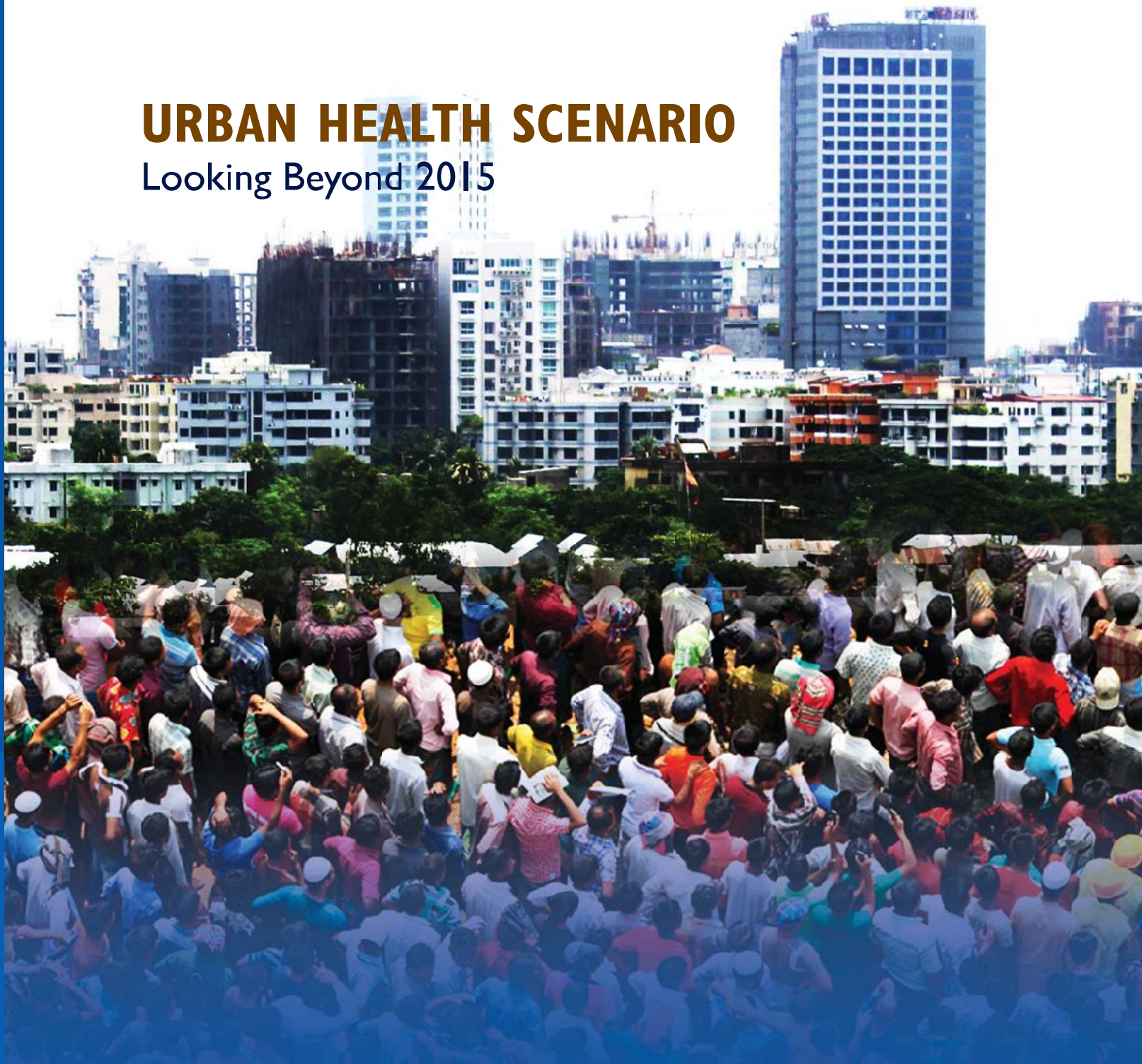
Bangladesh Health Watch Report 2014

URBAN HEALTH SCENARIO

Looking Beyond 2015



BANGLADESH
HEALTH WATCH

Urban Health Scenario

Looking Beyond 2015

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BANGLADESH
HEALTH WATCH

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PREFACE

Initiated in 2006, Bangladesh Health Watch (BHW) is a civil society advocacy and monitoring initiative dedicated to improve the health system in Bangladesh through critical review of policies and programmes, and recommendation of appropriate actions for change. It is the successor to Bangladesh Health Equity Watch (BHEW), a collaborative initiative of four organizations (Bangladesh Bureau of Statistics, Bangladesh Institute of Development Studies, BRAC and ICDDR,B) which shared the common concern for equitable health and development in Bangladesh.

BHW publishes a bi-annual report on the state of health in Bangladesh and does advocacy work to catalyze sustainable changes in the health sector. The health watch applies monitoring and advocacy measures such as round table discussions, meetings, press briefings and media reports to engage all key stakeholders in the health sector and disseminate report findings to wider audiences for action. So far, four BHW reports on health equity (2006), health workforce (2008), health sector governance (2010), and Bangladesh's preparedness to universal health coverage (2012) have been published. We also started a quarterly Newsletter series "Health Watch" from December 2013 to discuss issues of immediate importance related to Universal Health Coverage (UHC) in Bangladesh. So far, three issues have been published.

This 2014 BHW Report deals with problems and prospects of urban health in the context of post 2015 development agenda. The challenges of providing services to vulnerable population groups, e.g., the ever increasing slum population, received especial attention. In different chapters of this report, urban health issues such as pluralistic health service delivery system, food insecurity and malnutrition, poor state of water, sanitation and urban environment, complexity of urban health governance are discussed by experts in respective fields, using secondary data. A concluding chapter summarized the key findings and based upon these, a set of recommendations is proposed to facilitate better urban health beyond 2015.

Though a bit late due to some unavoidable circumstances, we are happy to bring out this report finally.

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The encouragement and guidance of Sir FH Abed KCMG, Founder and Chairperson of BRAC, has been a constant source of inspiration to us, as always!

Finally, we acknowledge the contribution of our donor Rockefeller Foundation in bringing out this report.

ACRONYMS

ACPR	Associates for Community and Population Research
ADB	Asian Development Bank
BBS	Bangladesh Bureau of Statistics
BDC	BRAC Delivery Centre
BNAAQS	Bangladesh National Ambient Air Quality Standards
BNBC	Bangladesh National Building Code
BOD	Biochemical Oxygen Demand
BUHS	Bangladesh Urban Health Survey
CASE	Clean Air and Sustainable Environment Project
CO	Carbon Monoxide
COD	Chemical Oxygen Demand
COPD	Chronic Obstructive Pulmonary Disease
CRHCC	Comprehensive Reproductive Healthcare Centre
DAP	Detail Area Plan
DHS	Demographic Health Survey
DMDP	Dhaka Master Development Plan
DSK	Dushtha Shasthya Kendra
FSNSP	Food Security and Nutrition Surveillance Plan
HIES	Household Income and Expenditure Survey
HKI	Helen Keller International
HPNSSP	Health Population and Nutrition Sector Strategic Plan
IPHN	Institute of Public Health and Nutrition
JMP	Joint Monitoring Programme
MCWC	Maternal and Child Welfare Centre
MICS	Multiple Indicator Cluster Survey
MIS	Management Information System
MR	Menstrual Regulation
MoLGRDC	Ministry of Local Government, Rural Development and Cooperatives
NIPORT	National Institute of Population Research and Training
NUPHCC	National Urban Primary Healthcare Committee
NO	Nitrogen Oxide
NPNL	Non-pregnant Non-lactating
OMS	Open Market Sale
PHC	Primary Healthcare
PIU	Project Implementation Unit
PM	Particulate Matter
PMU	Project Management Unit
PPP	Public Private Partnership
RDA	Recommended Daily Allowance
SAAP	Safe Abortion Access Project
SACOSAN	South Asian Conference on Sanitation
SDP	Sector Development Plan
SSFP	Smiling Sun Franchise Program
STP	Strategic Transport Planning
SWP	Sewage Treatment Plant
TBA	Traditional Birth Attendant
TTC	Total Thermotolerant Choliform
UPHCP	Urban Primary Healthcare Project
UPHCSDP	Urban Primary Health Care Service Delivery Project
UPPR	Urban Partnerships for Poverty Reduction
UPNSDP	Health Population and Nutrition Sector Development Program
UBA	Urban Birth Attendant
UHC	Universal Health Coverage
ULB	Urban Local Bodies
UPHCSDP	Urban Primary Health Care Service Delivery Project
VSC	Voluntary Surgical Contraception

EXECUTIVE SUMMARY

Bangladesh is one of the most densely populated countries in the world (>150 million population), and is rapidly undergoing urbanization. The urban population is predicted to grow from its current state of 53 million people to 79.5 million by 2028.With 400,000 people migrating to the city annually, Dhaka along with the port city of Chittagong is among the fastest growing cities in the world. While a substantial proportion squatter in streets or by railroads and create environmental havoc, the majority of these migrants coming from poor rural areas land in slums or informal settlements. In 2005, Dhaka, together with Chittagong, was home to 86% of the country's urban population and 90% of the country's slum population (CUS, NIPORT, MEASURE Evaluation 2006).These slums, or shantytowns, suffer from severe overcrowding, poor sanitation, and limited access to drinking water.

The absence of basic amenities (e.g., water, sanitation, waste disposal, etc.) all converge, making the urban health status in the slums worse than in the rural areas (NIPORT, MEASURE Evaluation, ICDDR,B and ACPR, 2008). At any given time, approximately 30-45% of slum dwellers are ill, and 60% of the children are chronically malnourished (Anam, 1993).The situation is further complicated due to primary healthcare in the urban areas being the responsibility of the local government instead of the Ministry of Health and Family Welfare (MOHFW). Due to lack of expertise and resources, the local government authorities cannot provide necessary care to the urban population, least of all the poor. Herein come different NGOs, civil society organizations and philanthropists to fill-in the gaps.

