancy

Reasons for no ANC	Frequency	Percentage
Bad behavior of staff	7	8.8
Lack of privacy	3	3.8
Long waiting time	1	1.3
Religious barrier/superstition	2	2.5
Not needed	59	73.8
Others	2	2.5
Non response	6	7.5
Total	80	100.0

Table A-58: Percentage distribution of HHs by reception of TT injection during pregnancy

Reception of TT injection	Frequency	Valid Percent
Yes	447	77.4
No	24	4.2
Already vaccinated	106	18.4
Total	577	100.0

Table A-59: Percentage distribution of HHs by Type of delivery after coming to slum

Type of delivery	Frequency	Valid Percent
Normal	545	83
C-section	112	17
Total	657	100.0

Table A-60: Percentage distribution of households by place of delivery after coming to slum

Place of delivery after coming to slum	Frequency	Valid Percentage
Govt. hospital	102	15.5
Private hospital/clinic	75	11.4
NGO clinic	85	12.9
Own residence	395	60.1
Total	657	100.0

Table A-61: Percentage distribution of HHs by assistance during home delivery

Home delivery assisted by	Frequency	Valid Percentage
Qualified doctor	1	0.3
Qualified Nurse/Midwife/Paramedic	12	3
FWV	1	0.3
Trained traditional birth attendant	78	19.7
Untrained traditional birth attendant	166	42
Quack	2	0.5
NGO worker	5	1.3
HH member/relative/neighbour	124	31.4
Without any assistance	6	1.5
Total	395	100.0

Table A-62: Percentage distribution of households by source of PNC received

Source of PNC	Frequency	Percentage
Nagar Sasthyo Kendro	48	13.0
Govt. Medical College Hospital	34	9.2
Govt. Specialized Hospital	40	10.8
Private hospital/clinic/nursing home	52	14.1
NGO clinic	141	38.1
Qualified doctor's chamber	7	1.9
Quack/homeopath/herbal/unani	11	3.0
Pharmacist at a drug store	30	8.1
Self-medication	3	.8
Others	4	1.1
Total	370	100.0

Table A-63: Distribution of households by reasons for seeking no PNC

Reason(s) for no PNC	Frequency	Valid Percentage
Insufficient care	11	3.8
To travel a long distance for PNC	1	0.3
Long waiting time	2	0.7
PNC was expensive	2	0.7
Religious barrier/superstition	1	0.3
Not needed	266	92.7
Other	1	0.3
Did not cite any reason	3	1.0
Total	287	100.0

Table A-64: Percentage distribution of HHs by Number of children aged 1-2 years

Having child aged 1-2 years		Frequency	Percentage
	Yes	780	86.7
	No	120	13.3
	Total	900	100.0

Table A-65: Percentage distribution of HHs by Sex of children (1-2 yrs)

Sex of children		Frequency	Valid Percent
	Girl	63	52.5
	Boy	57	47.5
	Total	119	100.0

Table A-66: Percentage distribution of HHs by number of children fully immunized against seven deadly diseases

children fully immunized		Frequency	Valid Percent
	Yes	110	91.7
	No	10	8.3
	Total	120	100.0

Table A-67: Distribution of HHs by reasons for no vaccination to child

Reasons for no vaccination to child		Frequency	Valid Percent
	Didn't know vaccination necessary	5	50.0
	Didn't know where to go for vaccination	3	30.0
	Others	2	20.0
	Total	10	100.0

Table A-68: Distribution of households by currently using Family planning

Current use of family planning method	Frequency	Percentage
Yes	490	54.4
No	410	45.6
Total	900	100.0

Table A-69: Percentage distribution of households by type of current use of family planning

Type of FP method currently use	Frequency	Valid Percentage
Pill	265	54.1
Injection	136	27.8
Condom	42	8.6
IUD/Coil	8	1.6
Implant	5	1.0
Female sterilization	17	3.5
Male sterilization	4	.8
Others	13	2.7
Total	490	100.0

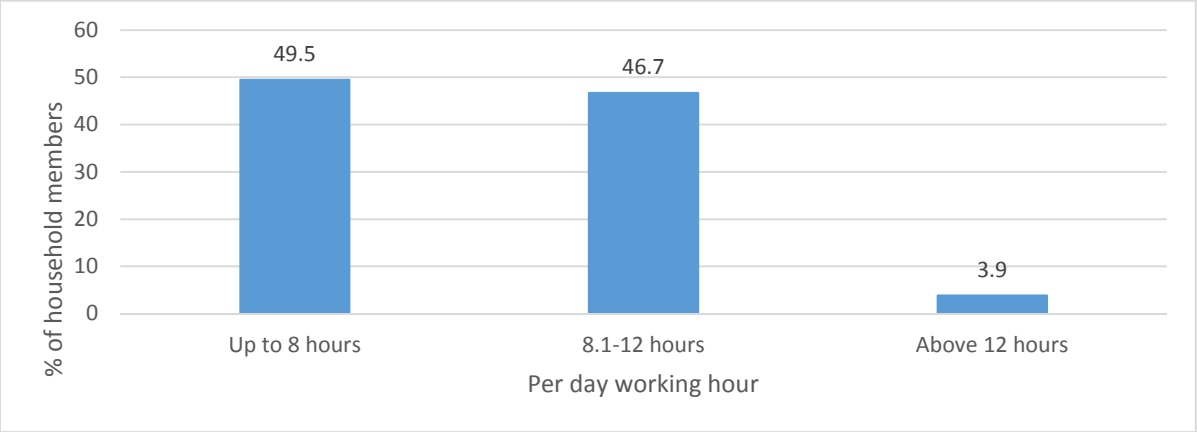


Figure A-1: Percentage distribution of household members by per day working hour

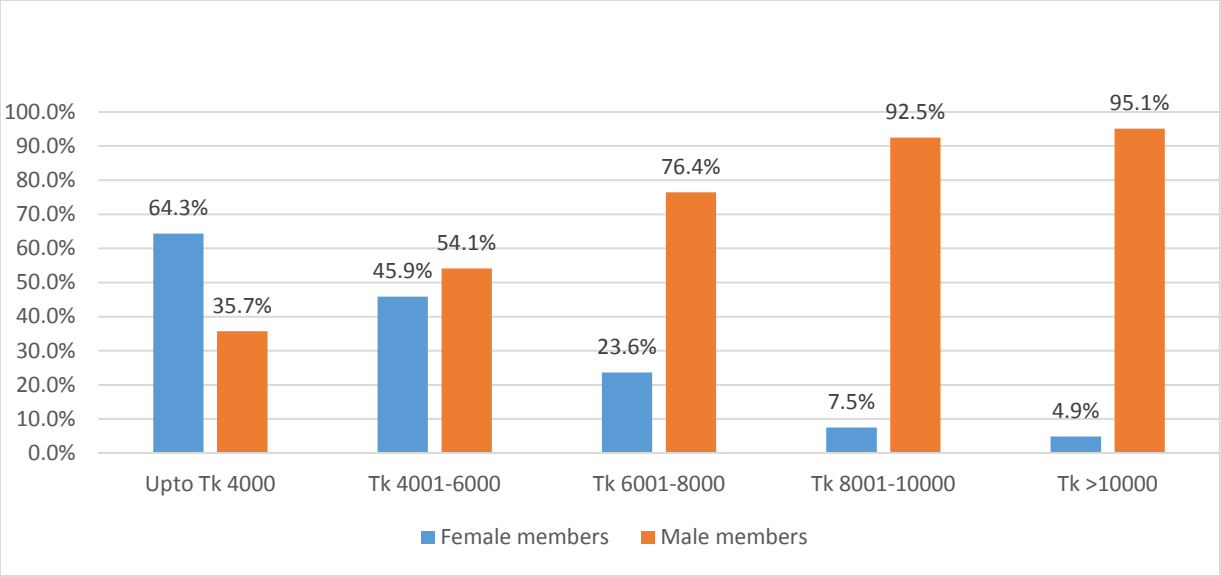


Figure A-2: Gender wise monthly labor income of slum dwellers

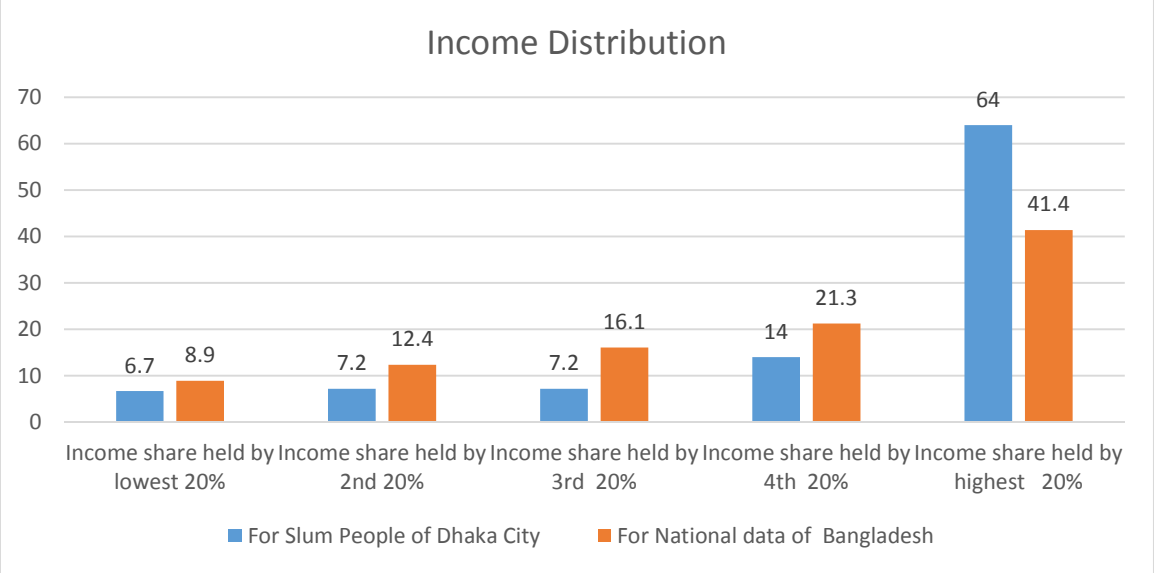


Figure A-3: Comparison of income distribution between slum people of Dhaka city and national population of Bangladesh