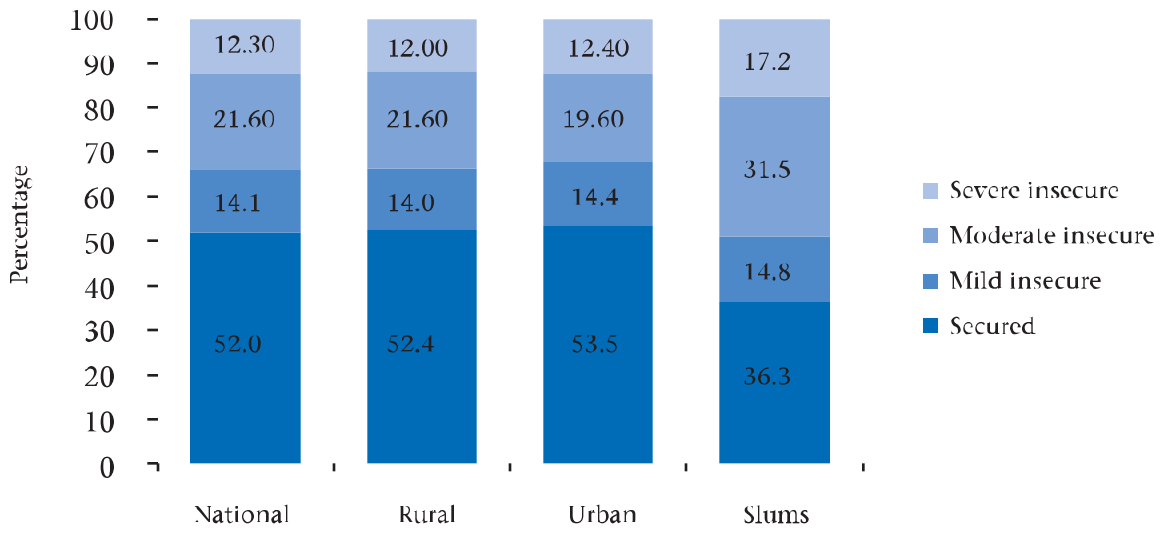
Urban health inequities and urban health governance are two additional, equally pertinent, issues that call for attention and appropriate action. Health inequities (socially produced inequalities that are unjust and unfair, and therefore modifiable) in urban areas exist at different levels: between the rich and poor, slum and non-slum populations, and neighborhoods. In urban areas, governance is not a matter of government alone, rather it is a combined effort of multiple actors including different departments of the government, NGOs, the private sector and the community. In big cities across the globe, the local government takes a leadership role to integrate the activities of all sectors, but this pro-active government leadership is unfortunately lacking in Bangladesh.

In the current BHW report, these issues related to urban health and its governance are discussed in a total of five papers commissioned by the Secretariat. Five teams of researchers, each under a lead researcher, made a state-of-the-art review of the available information originating from the secondary sources and prepared the chapters on different aspects of the prevailing situation. An introductory chapter made a brief description of the contents of the individual chapters and a concluding chapter reviewed the findings to arrive at a set of recommendations for way forward. This overview summarizes the key findings from the studies including conclusions and recommendations.

Gross inequities in food security and nutrition

Findings reveal that the burden of food expenditure is disproportionately higher among the low-income group, the poorest urban quintile spending a significantly greater proportion of their income on food than the poorest rural quintile. This presented a substantial challenge in meeting nutritional requirements of the poor households. The poor consumed significantly less calories (and less proteins and micronutrients) than those who were well-off, even though their energy requirements are higher due to being involved in physically-demanding jobs and activities. When different nutritional indicators in slum and non-slum areas were compared, the situation was worse for the former. The food insecurity of urban poor households resulted from insufficient cash income due to irregular employment along with the fluctuation of both wage rates and staple food prices. Coping strategies to allay this situation include borrowing from social networks (cash and kind), and migration back

Household food insecurity by strata



Source: National Micronutrients Status Survey 2011-12

and forth between urban and rural areas to buffer the risks of lean period of income. This study used secondary data from Household Income and Expenditure Survey (BBS 2012) and National Micronutrient Status Survey 2011-12 (ICDDR,B, UNICEF, GAIN and IPHN 2013) to measure absolute and relative inequality to capture socioeconomic differences in food expenditure and macronutrient consumption.

Pluralistic health services in the urban area

Interestingly, the responsibility of providing PHC services in the urban area lies with local government and not the health ministry. Due to lack of communication between the two ministries, inadequate financial and human resources, and a largely inactive coordinating body the health needs of the urban people, especially the poor, remain largely unmet. This has led local and international NGOs to fill-in the gaps through a customized Urban Primary Health Care Project (UPHC P2005-2012) and its successor Urban Primary Health Care Service Delivery Project UPHCSDP 2012-2016 (GoB2014) where NGOs are contracted through a competitive bidding process to provide designated services.There are plethora of secondary and tertiary services at the public, private and NGO sectors as well. However, self-care, home remedies and visits to nearest drug shops are quite common among the poor including slum dwellers, the latter due to low cost and easy accessibility. Programmes like *Manoshi*, a health service programme of BRAC, are working to reduce equity gaps related to access to services by the slum population through a supportive referral system, making drugs available at low cost, and establishing linkages between community and formal providers through a cadre of community health volunteers who take the services to the doorsteps of the slum people.

Poor water, sanitation and waste management for the poor

Due to growing poverty in the urban areas, insufficient infrastructure and inadequate institutional responsibility (e.g., in the slum settlements), Bangladesh has made slow progress in reaching universal access to safe water and sanitation. Findings reveal that the

country is on-track to reach the MDGs on water while it is seriously off-track to achieve the stipulated target of sanitation though it reduced open defaecation to substantial extent (9.9% annual decline during 1990 – 2011) (WHO and UNICEF, 2013). There is no dearth of policies in these aspects (including a recent one for the people of hard-to-reach areas) and government's intention, but these are not matched with appropriate resource flow (less than 0.5% allocation in water, sanitation and hygiene in the past seven national budgets, albeit biased to the urban areas) neither these are equitable towards poverty-prone and hard-to-reach areas including slums.

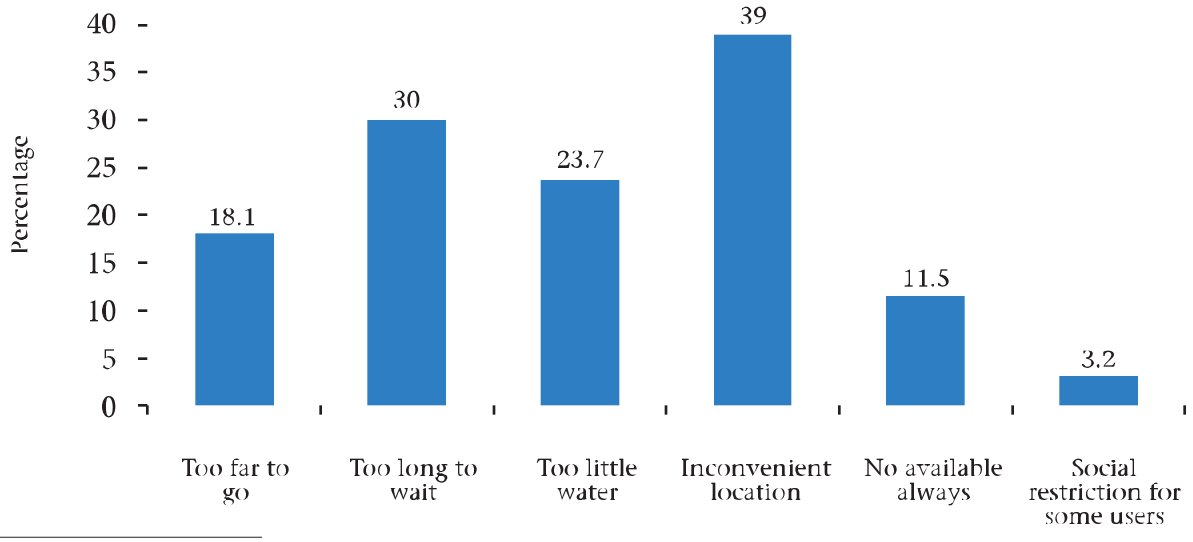
Poor and hazardous urban living environment

Life in urban areas especially the big cities (e.g., Dhaka, Chittagong, etc.) in Bangladesh is marred with air, noise and water pollution giving rise to health hazards directly, besides indirect effects on health due to largely unplanned use of land and water bodies, road-traffic and high population density. Due to poor planning, it is very common to find a residential zone or health and education facilities right next to a factory or a commercial hub. Housing in the urban areas is characterized by over crowding and poor ventilation, disregard to building codes, and inappropriate designing of the open spaces resulting in deprivation of outdoor spaces for leisure and recreation e.g., children's playgrounds. The situation is worse in slums, both in terms of space and amenities. Large gaps exist regarding our knowledge of health hazards due to the effects of urbanization which need urgent attention.

Urban health governance paves the way for public private partnership

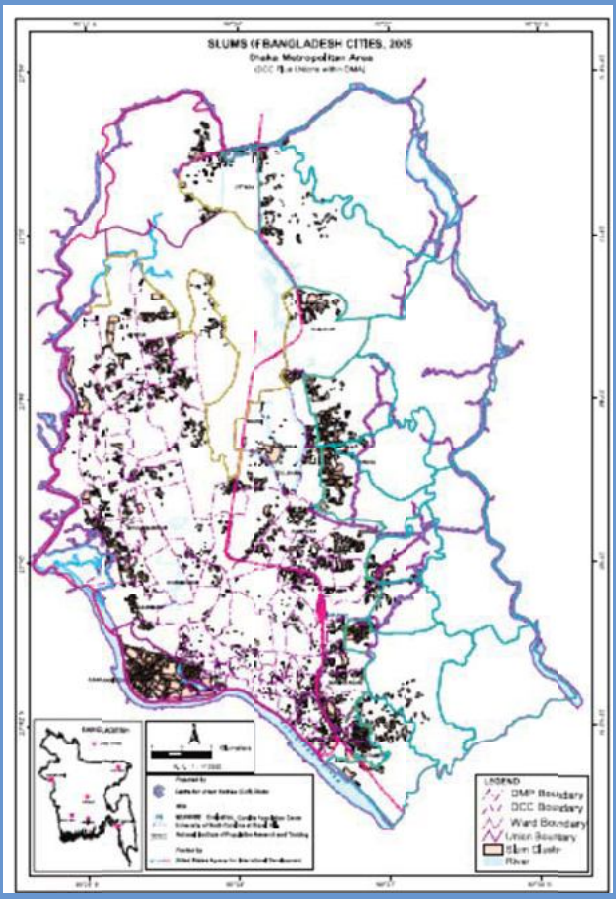
PHC services in the urban areas are under the jurisdiction of the local government and as they have neither the experience nor the capacity to provide relevant services, a number of NGOs under a public private partnership model, provide the services besides other providers in the private sectors. Thus, it brings the government, the NGOs and the donors into a tripartite pluralistic financial and governance relationship. The experiences from this pluralistic governance is mixed and had to undergo many ups and downs due to problems with role definitions of the partners, inexperience

Difficulty of accessing water by low income households in the urban areas



Source: WaterAid and PMID 2012

Slums in Dhaka metropolitan area 2005



Source: Slums of Urban Bangladesh: Mapping and Census, 2005 (Islam,et al. 2005)

of the government agencies, lack of mutual trust and respect, limited operational flexibility and stringent donor requirements. Lack of coordination among various service providers was an important governance problem as also the problem of organizing water, sanitation and health care services for the slums (Alam, 2011).