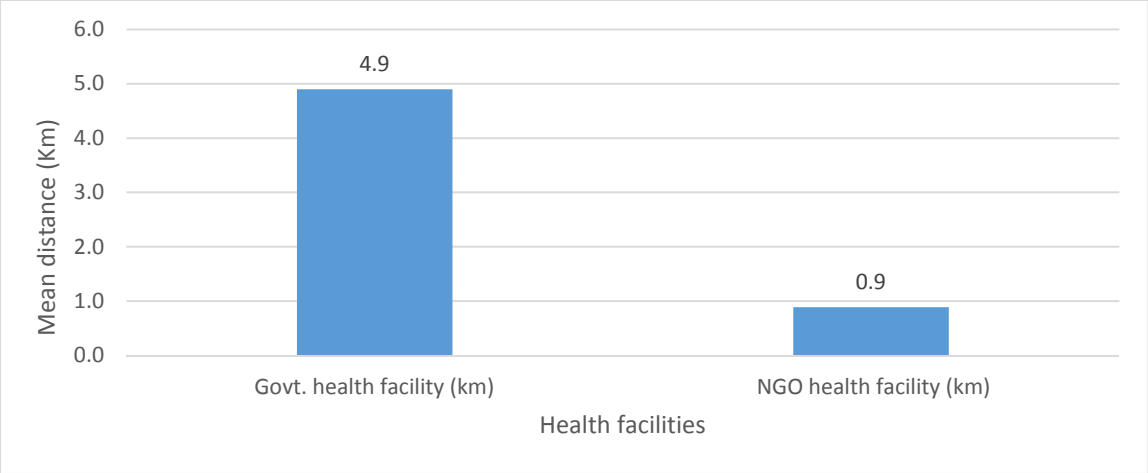


Figure A-4: Mean distance of health facilities from slums

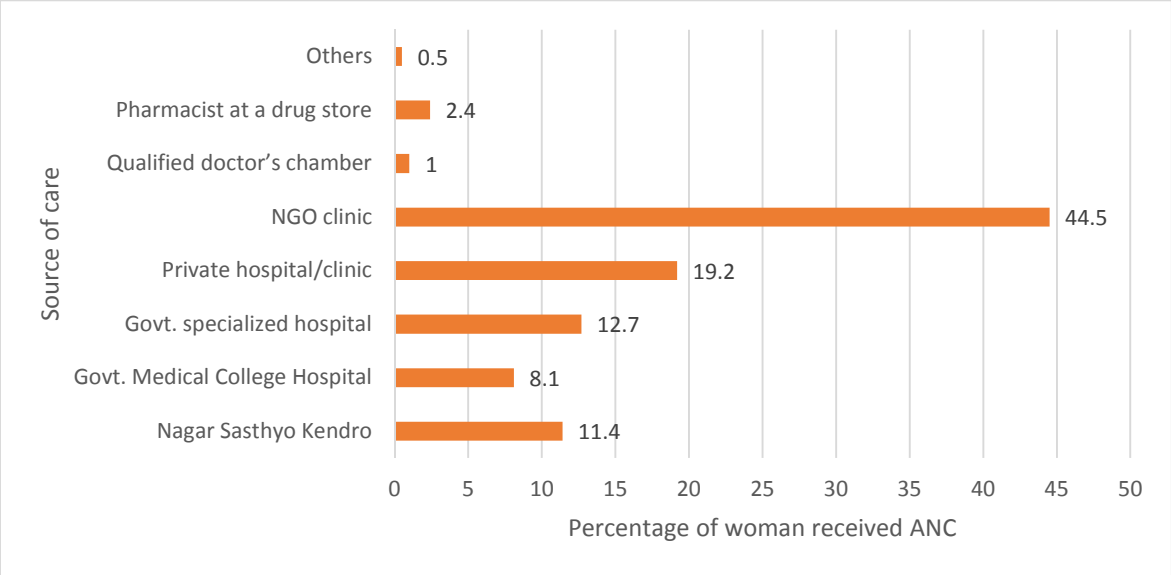


Figure A-5:Distribution of pregnant women by source of ANC care

ANNEX - II

Derivation of Lorenz curve and calculation of Gini Coefficient

To derive the Lorenz curve and to calculate the Gini Coefficient, the following steps are followed:

Step-1: Arrange the income distribution of slum households from lowest to highest.

Table 1: Distribution of households by total monthly income

Total monthly Income of HHs (tK)	Frequency	Percent	Valid Percent	Cumulative Percent
1900	1	.1	.1	.1
2700	1	.1	.1	.2
3200	2	.2	.2	.4
3800	1	.1	.1	.6
4000	2	.2	.2	.8
5000	2	.2	.2	1.0
5050	1	.1	.1	1.1
6000	2	.2	.2	1.3
6500	2	.2	.2	1.6
7000	9	1.0	1.0	2.6
7100	1	.1	.1	2.7
7200	2	.2	.2	2.9
7500	12	1.3	1.3	4.2
8000	22	2.4	2.4	6.7
8250	1	.1	.1	6.8
8500	17	1.9	1.9	8.7
8600	1	.1	.1	8.8
8800	1	.1	.1	8.9
9000	22	2.4	2.4	11.3
9200	1	.1	.1	11.4
9250	1	.1	.1	11.6
9450	1	.1	.1	11.7
9500	6	.7	.7	12.3
9525	1	.1	.1	12.4
9600	1	.1	.1	12.6
9750	1	.1	.1	12.7
10000	70	7.8	7.8	20.4
10200	2	.2	.2	20.7
10500	12	1.3	1.3	22.0
10800	2	.2	.2	22.2

	11000	36	4.0	4.0	26.2
	11250	1	.1	.1	26.3
	11400	1	.1	.1	26.4
	11500	5	.6	.6	27.0
	11600	1	.1	.1	27.1
	11700	2	.2	.2	27.3
	12000	85	9.4	9.4	36.8
	12200	2	.2	.2	37.0
	12300	2	.2	.2	37.2
	12500	18	2.0	2.0	39.2
	12700	1	.1	.1	39.3
	12750	1	.1	.1	39.4
	12800	1	.1	.1	39.6
	12900	1	.1	.1	39.7
	13000	42	4.7	4.7	44.3
	13100	1	.1	.1	44.4
	13200	3	.3	.3	44.8
	13400	1	.1	.1	44.9
	13500	11	1.2	1.2	46.1
	13600	1	.1	.1	46.2
	13700	2	.2	.2	46.4
	13800	1	.1	.1	46.6
	13900	1	.1	.1	46.7
	14000	54	6.0	6.0	52.7
	14200	2	.2	.2	52.9
	14500	7	.8	.8	53.7
	14600	1	.1	.1	53.8
	14700	1	.1	.1	53.9
	15000	74	8.2	8.2	62.1
	15075	1	.1	.1	62.2
	15228	1	.1	.1	62.3
	15400	2	.2	.2	62.6
	15500	11	1.2	1.2	63.8
	15700	2	.2	.2	64.0
	16000	33	3.7	3.7	67.7
	16200	1	.1	.1	67.8
	16400	1	.1	.1	67.9
	16500	7	.8	.8	68.7
	16800	1	.1	.1	68.8