RECOMMENDATIONS

Based on the analysis, the following recommendations are made:

1. Alleviate food and nutrition insecurity among the urban poor and slum population by supplementing their fluctuating and irregular income

The income of the urban poor is unpredictable and irregular. When this is combined with the 'environmental risks of inadequate safe water, pollution, open sewerage and contamination',the problem of urban food and nutrition insecurity gets worse. The solution should be directed at the root causes to alleviate irregular income, food price fluctuations and constant threat of evictions. In this regard, innovative measures like social safety nets and cash transfer programmes may play a role in supplementing fluctuating income and improve nutrition and dietary diversity.

2. Build an integrated infrastructure for PHC service delivery, involving all providers in the urban areas, under a system of pluralistic governance

The problem of PHC services in the urban areas is that it is not consolidated and coordinated resulting in duplication and service gaps. Also, there is no formal referral linkage of PHC services to higher level of care in the secondary/tertiary facilities. Experiences from UPHCP and likes especially direct our attention to the necessity of accommodating different stakeholders/ service providers to come under a common platform in a mutually trust and respectful relationship, and under a pluralistic governance structure where there are clearly defined roles and responsibilities for each partners.

3. Adopt a rights-based approach to health service delivery

For sustainable and pro-active development of policies and programmes in the urban health sector, a demand-driven approach based on 'rights-to-health' (e.g., rights to safe water, sanitation, waste disposal, healthy housing, etc.) instead of a benevolent (passive supply-driven, 'evidence-based') approach should be undertaken. This will place the people at the centre, and make providers accountable for 'availability, accessibility, acceptability and quality' of services, at an affordable cost. The approach can also mobilize civil society action to achieve the realization of the rights to health.

4. Adopt an equity lens for urban health care services

Given the level of prevailing inequities among different strata of the urban population (e.g., health and nutrition indicators of the poorest vs. least poor, the slum vs. non slum poor, etc.),

equity should be of prime strategy in organizing health and nutrition care services in the urban sector. Delivery of services at the doorsteps of the poor, using community health volunteers/ workers, will go a long way to improve access and use equitably. IEC campaigns to raise health awareness of the poor including slum population (the latter around 1/3rd of the urban population in Bangladesh) and information on availability of services will empower them to take informed decisions to access appropriate providers and services.

5. *Ensure basic amenities for the slum population*

Concerted measures to ensure basic amenities e.g., water, sanitation, waste disposal, housing, etc. for the urban poor and slum population should be undertaken for better health of the slum dwellers. For this, land tenure problems of slum settlements need to be addressed in a proper way so that it is possible for NGOs and other stakeholders to provide required services. Besides, appropriate designing of open spaces, proper use of water bodies, and control of air, noise and environmental pollution are needed for general improvement of health status of urban dwellers in general, and slum dwellers in particular.

6. *Reduce air, noise and water pollution*

Adopting mitigation strategies to reduce air (e.g., controlling emission from road traffic and factories, etc.), noise (designating places like schools and hospitals as low noise area, restriction in blowing horns, etc.) and water pollution (e.g., effluent treatment plant for treating chemical effluents from tanneries and garment factories etc.) substantially so that there is improvement in living environment.

7. Finally, formulating an Urban Health Policy apart from the National Health Policy will help focus on specific problems of organizing, governing, and delivering an equitable, and quality urban health care services and push the UHC agenda forward beyond 2015.

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Chapter one
INTRODUCTION

Chapter 1

INTRODUCTION

Syed Masud Ahmed

> "The potential benefits of urbanization far outweigh the disadvantages: The challenge is in learning how to exploit its possibilities."
> (UNFPA, 2007)

Urban health, often referred to as the 'new public health,' grew up as a sub-discipline of international public health during the mid-1980s (Harpham and Molyneux 2001). In its discourse, the issues such as the growing inequities among urban population, multiplicity of health providers, involvement of sectors beyond health, and evidence-based action to tackle health problems in a complex situation (e.g., slums), are discussed.

During 1930 to 2014, the proportion of the world population in urban areas increased from <30% to 54%.This is projected to increase to 66% by 2050, with Asia and Africa accounting for 90% of the growth (UN 2014). In developing nations, this rapid rate of urbanization often outstrips the rate of economic growth, making it difficult for national and municipal authorities to provide 'affordable housing, quality social services or sufficient employment to the growing urban populations'. Thousands of factors in the 'natural and built environment, socioeconomic environment, food security and quality, services and emergency health management, and urban governance' pose three threats to health in urban areas. These are infectious diseases (e.g., tuberculosis, diarrhea and pneumonia), non-communicable diseases (e.g., hypertension and cardiovascular diseases, diabetes, asthma and cancer), and accidents and injuries including those from road traffic accidents (WHO 2010). While urbanization may be inevitable, the biggest challenge lies in managing these changes and ensuring that human dignity is restored.

South Asia's process of rapid urbanization began relatively late in relation to the rest of the Asia, accelerating in the past two decades. Consequently, the overall urbanization of the subcontinent is relatively low, just under 40%, compared to the rest of Asia, which currently sits at 48% (UN 2014). While the region is still largely rural, it is urbanizing quite rapidly, experiencing a large migration of residents to existing urban centres.

Bangladesh is one of the most densely populated countries in the world, with over 150 million citizens. The urban population is predicted to grow 50% from its current state of 53 million people to 79.5 million by 2028. Although currently it is largely a rural nation, Bangladesh will be an urban country by 2039 (NIPORT, MEASURE Evaluation, ICDDR,B 2014). This rapid urbanization is not the planned output of industrialization, rather the result of various "push (e.g., poverty, landlessness, violence, natural disasters etc.)" and "pull (e.g., job opportunities in formal and informal sectors, better wage rate etc.)" factors (Lee 1966) driving 'economic refugees' from rural to urban areas.

The capital city of Dhaka had an estimated population of 15 million in 2011 (UN Data Bangladesh). With 400,000 people migrating to the city annually, Dhaka, along with the port city of Chittagong, is among the fastest growing cities in the world. While a substantial proportion squatter in streets or by railroads and create environmental havoc, the majority of these migrants, coming from poor rural areas, land in slums or informal settlements. These slums, or shantytowns, suffer from severe overcrowding, poor sanitation, and limited access to drinking water. In 2005, Dhaka, together with Chittagong, held 86%

of the country's urban population and 90% of the country's slum population (CUS, NIPORT, MEASURE Evaluation 2006).

The floating population on the streets and slum dwellers are the most vulnerable among the urban poor. Due to problems with land tenure and temporary nature of the slum settlements, authorities are reluctant to provide even basic amenities such as the provision of safe and portable drinking water, effective liquid and solid waste management systems, prevention of affordable air, water and land pollution, and some form of decent shelter. In Dhaka, where the country's largest concentration of slum residents live, 90% of slum dwellers share latrines, and only about 13% of the households have access to improved sanitation. Furthermore, while access to "improved" water is universal, 65% of the households reported to share a water source with ≥10 households (NIPORT, MEASURE Evaluation, ICDDR,B 2013). Equally disconcerting, of the 3,200 metric tons of solid waste produced per day, 50% is collected for proper disposal (Zaman *et al.* 2010). The absences of these basic amenities all converge, making the urban health status in the slums worse than in the rural population (NIPORT, MEASURE Evaluation, ICDDR,B and ACPR 2008).

At any given time, approximately 30-45% of slum dwellers are ill, and 60% of the children are chronically malnourished (Anam 1993). While some turn to government hospitals and clinics, the most common source of care for acute medical problems among these citizens is the neighborhood pharmacy. Slum dwellers frequently visit these pharmacies for their medical care because of the short distance, easy accessibility, short waiting time and reduced cost for treatment (Khan *et al.* 2012). However, the ones who operate these pharmacies and provide said medical care are, unfortunately, often undertrained and thus give substandard counseling, diagnosis, and treatment. The situation is further complicated due to primary health care in the urban areas being the responsibility of the local government instead of the Ministry of Health and Family Welfare (MOHFW). Due to lack of expertise and resources, the local government authorities cannot provide necessary care to the urban population, least of all the poor. Herein come different NGOs, civil society organizations and philanthropists to fill-in the gaps and address different needs of the population through delivery of health and related services. However, they operate with a very weak linkage to the mainstream, secondary, and tertiary health facilities. They also play a pro-active role in 'supporting and articulating the interests of the urban poor' (Devas 2004).

Urban health inequities and urban health governance are two additional, equally pertinent, issues that call for attention and appropriate action. Health inequities (socially produced inequalities that are unjust and unfair and therefore modifiable) in urban areas exist at different levels: between the rich and poor, slum and non-slum populations, and neighborhoods. Concerted efforts are needed to address these inequities. Here governance plays a key role. In urban areas, governance is not a matter of government alone, rather it is a combined effort of multiple actors including different departments of the government, non-governmental organizations, the private sector and the community. In big cities, the local government takes a leadership role to integrate the activities of all sectors, but this pro-active government leadership is unfortunately lacking in Bangladesh.

These issues are discussed in separate chapters of this report. Chapter 2 discusses urban food security and nutrition, chapter 3 gives a brief narrative of the healthcare services available in urban areas, chapter 4 presents the miserable water and sanitation situation in the urban areas, chapter 5 discusses the prevailing poor environment and living conditions in urban areas, chapter 6 deals with the state of urban health governance, and finally, chapter 7 summarizes the key findings and the conclusions, with a set of recommendations based on the findings. The contents of different chapters are briefly described below.