	17000	27	3.0	3.0	71.8
	17100	2	.2	.2	72.0
	17200	1	.1	.1	72.1
	17360	1	.1	.1	72.2
	17500	4	.4	.4	72.7
	18000	19	2.1	2.1	74.8
	18500	6	.7	.7	75.4
	18800	1	.1	.1	75.6
	18900	1	.1	.1	75.7
	19000	20	2.2	2.2	77.9
	19200	2	.2	.2	78.1
	19400	1	.1	.1	78.2
	19500	2	.2	.2	78.4
	19700	1	.1	.1	78.6
	20000	41	4.6	4.6	83.1
	20500	6	.7	.7	83.8
	20700	1	.1	.1	83.9
	21000	6	.7	.7	84.6
	21200	1	.1	.1	84.7
	21300	1	.1	.1	84.8
	21500	5	.6	.6	85.3
	22000	11	1.2	1.2	86.6
	22500	3	.3	.3	86.9
	23000	4	.4	.4	87.3
	23500	2	.2	.2	87.6
	23600	1	.1	.1	87.7
	24000	6	.7	.7	88.3
	24500	3	.3	.3	88.7
	25000	18	2.0	2.0	90.7
	25300	1	.1	.1	90.8
	25500	2	.2	.2	91.0
	26000	7	.8	.8	91.8
	26500	4	.4	.4	92.2
	26900	1	.1	.1	92.3
	27000	7	.8	.8	93.1
	27250	1	.1	.1	93.2
	27500	1	.1	.1	93.3
	28000	2	.2	.2	93.6
	28500	2	.2	.2	93.8

29000	6	.7	.7	94.4
29100	1	.1	.1	94.6
29500	1	.1	.1	94.7
30000	11	1.2	1.2	95.9
31500	1	.1	.1	96.0
32000	4	.4	.4	96.4
32100	1	.1	.1	96.6
33000	1	.1	.1	96.7
35000	4	.4	.4	97.1
37000	1	.1	.1	97.2
37900	1	.1	.1	97.3
38000	6	.7	.7	98.0
39000	4	.4	.4	98.4
39500	1	.1	.1	98.6
40000	2	.2	.2	98.8
41000	1	.1	.1	98.9
42000	1	.1	.1	99.0
45000	1	.1	.1	99.1
46000	1	.1	.1	99.2
50000	1	.1	.1	99.3
54000	1	.1	.1	99.4
80000	1	.1	.1	99.6
83000	1	.1	.1	99.7
90000	2	.2	.2	99.9
220000	1	.1	.1	100.0
Total	900	100.0	100.0	

Step-2: Calculate their total income: Tk 2884988
Step-3: Divide into quintiles. 900/5 = 2 earners in each quintile.

Step-4: Calculate the total income in each quintile

Income of First Quintile	Income of Second Quintile	Income of Third Quintile	Income of Fourth Quintile	Income of Fifth Quintile
1900	10200	13000	15075	20000
2700	10500	13100	15228	20500
3200	10800	13200	15400	20700
3800	11000	13400	15500	21000
4000	11250	13500	15700	21200
5000	11400	13600	16000	21300
5050	11500	13700	16200	21500

6000	11600	13800	16400	22000
6500	11700	13900	16500	22500
7000	12000	14000	16800	23000
7100	12200	14200	17000	23500
7200	12300	14500	17100	23600
7500	12500	14600	17200	24000
8000	12700	14700	17360	24500
8250	12750	15000	17500	25000
8500	12800	Total Income = 208200	18000	25300
8600	11500		18500	25500
8800			18800	26000
9000	Total Income= 200100		18900	26500
9200			19000	26900
9250			19200	27000
9450			19400	27250
9500			19500	27500
9525			19700	28000
9600			Total Income= 415963	28500
9750				29000
10000				29100
Total income = 194375				29500
				30000
				31500
3200				32000
				32100
				33000
				35000
				37000
				37900
				38000
				39000
				39500
				40000
				41000
				42000
				45000
				46000
				50000
				54000
				80000
				83000

				90000
				220000
				Total income= 1866350

Table 2: Total income in each quintile

Quintiles	Total income in each quintile
1st quintile (lowest 20% of income earners)	194375
2nd quintile (2nd lowest 20% of income earners)	200100
3rd quintile (Middle 20% of income earners)	208200
4th quintile (2nd highest 20% of income earners)	415963
5th quintile (Top 20% of income earners)	1866350

Step-5: Calculate the percent of total income in each quintile.

Quintiles (%)	Total income in each quintile	Percent of total income in each quintile.
20	194375	0.067
40	200100	0.069
60	208200	0.072
80	415963	0.14
100	1866350	0.64
Total income	Tk 2884988	

Step-6: Calculate the cumulative percentage of household income

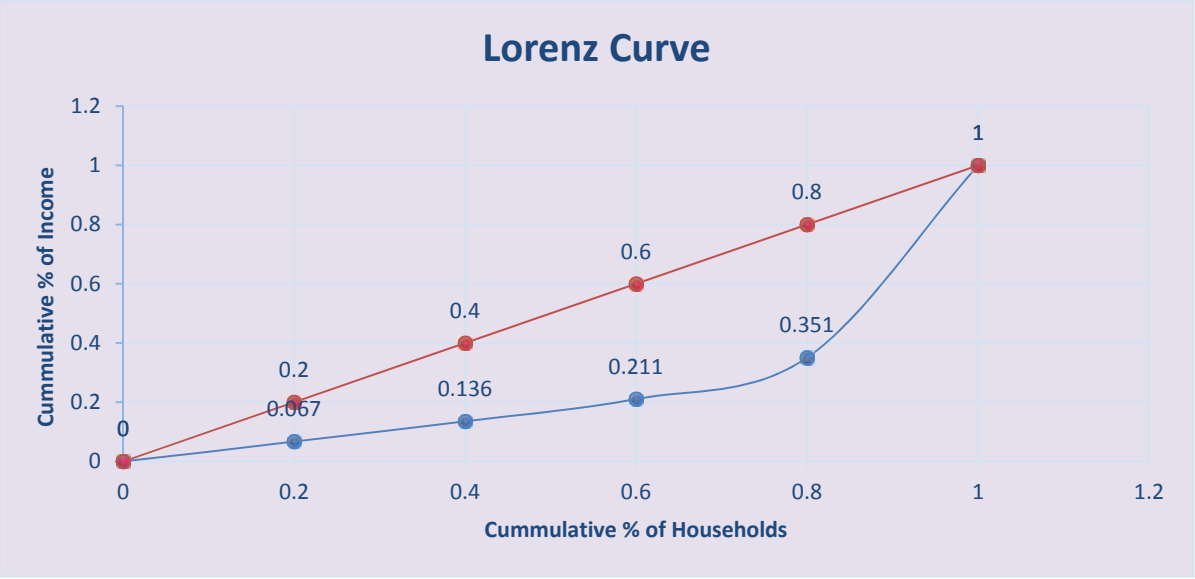
Quintiles (%)	Total income in each quintile	Percent of total income in each quintile	Cumulative percentage of household income
20	194375	0.067	0.067
40	208900	0.069	0.136
60	208200	0.072	0.211
80	415963	0.14	0.351
100	1866350	0.64	1.000

Step-7: Graph quintiles, cumulative percent of income, and line of perfect equality

Quintiles	cumulative percent of income	line of perfect equality
0	0	0
0.2	0.067	0.2
0.4	0.136	0.4
0.6	0.211	0.6
0.8	0.351	0.8

1	1.000	1

Step-8: Select the data and use the Chart Wizard, select "Scatter Plot".
Step-9: Get the following Lorenz Curve



Step-10: Calculate the area under the Lorenz Curve using the properties of a trapezoid. The formula is: ½(b1 + b2).2.
Therefore,
Area under Lorenz curve= {1/2(0+0.067).2} + 1/2(0.067+0.136).2} + {1/2(0.136+0.211).2} + {1/2(0.211+0.351).2} + {1/2(0.351+1).2} = 0.2536

Step-11: To get the area between the line of perfect equality and the Lorenz Curve, subtract area under the line of perfect equality from the area under the Lorenz Curve .
The area between the line of perfect equality and the Lorenz Curve=
0.5-0.2536=0.2464