Food security and nutrition (Chapter 2)

Using secondary data from Household Income and Expenditure Survey (BBS 2012) and Micronutrient Status Survey 2011-12, this chapter examines inequities in nutrition and food insecurity in urban Bangladesh. Using measures of absolute and relative

inequality, socioeconomic differences in food expenditure and macronutrient consumption are captured based on HIES data (BBS 2012). Findings from the Micronutrient Status Survey 2011-12 (ICDDR,B, UNICEF Bangladesh, GAIN and IPHN, 2013) are similarly assessed to characterize disparities in vitamin A, iron and zinc deficiency comparing women and children from slum, rural and urban strata. Rural and urban, and within urban differences in wasting, stunting and overweight in children aged 6-59 months are also explored. The implications of findings are also discussed for designing appropriate policies and interventions, which is expected to contribute to healthy urban growth and development.

Urban health services (Chapter 3)

In urban areas in Bangladesh, the Ministry of Health and Family Welfare (MOHFW) is responsible for providing secondary and tertiary healthcare services, while the local government wing of the Ministry of Local Government, Rural Development and Cooperatives (MLGRDC) is responsible for primary health care (PHC). Due to lack of communication between the two ministries, inadequate financial and human resources, and a largely inactive coordinating body (Urban Primary Healthcare Committee, NUPHCC), the health needs of the people, especially the urban poor, remain largely unmet. This has led local and international Non-Government Organisations (NGO) to fill-in the gaps left by the government. The Urban Primary Health Care Project (UPHCP 2005-2012) and its successor Urban Primary Health Care Service Delivery Project (UPHCSDP 2012-2016) have contractual arrangements with the local government to deliver PHC services to the urban population.

Apart from difficulties in coordinating with the MLGRDC, the NGOs often duplicate or overlap healthcare delivery services, creating yet another obstacle to formulating a comprehensive and coordinated urban healthcare strategy for Bangladesh. Due to powerlessness and having extremely low consciousness about their health rights, the urban slum dwellers remain voiceless and fail to articulate their needs in the realm of healthcare. The resulting gaps lead urban dwellers to seek low cost healthcare in the informal sectors with all its associated health hazards. In this context, the health-seeking behaviour of the urban population is described. Various health interventions currently being implemented by different organizations in addition to the facilities operated by the government are discussed. Finally, the gaps and challenges within the sector are also discussed, along with prospective approaches to addressing them in future.

Water and sanitation scenario in the urban areas (Chapter 4)

Scarce resources, insufficient infrastructure and undefined institutional responsibility have made Bangladesh's progress in providing safe water and sanitation slower than it should be. The National Sanitation Strategy of 2005, along with the National Water Policy of 1999 and the National Water Management Plan of 2004, gives broad directions for sanitation and water resource management in the country. The ongoing development of the National Strategy for Water and Sanitation for Hard to Reach Areas of Bangladesh is also an indication of the government's commitment to address the challenges of equity and exclusion at policy level. However, the National Water Policy approved in 2013 leaves space for the commercialisation of water and, through the associated equity implications, limits an individual's right to the natural resource for household or agricultural uses. Finally, although the government is committed to the development of the water and sanitation sector in the country, this is not equally matched by the flow of resources. The authors then further discussed the implications of this for the sector.

Environment and living conditions (Chapter 5)

This chapter attempts to explain how the current urban built environment is affecting health in Bangladesh. Factors such as air (Ischemic heart disease, stroke, chronic obstructive pulmonary disease, lung cancer, and acute lower respiratory infections in children), noise (annoyance, cardiovascular disease, cognitive impairment,

sleep disturbance and tinnitus), and water pollution (diarrhea, dysentery, jaundice, enteric fever etc.) affect health directly. Meanwhile, certain factors, including transport and mobility (air pollution, road traffic congestion and accidents), density and housing condition (slums and squatter settlements, environmental pollution, shortage of play grounds and community spaces) and land use (flood, water logging, etc.) have indirect effects on health. The authors discuss at length how proper urban planning can ameliorate these hazards of rapid urbanization and design healthier cities for tomorrow.

Urban health governance (Chapter 6)

The final chapter deals with the complex issue of urban health governance. Urban healthcare is, unfortunately, 'fragmented and patchy and characterised by multiple, mostly independent providers' that cater to the better off segments of the population. Compared to secondary and tertiary care facilities, PHC facilities are lagging far behind in the urban areas. Interestingly, PHC in the urban areas is not under the jurisdiction of the MOHFW. Instead, according to the Municipality Act 1975, the responsibility of providing 'public health' in the urban areas remains with MLGRDC. Operating under this act, the MOHFW had no say in the PHC in urban areas, except running a number of dispensaries and Mother and Child Welfare Centres. However, the situation has changed since 1998 and with initiatives and funding from Asian Development Bank, the two ministries have come together through a number of arrangements (e.g., Project Management Committee at the central level and a Project Implementation Unit at the local level with representation of all stakeholders including the donors, and a supreme National Urban Primary Health Care Committee) to provide primary healthcare to the urban communities. They accomplished this by contracting out the provision of a minimum package of primary care services, focusing primarily on mothers and children, with effective integration of national programmes such as immunisation, tuberculosis and family planning. The project serves as a functioning example of a public-private partnership. The authors go on to discuss, in detail, the experimentation, successes and challenges of pluralistic governance in urban health and prospects for such governance in the future.

Conclusions and policy recommendations (Chapter 7)

The report concludes by summarising the findings followed by a critical discussion of the problems and prospects of urban health in the context of Bangladesh's drive towards universal health coverage beyond 2015. The authors then outline, using the findings with their own experiences, a set of practical recommendations to guide the future of a universal, equitable and quality urban healthcare in Bangladesh. These recommendations, while extensive, are by no means exhaustive. There are a great number of possible actions, on both large and small scales, that will serve to improve the health of the urban population. Regardless of the extent that policy-makers and other such actors in the urban health sector heed and implement these suggestions, however, even few small changes can open the doors for more larger improvements and set Bangladesh on the path toward a more effective and efficient urban healthcare system for future.

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Chapter two

URBAN INEQUITIES IN FOOD SECURITY AND NUTRITION IN BANGLADESH

Chapter 2

URBAN INEQUITIES IN FOOD SECURITY AND NUTRITION IN BANGLADESH

Alayne M Adams, Tessa Hillgrove, Sifat Yusuf and Atonu Rabbani

INTRODUCTION

For decades, the vast majority of resources devoted to improving food security and nutrition in developing countries has focused on rural populations and the agricultural economies on which they depend. The neglect of urban food security and nutrition stems partly from the widespread use of aggregate statistics that demonstrate better health and nutritional performance of urban populations relative to those in rural areas (BBS 2012, Sadika *et al.* 2013). These averages, however, overlook the heterogeneous nature of the urban space characterised by pockets of affluence, and areas of concentrated poverty and insecurity, most of which are centered in slum and squatter settlements (Oldewage-Theron, Dick and Napier 2006).

Using secondary data, this chapter examines inequities in nutrition and food security in urban Bangladesh. The chapter begins by exploring the features of rapid urbanization and its impact on the livelihood security of the urban poor. Using measures of absolute and relative inequality, socioeconomic differences in food expenditure and macronutrient consumption are captured based on data from the Household Income and Expenditure Survey (HIES) (BBS 2012). Findings from the Micronutrient Status Survey 2011-12 (ICDDR,B, UNICEF Bangladesh, GAIN and IPHN 2013) are similarly assessed to characterise disparities in vitamin A, iron and zinc deficiency comparing women and children from slum, rural and urban strata. Rural and within-urban differences in rates of wasting, stunting and overweight in children aged 6-59 months are also explored. A final section considers the recent literature on how household's cope with urban food insecurity. Discussion focuses on the implications of analysis for the design of contextually appropriate urban policies and interventions that redress inequities in nutrition and food security, and optimize healthy urban growth and development.

Urbanization in Bangladesh

Fault lines in the distribution of health, nutrition and food security within cities have become even more visible given the dramatic shift of populations towards metropolitan areas throughout the world. Bangladesh is no exception, with projections that more than half of its citizens will live in cities by 2050 (World Urbanisation Prospects 2011). In Bangladesh, pull and push factors ranging from economic opportunity to climate change and rural poverty, have resulted in an influx of migrants into urban areas, contributing to a population growth rate of almost 3% per year (World Urbanisation Prospects 2011). Poor urban settlements comprise almost 35% of the urban population nationwide, and are growing at a rate of almost 7% per year (Streatfield and Karar 2008).

Slums in Bangladesh are characterised by poverty, tenure insecurity, overcrowding, and inadequate hygiene and sanitation, and stand in stark contrast to neighbouring non-poor areas (NIPORT, MEASURE Evaluation, ICDDR,B, and ACPR 2008, UPPR 2012). Some are squatter settlements on public land, but a growing proportion is privately owned. Eviction is common, and investments in infrastructure are rarely made. Around 86% of the urban population in Bangladesh has access to safewater supply, while sewerage services are available to only 55% of the population (WHO and UNICEF 2014). Adverse living conditions and inadequate access to services contribute

towards stark inequities in health. These are exemplified by patterns of child mortality where urban mortality rate among slum residents (95 per 1,000 live births) surpasses rates in urban non-poor and rural populations (53 and 66 per 1,000 live births respectively) (UNICEF 2009).

In search of improved job prospects as well as better lives for their families, the urban poor represent the engine of urban development, yet the informal work they perform is highly insecure (Begum and Sen 2004). Low paying jobs such as rickshaw pulling, construction work, petty trade and day labor provide unstable sources of income on which few can rely (Ahmed and Khandaker 1997). Insecurity is further exacerbated by the cash-based nature of urban economy and the effects of market price fluctuations (Maxwell 1999). Among the urban poor, almost everything including food must be purchased and many experience daily challenges in earning sufficient income to cover basic family needs. The impact of these challenges on the ability of the urban poor to constitute an adequate diet is of critical concern, especially for women and children, with consequences for child development, health and productive capacity.

Measuring socioeconomic inequities in food security and nutrition

Socioeconomic inequities in the dietary composition of the urban poor are examined using data from HIES (BBS 2012). HIES applies a two-stage random sampling approach covering both rural and urban Bangladesh. Data were collected for 12 months to capture seasonal variations. In 2010, 12,240 households were surveyed –7,840 from rural areas and 4,400 from urban areas (BBS 2012). Data were analyzed at household level on a final sample of 12,222 households once suspect and missing data were excluded.

Food consumption data in HIES is based on recall of all foods acquired during the last two weeks. These data include food consumed inside and outside the home, and cover 134 individual food items (such as bananas) or categories of food (such as green leafy vegetables). Food items may have been purchased, produced, gifted, or received as in-kind payment for work performed. Household food acquisition data were transformed into standard units of weight, and converted to daily amounts. Nutrient content was derived based on the 2013 food composition tables for Bangladesh (Shaheen *et al.*, 2013). Minimum intake was calculated based on the number of members in the household and their respective nutritional requirements. These data were used to find whether a household consumed sufficient foods to meet minimum daily intakes of energy, protein, and various micronutrients (such as calcium and Vitamins B1, B2, and C) (Berudez *et al.*, 2012).

Data are presented in terms of income quintiles, and analyzed using t-tests for continuous variables and chi-square tests and logistic regression for categorical variables to determine whether differences between quintiles were statistically significant ($p<0.05$). Analysis focuses on differences between income quintiles within urban population, as well as comparisons between the poorest quintiles in urban and rural areas.

Inequities in income and food expenditure in rural and urban areas

Almost 27% of the population sampled in this data set are classified as living in urban areas (including those in municipalities and small metropolitan areas), with the remaining 73% living in rural areas. Mean household size was 4.5, with a small but significant difference in urban (4.4) and rural (4.5) areas ($p<0.05$). Average household income was 12,340 taka per month, and not significantly different from monthly income reported in urban (12,982 taka) versus rural areas (12,189 taka). Per capita monthly income (averaged across all household members) was 2,947 taka (urban 3,174 taka; rural 2,865 taka), with no significant difference between areas.

Area averages, however, hide substantial socioeconomic disparities within rural and urban populations. Notwithstanding the likely underreporting of income among the poor due to uncertainty of earnings from day labour, and the use of credit and barter systems to acquire food, a step-wise increase in per capita and mean household income is apparent in both urban and rural areas, with a 7-12 fold

difference comparing the lowest and highest quintiles (Table 1). Monthly household food expenditures also increased by income quintile, with statistically significant differences apparent between poorest and richest quintile households in both rural and urban areas ($p<0.05$). When food expenditure is expressed as a proportion of household income, the urban population average is 56.7%, compared to 45.5% in rural areas, a difference that reflects the greater reliance on food purchases in urban cash-based economies. When expressed by quintile, the proportion of reported income spent on food in the poorest quintiles exceeds 100% (155% and 134% among the poorest urban and rural households respectively), alluding to their chronic indebtedness, and the probable imprecision of income measures. The poorest urban quintile spent a significantly greater proportion of their income on food than the poorest rural quintile ($p<0.05$), which translates into a mean difference of 885 taka per month when measured by income quintile ($p<0.05$).

Quintile differences in the percentage of income spent on food are explored using two equity measures: 1) absolute (or difference) measures of equity that capture the actual size of the gap between groups (Q1-Q5), and 2) relative (or ratio) measures which take into account the relative disadvantage of different groups across the population (Q1:Q5). When analysing absolute differences in the proportion of income used for food expenditure comparing the poorest and richest income quintile, the gap is greatest in urban areas (120.0 vs. 109.5). Although rate ratios are similar between urban and rural areas, urban households spent a much higher fraction of their income on food compared to rural households. The burden is disproportionately higher among the low income group implying a bigger challenge in meeting household nutritional requirements.

Inequities in macro and micronutrient consumption in rural and urban areas

Among the urban population, the poorest income quintile consumed significantly fewer calories each day than the wealthiest group (2205 vs. 2451 calories), which is equivalent to an additional 64 calories consumed for each additional quintile ($p<0.05$) (Table 3). This is especially concerning as the poorest are more likely to work in physically demanding jobs and thus have greater energy needs. Relative to the rural poor, the urban poor also consumed significantly fewer calories each day: 2291 vs 2205 calories respectively ($p<0.05$).

The poorest urban quintile similarly consumed significantly fewer grams of protein each day than those in higher income quintiles (5.2 more calories for each additional quintile: $p<0.001$); with just 61.9 grams of protein consumed by the lowest quintile vs. 84.0 grams consumed by the highest. Interestingly, protein intake among the poorest quintile was comparable between rural and urban populations.

Table 1. Household income and food expenditure by quintile in rural and urban areas

Income quintile	Mean household income		Food expenditure		% income spent on food	
	Urban	Rural	Urban	Rural	Urban	Rural
1st quintile	2,923	2,720	4,531	3,646	155.0	134.0
2nd quintile	5,432	5,409	5,320	4,520	98.0	83.6
3rd quintile	8,244	8,209	6,529	5,241	79.0	63.8
4th quintile	12,656	12,495	7,896	6,217	62.4	49.8
5th quintile	31,889	33,043	11,151	8,099	35.0	24.5
Overall	12,982	12,189	7,365	5,540	56.7	45.5

Table 2. Inequities in percentage of income spent on food in rural and urban areas

Area	Income quintile	% income spent on food	Absolute difference Q1-Q5	Relative difference Q1:Q5
Urban	Q1	155.0	120.0	4.42
	Q5	35.0		
Rural	Q1	134.0	109.5	5.46
	Q5	24.5		

While the rural poor had significantly lower intakes of vegetables than more wealthy residents ($p<0.05$), the same trend was not apparent in urban areas. Across all income quintiles, urban consumption of vegetables was lower than rural areas. When comparing consumption of the poorest in each area, per capita vegetable intake was an average of 23.3 grams lower in urban areas compared to rural areas ($p<0.001$).

There were no significant differences comparing fruit intake in rural and urban areas (52.4 vs. 51.0 g/person/day) (Table 3). However, within the urban population, differences in fruit consumption were apparent between quintiles ($p<0.05$). The poorest quintile consumed an average of just 51.0 g/person/day, while the richest quintile consumed almost double this amount (91.2 g/person/day).

Logistic regression was used to determine the relative likelihood of obtaining an adequate daily intake of key nutrients by income quintile (Table 4). Results suggest that the rich were more likely to obtain an adequate intake of energy, protein, iron, vitamin A, vitamin B2 and vitamin C ($p<0.05$). Overall, there was no difference in consumption of vitamin B1 by income quintile.

Logistic regression analysis was also used to determine whether the poorest in urban areas were more or less likely to have an adequate nutritional intake compared to those in rural areas. Table 5 shows that the poorest urban households were significantly less likely to meet minimum daily requirements relative to the poorest in rural areas for calories, and vitamins B1 and B2, and significantly more likely to consume sufficient calcium (odds ratio 1.55, $p<0.05$). No significant differences were apparent in the likelihood of achieving adequate daily intake of protein, iron, vitamin A, and vitamin C comparing the poorest quintile in urban and rural areas.

Table 3. Mean number of calories consumed per capita by quintile in rural and urban areas

Income quintile	Per capita calories consumption		Per capita protein consumption (g)		Per capita vegetable consumption (g)		Per capita fruit consumption (g)	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
1st quintile	2205	2291	61.9	61.8	235	259	51.0	52.4
2nd quintile	2211	2328	63.6	63.1	233	249	59.8	59.8
3rd quintile	2272	2345	67.9	64.5	233	247	59.6	63.2
4th quintile	2345	2436	73.6	69.1	232	258	68.1	64.5
5th quintile	2451	2568	84.0	75.1	240	274	91.2	84.2
Overall	2306	2393	70.7	66.7	234	257	68.7	65.9

Table 4. Likelihood of meeting daily macro and micronutrient requirements by quintile in urban areas

Nutrient	Quintile				
	1	2	3	4	5
Energy					
% sufficient intake	47.6	46.5	47.6	52.2	60.1
Odds of sufficiency	-	0.9	1.0	1.3*	1.4*
Protein					
% sufficient intake	77.7	81.5	83.7	86.0	90.2
Odds of sufficiency	-	1.2	1.8*	2.1*	3.7*
Calcium					
% sufficient intake	30.7	31.5	35.4	47.6	57.7
Odds of sufficiency	-	1.1	1.3*	2.4*	3.3*
Iron					
% sufficient intake	90.6	92.4	93.7	94.5	95.7
Odds of sufficiency	-	1.1	1.7	1.8*	2.4*
Vitamin A					
% sufficient intake	95.7	95.8	96.6	97.7	98.0
Odds of sufficiency	-	1.7	2.1*	3.5*	5.0*
Vitamin B1					
% sufficient intake	80.1	80.5	81.2	82.4	82.1
Odds of sufficiency	-	0.9	0.9	1.1	0.8
Vitamin B2					
% sufficient intake	15.8	12.8	11.9	14.8	20.9
Odds of sufficiency	-	0.8	0.7	0.9	1.5*
Vitamin C					
% sufficient intake	84.3	86.3	87.5	90.2	92.7
Odds of sufficiency	-	1.7*	2.1*	2.1*	3.6*

*indicates significant difference relative to the poorest quintile ($p<0.05$)

Urban nutritional status comparing slum vs. non-slum strata

The recent National Micronutrient Status Survey (2011-2012) provides useful data on inequities in nutritional status that corroborate HIES analysis of household dietary intake. A collaborative effort between ICDDR,B, UNICEF Bangladesh, GAIN, and the Institute of Public Health Nutrition, the survey examined the nutritional status of three population groups (preschool age children; non-pregnant non-lactating (NPLA) women of reproductive age; and school age children), sampled from rural, urban slum and non-slum strata. Rates of vitamin A, iron, zinc, iodine deficiency and malnutrition were assessed by means of biological (blood and urine) and anthropometric measurements, and dietary adequacy was explored using a 7-day food frequency questionnaire. Details of survey sampling and methodology are found in the full report (ICDDR,B, UNICEF Bangladesh, GAIN and IPHN 2013). Iodine deficiency was not examined given that iodized salt is widespread in urban areas, and there were virtually no differences in rates of deficiency comparing urban slum and non-slum strata.

Table 5. Likelihood of urban poor obtaining adequate daily intake relative to rural poor

Nutrient	Odds ratio	p value
Calories	0.76*	0.03*
Protein	0.88	0.4
Calcium	1.55	0.002*
Iron	1.2	0.5
Vitamin A	0.66	0.08
Vitamin B1	0.52	<0.001*
Vitamin B2	0.58	0.002*
Vitamin C	1.1	0.76

Vitamin A

Vitamin A is necessary for healthy epithelial tissue of the skin, respiratory system, and gastro-intestinal and urinary tracks, and deficiency has been linked with increased susceptibility to infectious disease (Thurnham 1989). The national prevalence of subclinical vitamin A deficiency (serum retinol<0.7mmol/L) was 20.5% and 20.9% among preschool and school age children respectively, and 5.4% non-pregnant, non-lactating (NPNL) women (Table 6). When data are examined according to rural, urban and slum strata, measures of absolute equity show consistently higher rates of deficiency in slums compared to rural and urban strata, with the largest differences apparent in preschool children. Relative measures for preschool children tell a similar story, with rates of deficiency almost twice as great in the slum versus rural and urban strata. While absolute differences in Vitamin A deficiency comparing slums with rural and urban strata are substantially higher in school age children than NPNL women, relative differences are similar between groups, with those living in slums having deficiency ratio between 1.23 and 1.41 compared to those in other strata.