Step-12: The Gini Coefficient is found by taking the ratio of the area between the line of perfect equality and the Lorenz Curve to the area under the line of perfect equality.
That is: 0.2464/.50 =0.4928
Hence, we get the Gini Coefficient= 0.493

Table: Comparison of Income Distribution of Slum people in Dhaka city and overall in Bangladesh

Income Distribution	For Slum People of Dhaka City (year 2015)	For National data of Bangladesh(Year 2010)
Income share held by lowest 20%	6.7	8.9
Income share held by 2nd 20%	6.9	12.4
Income share held by 3rd 20%	7.2	16.1

Income share held by 4th 20%	14	21.3
Income share held by highest 20%	64	41.4
Gini Index	49	32.1

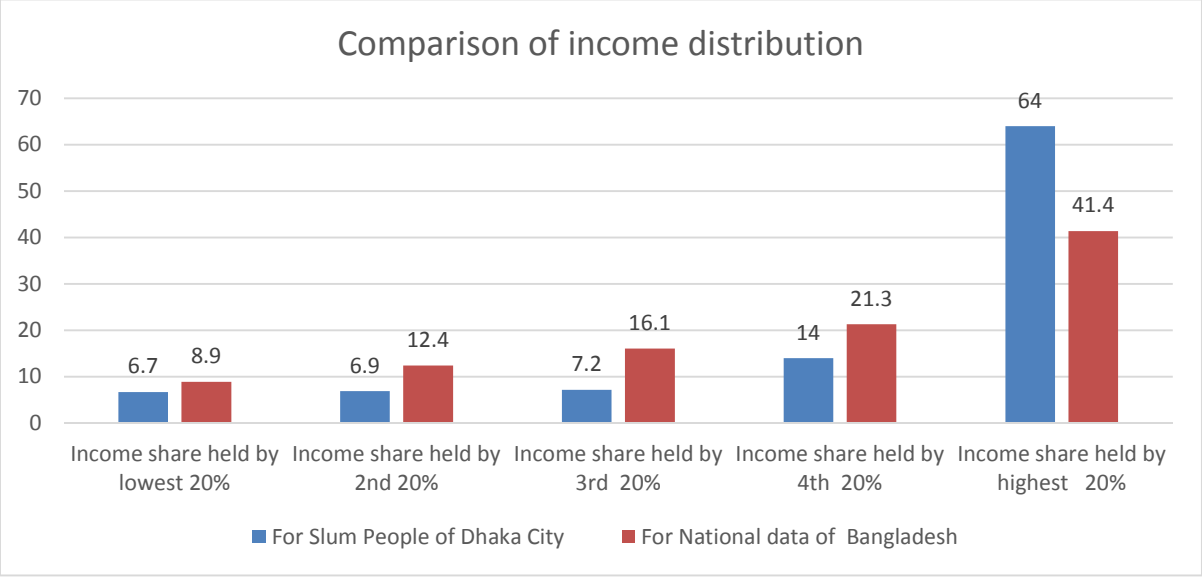


Figure 2: Comparison of income distribution between slum people and national data

ANNEX- III

Validity:

Validity is the extent to which an instrument measures what it is supposed to measure and performs as it is designed to perform. It is rare, if not impossible, that an instrument be 100% valid. So validity is generally measured in degrees. As a process, validation involves collecting and analyzing data to assess the accuracy of an instrument. There are numerous statistical tests and measures to assess the validity of quantitative instruments, which generally involves pilot testing (Carmines et al 1979).

External validity is the extent to which the results of a study can be generalized from a sample to a population. Establishing eternal validity for an instrument, then, follows directly from sampling. Recall that a sample should be an accurate representation of a population, because the total population may not be available. An instrument that is externally valid helps obtain population generalizability, or the degree to which a sample represents the population.

Content validity refers to the appropriateness of the content of an instrument. In other words, do the measures (questions, observation logs, etc.) accurately assess what you want to know? This is particularly important with achievement tests. Consider that a test developer wants to maximize the validity of a unit test for 7th grade mathematics. This would involve taking representative questions from each of the sections of the unit and evaluating them against the desired outcomes.

In our study, validity (external and content) has been judged by, i) extensive literature review and ii) taking expert opinion.