Vitamin A consumption estimates for various population groups were derived by applying nutrient values from the 2010 Bangladesh Food Composition Tables (Islam 2010) to raw food weights elicited using a 7-day food frequency questionnaire (Table 7). According to these estimates, preschool and school age children sampled from the slum strata consumed the least amount of vitamin A in diet compared those residing in rural or non-slum urban areas. Among NPNL women, vitamin A consumption was lowest in the rural population. In general, these findings are consistent with HIES estimates of household level vitamin A consumption.

As might be expected, consumption of animal source vitamin A was the highest among those residing in wealthier urban non-slum areas (61.1 and 44.7 RE for preschool and school age children respectively, and 40.2 RE for NPNL women). Plant source vitamin A consumption was highest among preschool and school aged children in rural areas (186.3 and 237.0 RE respectively), while for NPNL women, those sampled from urban non-slum strata consumed the most (392.3 RE). Median consumption of vitamin A (RE) was lower than Recommended Daily Allowances (RDA) in all groups with the

Table 6. Sub-clinical vitamin A deficiency by age group and strata

Age group	n	Vit A deficiency (%)*				Absolute Difference (%) Slum: Rural	Relative Difference (%) Slum: Rural	Absolute difference (%) Slum: Urban	Relative difference (%) Slum: Urban
		National Average	Rural	Urban	Slum				
Pre-school	873	20.5	19.4	21.2	38.1	18.70	1.96	16.90	11.80
School age	1267	20.9	20.2	22.1	27.1	6.90	1.34	5.00	1.23
NPNL women	918	5.4	5.4	4.9	6.9	1.50	1.28	2.00	1.41

*Serum retinol <0.7mmol/L;
Source: National Micronutrients Status Survey 2011-12.

Table 7. Vitamin A consumption by age group and strata

Age group &source of Vit A intake	Median Retinol Equivalents (RE)				
	National	Rural	Urban	Slums	RDA[1]
Preschool					
Animal Source	52.6	52.4	61.1	40.2	
Plant Source	168.8	186.3	105.3	118.8	
Total Vitamin A	270.4	291.5	230.3	209.1	300-400
School age					
Animal Source	40.5	40.1	44.7	29.8	
Plant Source	225.1	237.0	194.1	201.9	
Total Vitamin A	318.4	321.3	300.1	260.3	400-600
NPNL women					
Animal Source	31.8	28.9	40.2	30.3	
Plant Source	285.8	258.7	392.3	373.2	
Total Vitamin A	372.1	315.9	467.2	412.5	700

[1]Institute of Medicine (IOM 2002): Age 1-3 years 300 RE and age 4-5 years 400 RE[2]; age 6-8 years 400 RE and age 9-13 years 600 RE[3]; Age 15-9 years (NPNL) 700 RE[4]

Source: National Micronutrients Status Survey 2011-12.

largest shortfalls apparent in preschool and school-aged children living in slums. NPNL women sampled from urban non-poor strata were relatively better off than those in rural and slum strata, however, in all instances median consumption is dramatically below the RDA for this age group.

Anaemia and Iron Status

Iron is a component of hemoglobin, and plays a vital role in the cognitive development of growing children and adolescents, and is an important mineral in pregnancy. Deficiency in iron has been linked with increased risk of premature births, low birth weight, and reduced foetal organ growth (Thurnham *et al.*, 2010). Table 8 compares mean hemoglobin concentration in blood (g/dL) among women and children from rural, urban slum and non-slum areas. Interestingly, findings reveal strikingly little variation between strata, with hemoglobin levels in the recommended range in all cases.

Anaemia and iron status by age group and strata show more variation (Table 9). Across all age groups, prevalence rates of anaemia were highest in rural versus urban and slum strata. Overall levels of iron deficiency were greatest among preschool children, with rates among slum children over twice as high as those from rural and urban non-poor strata (27.2%). Correspondingly, the prevalence rate for iron deficiency anaemia was highest among pre-school age children in slums (13.9%), who also consumed the least amount of iron in foods compared to those in rural and urban strata.

Among NPNL, rates of anaemia were greatest among rural women (27.4%) compared to those from urban and slum strata (21.4 and 20.1% respectively). Although the prevalence of iron deficiency was highest among NPNL women in the better-off urban strata (8.7%), rates of iron deficiency anemia were highest among rural women. Together, these results suggest that iron deficiency is not the primary determinant of high rates of anemia in the population.

Zinc

Zinc is also important for growth and development of the fetus, brain and immune function and the prevention of disease especially in children (Wasantwisut 1997).The

Table 8. Mean hemoglobin status (g/dL) by age group and strata

Group	National (n = 607)	Rural (n = 207)	Urban (n = 220)	Slums (n = 180)	Recommended level
Preschool	11.5	11.4	11.7	11.4	11-13
School age	12.3	12.3	12.5	12.4	11-13
NPNL women	12.4	12.4	12.6	12.6	12-16

Source: National Micronutrients Status Survey 2011-12.

Table 9. Anemia and iron status by age group and strata

	Preschool Children		Young school age (6-11 yrs)		Older school age(12-14 yrs)		NPNL Women	
	N	%	N	%	N	%	N	%
Anaemia[1]								
National	607	33.1	995	19.1	326	17.1	1031	26.0
Rural	207	36.6	340	21.7	102	18.1	362	27.4
Urban	220	22.8	342	11.8	110	13.2	351	21.4
Slum	180	22.0	313	13.2	114	18.1	318	20.1
Iron Deficiency[2,3]								
National	468	10.7	960	3.9	319	9.5	882	7.1
Rural	155	9.4	331	4.1	98	10.0	314	6.7
Urban	164	12.3	329	3.6	112	8.1	298	8.7
Slum	149	27.2	300	3.4	109	8.3	270	7.4
Iron Deficiency Anemia[4]								
National	449	7.2	944	1.3	312	1.8	868	4.8
Rural	149	6.1	324	1.1	97	1.8	312	5.0
Urban	158	10.1	325	2.1	108	1.7	294	4.1
Slum	142	13.9	295	1.3	107	1.8	262	4.1

[1]Anaemia is defined as Hemoglobin: <12.0 g/dl in NPNL women; <11.0 g/dl in preschool children; <11.5 in children 6-11 years, and <12.0 g/dl in children 12-14 years. [2]Iron deficiency is defined as serum ferritin level: <15.0 ng/ml in NPNL women and school age children and <12.0 ng/ml in preschool age children. [3]Adjusted for elevated CRP or elevated AGP (Thurnham et al. 2010 and Engle-Stone et al. 2011).[4]Iron deficiency anemia is defined as: hemoglobin <12 g/dl plus ferritin level<15.0 ng/ml in NPNL women; hemoglobin <11.0g/dl plus ferritin level <12.0 ng/dl in preschool age children; hemoglobin <11.5 g/dl plus ferritin level <15.0 ng/ml in children 6-11; hemoglobin <12.0 g/dl plus ferritin level<15.0 ng/ml; in children 12-14 years.

Source: National Micronutrient Status Survey 2011-12.

national micronutrient survey found alarmingly high rates of zinc deficiency in slum dwelling populations. Almost 52% of preschool children living in slums were zinc deficient compared to 29.5% in urban non-slum and 48.6% in rural children. Similarly, over 66% of slum women were zinc deficient, which is substantially higher than the national average of 57.3%. Seven-day food frequency records revealed comparatively low consumption rates of animal and non-animal food containing zinc in slum populations as a whole, with substantial gaps between median consumption and recommended daily allowance, especially for slum women (3.61 mg vs. RDA 8-9 mg).

Anthropometry

The micronutrient survey also provides up-to-date assessments of nutritional status of children (6-59 months) comparing rural, urban and slum strata. Table 10 presents the prevalence of stunting (height-for-age z score <2sd), underweight (weight-for-age z score<2sd), and wasting (weight-for-height z score <2sd) among pre-school age children.

Rates of wasting are slightly higher among pre-school children in rural areas compared to those living in slums. However, for stunting and underweight, slum children are the worst off by a large margin. For stunting, over 50% of children living in slums are stunted, compared to a little over 20% in rural and urban areas. Similar differences between strata are reflected in measures of underweight and in measures of absolute and relative equity. With the exception of wasting, where rural and slum children perform equally poorly, the relative disadvantage of slum children exceed that of rural and urban strata by a factor of at least 1.5. Similar results have been obtained using quintile analysis of BDHS data, where concentration indices suggest that the urban population is more inequitable than the rural population in terms of children's nutritional indicators (Ahmed *et al.* 2013).

Food insecurity in urban slums

The extreme vulnerability of the urban poor to malnutrition, whether captured by wealth quintile or slum residence, resonates across this analysis. It is also reflected in measures of food security, where 36.3% of the households are classified as food secure, compared to 53.4% and 53.5% in households in rural and urban non-slum areas respectively (Fig. 1). Much higher rates of moderate and severe food insecurity in slum households are responsible for driving the average upward.

Living with food insecurity

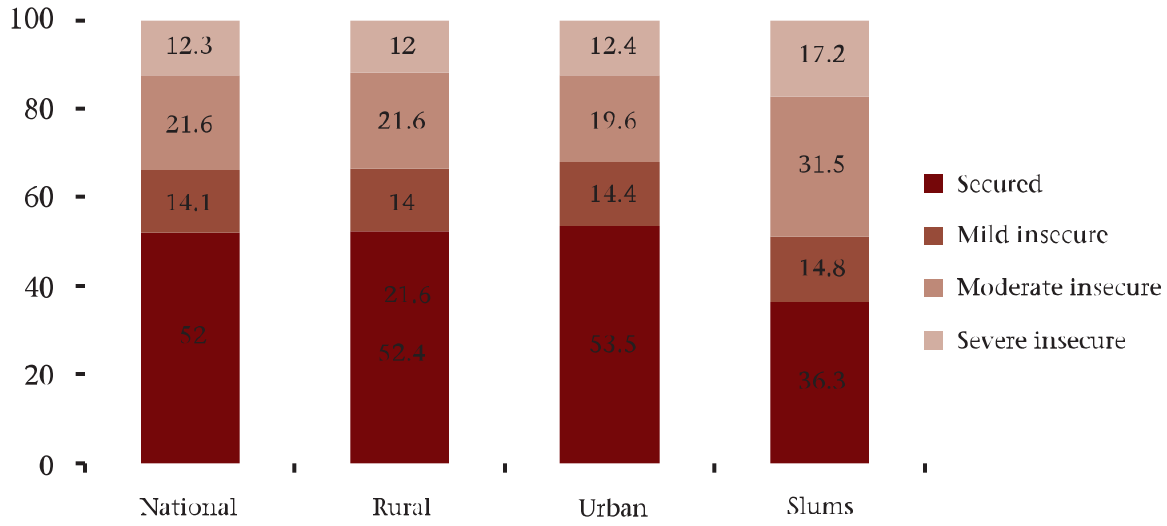
Largely reliant on insecure forms of employment such as daily wage labour, or work in the informal or ready-made garments sector, much of the food insecurity experienced by the urban poor arises from insufficient cash income to afford a nutritious diet. Although overall wage rates have increased over the last decade, volatility in global food prices, in addition to sharp increases and decreases in national rice rates, puts the urban poor at particular risk given that household food spending comprises almost 60% of the household income in urban areas (BBS 2012). Although the government's

Table 10. Prevalence of malnutrition among preschool age children by strata

	National	Rural	Urban	Slums	Absolute Difference (%) Slum-Rural	Relative Difference (%) Slum-Rural	Absolute difference (%) Slum-Urban	Relative difference (%) Slum-Urban
Wasting[1]								
Prevalence	19.3%	21.2%	12.9%	20.3%	-1.0	0.96	7.4	1.57
z-score	-0.88	-0.95	-0.61	-0.94				
Stunting[2]								
Prevalence	32.1%	31.4%	31.3%	51.1%	19.7	1.63	19.8	1.63
z-score	-1.32	-1.29	-1.30	-1.97				
Underweight[3]								
Prevalence	30.0%	29.6%	28.1%	47.4%	17.8	1.68	19.3	1.69
z-score	-1.43	-1.48	-1.19	-1.85				

[1] % weight-for-height z score <2sd; [2] % height-for-age z score <2 sd; [3] %height-for-weight z score <2 sd.
Source: National Micronutrients Status Survey 2011-12.

Figure 1. Household food insecurity by strata



Source: National Micronutrients Status Survey 2011-12.

Open Market Sale (OMS) has lessened this impact by offering imported rice at a lower price than the market price (FPMU 2013), and average wage rates have increased (BBS 2012), food price fluctuations continue to impact purchasing power of the urban poor. Recent surveillance findings show that even when prices have stabilized, household utilization patterns do not immediately revert to normal given perceived insecurity about whether the change is fleeting or permanent (HKI and JPGSPH 2014).

Although the literature on food insecurity is largely rural focused, models of household responses to scarcity are still relevant to urban areas. Importantly, this literature distinguishes between coping strategies, which are fallback measures to cope with short-term food deficits and adaptive strategies, which involve more long-term or permanent adjustments such as migration or alteration in livelihood pattern (Davies 1993). Immediate short-term strategies include reducing food ration size and shifting food composition towards higher ratios of cheaper cereals and away from relatively more expensive legumes, vegetables or animal products. Other strategies relevant to the urban poor involve altering the distribution of food between household members, reducing household size through migration, borrowing and sale of assets (Maxwell 1996).

Evidence from a qualitative study in Dhaka's largest slum (Norikane 2014) provides useful insight on how the urban poor construct household diet in the context of food insecurity. Scarcity was acknowledged as a common occurrence among slum respondents, and a variety of coping mechanisms were mobilised to address it. Among the most common of these strategies was to borrow money, food or both from relatives and neighbours, although many indicated that they felt less comfortable borrowing for themselves as opposed to their children. These same households also described a practice of lending to others, suggesting that this informal system of borrowing is reciprocal. In a quantitative study of urban food security in Dhaka slums, two-thirds of the 205 households sampled reported frequent use of family and neighbours as a source of credit. Buying food on credit from local shopkeepers was mentioned by one-third of the households as a frequent practice given the insecure and irregular nature of daily wage labour (Zingel *et al.* 2011).

In addition to eating less preferred yet more inexpensive food, voluntary restriction of diet was also mentioned by women respondents

(Norikane 2014 and Zingel *et al.* 2011) as a means of buffering the nutrition security of other members of the household. National data from FSNSP also reveal this practice. Among households that report skipping meals or reducing portion size, adults disproportionately curtailed consumption. When disaggregated by age and sex, however, a significantly greater proportion of adult women reported eating smaller meals, only rice, or sleeping hungry compared to their male counterparts, with a similar pattern evident between male and female adolescents (HKI and JPGSPH 2014).

Adaptive strategies noted by Norikane (2014) involved sending household members back to their home village during difficult periods, with one respondent describing how she planned to return to her village with her child while her husband would remain in Dhaka for work, sleeping in the shop in which he works. Others explained that they deliberately left children behind with family members in the village when they moved to Dhaka city in search of employment. Reducing migrant remittances to rural relatives was another response (Zingel *et al.* 2011).

Discussion

With urbanization, the locus of poverty and under-nutrition in Bangladesh is also shifting to urban areas, with rural out migration adding to the swelling numbers of urban poor. The challenges that they confront are unique to urban context and their vulnerability to food and nutrition insecurity is substantial. Almost exclusively dependent on the market to feed their families, the urban poor are highly vulnerable to food and fuel price fluctuations resulting from profiteering, as well as global market shocks. Extreme population density (sometimes surpassing 200,000 per square kilometer in some of Dhaka's slums) and limited access to clean water and sanitation further contribute to health risks that exacerbate malnutrition, and ultimately undermine the productivity of the nation.

Results indicate that absolute disparity (as measured by mean household food expenditure for top and bottom income quintiles) is higher in urban areas. Compared to rural households, urban dwellers spend a much greater share of their income on food, which also tend to be more expensive and more prone to seasonal and sudden idiosyncratic shocks in urban areas. Together, these findings suggest greater vulnerability of urban low income households to fluctuations in food availability, given their almost exclusive reliance on food purchases compared to those in rural areas.

A strong income effect was also evident in the macro and micronutrient content of urban diets. For energy intake, the income effect is the most muted (the odds are 40% higher for households in the top quintile versus bottom quintile). However, for other macronutrients such as protein, the odds of meeting daily requirements are 3.7 times more likely for the top-most income quintile compared to the bottom-most income quintile. The results are similar for most micronutrients. These findings suggest that income (and wealth) inequality is the key driver of food insecurity and nutritional deficiency among poor urban households.

Considering recent national data on micronutrient deficiency and anthropometric outcomes, we find that children sampled from urban slums face disproportionately higher levels of vitamin A deficiency. About 38% of preschool aged children are deficient in vitamin A compared to a national average of 21%. The prevalence of anaemia is also higher among children living in the slums, and together with dramatically higher rates of stunting, increases the risk of sub-optimal growth and cognitive development. These findings highlight the intergenerational nature of inequities in nutrition and food security, and the manner these perpetuate urban poverty and deprivation.

Dependent on income from precarious informal sector jobs that rarely meet their consumption needs, the urban poor are more likely to take on risky coping strategies including high levels of borrowing. Amongst the poorest, food purchases comprise over 100% of household income, pointing to the importance of debt and borrowing to daily survival.

Several surprising features of household coping with urban food insecurity were revealed. First, contrary to the common characterisation of urban slums as places of dislocation and isolation, social networks appear crucial in the arsenal of

coping strategies used by poor households. The widespread practice of borrowing or buying on credit from neighbours and local shopkeepers in times of scarcity indicate a level of mutual trust sufficient to sustain giving and receiving in times of need. While some of these informal credit networks might be viewed as exploitative, they provide a means of survival for families with limited access to the formal system. A second observation is the ebb and flow of people from urban to rural areas as a means of coping with periods of insecurity. This dynamic feature of urban populations, where resources move to and from rural areas, spreads risk for households otherwise living at the margin. Both coping strategies imply the absence of social protection that buffer risk. Only 8% of urban households benefit from social safety net programmes compared to one-third of households in rural areas, which is largely a consequence of preferential rural targeting such as the Cash for Education Programme (HKI and JPGSPH 2014).

Bangladesh is rapidly urbanising, with numbers of urban poor increasing daily. Deeply rooted in an economy fueled by cheap and plentiful labour, yet lacking social protection and basic services critical to sustained health and productivity, the problem of urban food and nutrition insecurity will continue to grow unless substantive action is taken. Urban challenges are unique, and will require innovations in prevailing food security and nutrition policy and programming models that are rural in origin. Some of these challenges relate to difficulties in serving mobile populations, the environmental risks of inadequate safe water, pollution, open sewerage and contamination, and the insecurity of urban livelihoods, and require integrated, multi-sectoral approaches. Accessibility barriers ranging from costs of services and long working hours also need to be taken into account. Social protection and cash transfer programmes are particularly promising, with evidence suggesting that they can improve dietary diversity (Abebwa, Fentie, and Kassa 2010, Miller, Tsoka, and Reichert 2011). Strong urban platforms are needed, with coordination at all levels to address the root causes of urban vulnerability, which include employment insecurity, food price fluctuations, and eviction.

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Chapter three

HEALTH CARE IN URBAN SLUMS OF BANGLADESH

TAKING SERVICES AT THE DOORSTEPS OF THE POOR?

Chapter 3

HEALTH CARE IN URBAN SLUMS OF BANGLDESH
TAKING SERVICES AT THE DOORSTEPS OF THE POOR?