First of all, the questionnaire used for this study were developed based on the standard questionnaire used for the national surveys, such as BDHS, MICS and BUHS 2013 etc.

Secondly, some questions were added in order to comply with the requirement of the study and these questions were developed with the opinion of the expert of the relevant fields.

Thirdly, a draft questionnaire was presented and finalized after modifications based on the result of the pretesting.

Reliability:

Reliability is the degree to which an assessment tool produces stable and consistent results. A measure is said to have a high reliability if it produces similar results under consistent conditions. For example, measurements of people's height and weight are often extremely reliable (Carmines et al 1979).

Cronbach's α (alpha) is used as a (lower bound) estimate of the reliability.

It has been proposed that α (alpha) can be viewed as the expected correlation of two tests that measure the same construct. By using this definition, it is implicitly assumed that the average correlation of a set of items is an accurate estimate of the average correlation of all items that pertain to a certain construct. Reliability is the correlation of an item, scale, or instrument with a

hypothetical one which truly measures what it is supposed to. Since the true instrument is not available, reliability is estimated in one of four ways:

1. *Internal consistency*: Estimation based on the correlation among the variables comprising the set (typically, Cronbach's alpha)
2. *Split-half reliability*: Estimation based on the correlation of two equivalent forms of the scale (typically, the Spearman-Brown coefficient)
3. *Test-retest reliability*: Estimation based on the correlation between two (or more) administrations of the same item, scale, or instrument for different times, locations, or populations, when the two administrations do not differ on other relevant variables (typically, the Spearman Brown coefficient)
4. *Inter-rater reliability*: Estimation based on the correlation of scores between/among two or more raters who rate the same item, scale, or instrument (typically, intraclass correlation, of which there are six types discussed below).

Cronbach's α (alpha) is a measure of internal consistency, that is, how closely related a set of items are as a group (George et al 2003). It is considered to be a measure of scale reliability. A "high" value for α (alpha) does not imply that the measure is unidimensional. Technically speaking, Cronbach's α (alpha) is not a statistical test - it is a coefficient of reliability (or consistency).

Cronbach's α (alpha) can be written as a function of the number of test items and the average inter-correlation among the items. Below, for conceptual purposes, we show the formula for the standardized Cronbach's α (alpha):

$$\alpha = \frac{N.\bar{c}}{\bar{v} + (N-1).\bar{c}}$$

Here N is equal to the number of items, $\bar{c}$ is the average inter-item covariance among the items and $\bar{v}$ equals the average variance.

If the number of items is increased, the Cronbach's α (alpha) is increased. Additionally, if the average inter-item correlation is low, α (alpha) will be low. As the average inter-item correlation increases, Cronbach's α (alpha) increases as well (holding the number of items constant).

For our study, we computed the Cronbach's α (alpha) for two variables, household total monthly income (q1.4) and household total monthly expenditure (q.1.5a-k).

Case Processing Summary			
		N	%
Cases	Valid	900	100.0
	Excluded	0	.0

	Total	900	100.0
a. Listwise deletion based on all variables in the procedure.			

Reliability Statistics	
Cronbach's Alpha	N of Items
.760	2

The α (alpha) coefficient for the two items is .760, suggesting that the items have moderately high internal consistency, as a reliability coefficient of .70 or higher is considered "acceptable" in most social science research situations (George et al 2003).

Reliability Statistics			
Cronbach's Alpha	Part 1	Value	1.000
		N of Items	1[a]
	Part 2	Value	1.000
		N of Items	1[b]
	Total N of Items		2
Correlation Between Forms			.710
Spearman-Brown Coefficient	Equal Length		.830
	Unequal Length		.830
Guttman Split-Half Coefficient			.760
a. The items are: HH total monthly income (q1.4)			
b. The items are: Household total monthly expenditure (q1.5a-k)			

From the above table we can see, the correlation between forms is .710. The Spearman-Brown Coefficient gives two types of coefficient: "Equal length" gives the estimate of the reliability if

both halves had equal numbers of items, and "Unequal length" gives the reliability estimate assuming unequal numbers. Both coefficients are quite high: 0.83. Lastly, the Guttman Split-Half Coefficient, which is an adaptation of the Spearman-Brown coefficient, but one which does not require equal variances between the two split forms. The Guttman Split-Half Coefficient is 0.76. All the coefficients suggests that the items have moderately high split-half consistency among them.