Kaosar Afsana, Sabina F Rashid, Kuhel F Islam and Prianka Hashim

INTRODUCTION

In Bangladesh, rapid urbanisation, uncontrolled migration from rural to urban areas (approximately 1,100 migrants arriving daily in Dhaka city), (Rashid, 2009) and changing socio-demographic pose a formidable challenge for providing healthcare services to urban poor (Kulkarni, 2012). Slum dwellers, struggling with the challenge of 'recognition', have limited access to basic health services and amenities (for details, please refer to chapters 4–6 in this volume). This is reflected in the health indicators of slum population, which is worse than the rural population (e.g., under-5 mortality rate or U5MR of 57 per 1,000 live births in slums compared to 55 in rural) (BUHS, 2013 and BDHS, 2011). This is also true for nutritional status of children in slums (for details, please refer to chapter 2 in this volume). While grappling with significant burden of communicable diseases, the slum population is also increasingly suffering from the burden of non-communicable diseases such as hypertension, diabetes mellitus and obesity (Streatfield and Karar, 2008). Slums in Dhaka now constitute about a third of the city corporation area, but are growing twice as fast, which means in 20 years slums will constitute half of the city corporation. But according to the government's mid-term review of the health sector development programme HPNSDP, urban health remained 'the least attended' area of attention (BUHS, 2013).

Settling down in slums and exploring healthcare facilities

The rural migrants arrive and settle into bustling slums and quickly become dependent on a broker who provides electricity and other necessities to their makeshift dwellings, usually for the highest prices in the city, albeit illegally (Saunders, 2011). This broker is usually well connected to a local leader who helps meet multiple needs of the slum dwellers including healthcare in return for votes during election. These slum dwellers, especially who are fairly new, have little to no knowledge of where to proceed in cases of severe illness, and depend on the brokers and local leaders both for alleviating their ailments by providing medicine, and helping the urban poor navigate the maze of primary healthcare facilities (Auyero, 1999). This maze of the multiple actors, both formal and informal, is created due to competition between different healthcare providers with few effective referral systems. However, with little help in receiving formal healthcare, the slum dwellers become dependent on themselves and local informal providers such as brokers, healers, and pharmacists to treat their illnesses. This progressive increase of self-care or informal care harms the urban poor since in many cases they are being inadequately or wrongly treated, especially for severe illnesses (Ahmed, *et al.*, 2005). Nevertheless, lack of information is not the only obstacle for urban poor to receive formal healthcare services as the modes of service delivery themselves create challenges of access for urban poor (Streatfield and Karar, 2008).

Many of the urban poor are dependent on their daily wages to support their families. They suffer most when illnesses are so debilitating that hinders an individual from working for even a few hours. It is very difficult for these people to give up a day of work, particularly when employment is so sporadic, to visit a doctor for illnesses (Saunders, 2011). Since the doctor's chambers are open during the working time, it is impossible for urban poor to be diagnosed after their working hour. Besides, many doctor's chambers and hospitals are not within walking distance of slums, transport cost is involved, many times causing food to be denied to family

members (Bangladesh Public Policy Watch, 2004). The long waits, hidden fees, and inability to navigate formal healthcare system due to lack of knowledge about their rights the slum dwellers also felt discouraged to seek formal healthcare; rather it inadvertently push them to seek healthcare from informal providers such as pharmacies, local healers, and brokers (Ahmed, *et al.*, 2005). Inadequate access to formal facilities and mushrooming of informal and untrained health sectors not only further marginalise the urban poor, but also inhibit Bangladesh's ability to pace with rapid urbanisation without increasing poverty (Streatfield and Karar, 2008).

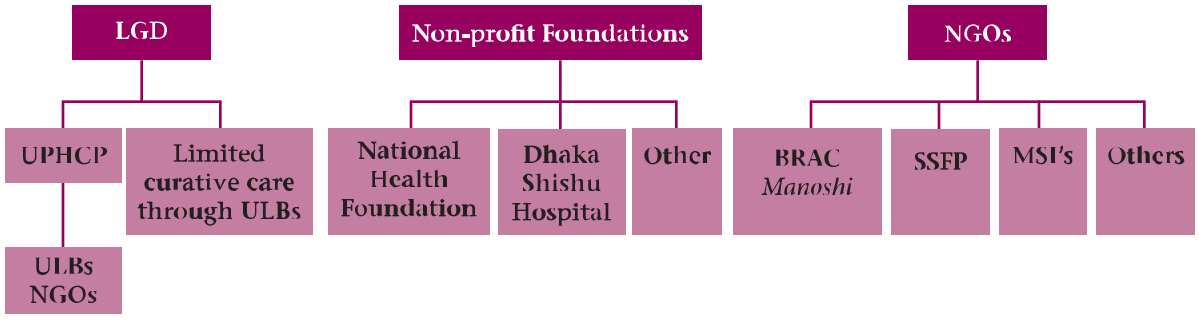
Urban healthcare infrastructure

Provision of primary healthcare is inadequate for urban poor (Uddin, *et al.*, 2010). The Bangladesh government is one of the key actors in providing urban healthcare. The Ministry of Health and Family Welfare (MOHFW) is responsible for providing secondary and tertiary care while the Ministry of Local Government, Rural Development & Co-operatives (MOLGRDC) is responsible for providing urban primary healthcare. Instead of an integrated policy that provides consistent and equitable healthcare to urban poor, lack of communication between these two government bodies, shortage of human and financial resources, and a largely inactive National Urban Primary Healthcare Committee (NUPHCC) led to local and international NGOs to fill the gaps left by the government. These NGOs often have arrangement with the local government through the Urban Primary Health Care Project (UPHCP) from 2005-2012 and Urban Primary Health Care Service Delivery Project (UPHCSDP) from 2012-2016, but have difficulties in retaining doctors who leave for better pay (for details, please refer to chapter 6 in this volume). Different models of healthcare delivery service of the NGOs sometimes become an obstacle in designing a comprehensive and coordinated urban healthcare strategy for Bangladesh (UPHCDSP, 2014).

Another stakeholder among the healthcare providers is the private donors who generate and provide funding for healthcare service delivery (DFID, 2012). In many cases, these donors do not follow-up whether their money was utilized as planned, which makes them largely ineffective in providing a clear and sustainable direction for urban healthcare delivery (Health care for urban poor falls through the gap, 2011). What they lack is an effective method to assess the outcomes of their efforts. The final stakeholder is the urban slum dwellers themselves who remain voiceless and right-less and thus fail to articulate their needs in the realm of healthcare. The gaps left in the ill-coordinated and multifaceted urban slum healthcare delivery system force the urban poor to seek out other options to meet their needs (Streatfield and Karar, 2008).

Figure 4.1 shows the existing urban health service structure below (excluding secondary and tertiary facilities and some dispensaries of the MOHFW):

Fig 4.1 Organisation of healthcare delivery services in urban areas other than MOHFW facilities



Source: National Urban Health Strategy, 2011, MOHFW

Healthcare-seeking behaviour of the slum dwellers

Healthcare seeking behaviour of the slum dwellers varies and the choice of treatment depends on many factors including beliefs and perceptions, illness types and severity, access to therapeutic options, convenience, costs, quality of services, staff behaviour, and so on. Age, sex, education and social circumstances also influence health-seeking behaviour (Valssoff, 2007). The first and most prevalent behaviour is self-care that includes common home remedies with or without medicine based on self-diagnosis or advise of surrounding family and friends (Uddin, *et al.*, 2010). This may be the most cost effective method, but it has potential harm in reusing old medication, purchasing drugs without prescription and experimenting with them, or using someone else's medication. The low cost of traditional healthcare compared to formal allopathic healthcare and beliefs and understanding creates an incentive for urban poor to continue with this method (Uddin, *et al.*, 2010), often with unknown diagnosis and quality of care. Informal/unqualified healthcare providers consist of itinerant drug sellers, untrained pharmacists, and roadside quacks who usually have little, if any, recognized qualification (Ahmed, *et al.*, 2003). Drug shops (mostly unregistered and unregulated) are sought out regularly by slum dwellers since they are distributed throughout the slums and nearby areas. Drug shop attendants are the first point of contact for the urban poor in cases of fever and diarrhoea as they can be easily accessed for packets or oral rehydration salts (Caldwell, *et al.*, 2014).

NGO facilities are usually accessed due to subsidized cost based on economic standing and the urban poor's belief that healthcare providers are medically competent (Caldwell, *et al.*, 2014). The last type of healthcare provider consists of qualified allopaths who are licensed practitioners with professional medical training. This is the last access point of healthcare for the urban poor and is usually only approached when there are no other alternatives. This apprehensive nature of the slum dwellers comes from neglect from previous visits and gender inequity (Gender inequity and urban informality, CDKN, 2014). These individuals practice "modern" medicine and are most qualified to diagnose illnesses and prescribe medicine, but are often inaccessible to the urban poor for reasons such as lack of information about the location of the provider especially for the recent migrants, exorbitant cost attached to a doctor's visit and opportunity cost. In most cases, illnesses such as high fever and diarrhoea are first treated at home and then taken to a qualified allopath if home treatment is not successful (DFID, 2012). However, the quality of care, more specifically inequitable care, experienced by slum dwellers inhibits future visits of individuals and their friends and families (Bangladesh Public Policy Watch, 2004). The delay in seeking formal treatment tends to increase both the severity of illness and cost of treatment. Due to lack of referral system, the urban poor women who had pregnancy complications were neither considered a priority nor given instant care with only 3.3% of poor women receiving a caesarean section (Anwar, *et al.*, 2008). On the other hand, proper referral system is shown to reduce exorbitant medical costs for slum dwellers, and ensure partnership linkage between slums and formal providers was established (Banu, *et al.*, 2010).

Addressing the health challenge in urban slums

In slums, there is constant migration from the rural hinterland and also the constant threat of eviction. Health choice of the poor is pluralistic and access to formal health system is limited. Within the limits, health services are being provided to women and children through public health sectors and are also shared by various non-profit organisations. Among those, BRAC's *Manoshi* (maternal, neonatal and child health care), MarieStopes' Sexual and Reproductive Health Care, *Dushtha Shasthya Kendra's* health care and Concern's Bangladesh Child Survival Programme are worth mentioning for improving access to healthcare for women and children including the poor and the disadvantaged. The brief description of some of the major programmes will show how context-specific pro-poor PHC services including pregnancy and reproductive health services had brought health solutions close to the doorsteps of the disadvantaged slum population and made an impact on their lives.

Urban Primary Health Care Services Delivery Project (UPHCSDP): public private partnership for better health of poor people

UPHCSDP began in 1998 as a government initiative that involved public private partnership (PPP) with national NGOs to improve the health of the poor including slum dwellers in selected city corporations and municipalities (please see chapter 6 for more information). It provided an essential package of high-impact services to improve health status of urban population, especially the poor, through improved access to and use of efficient, effective and sustainable Primary Health Care (PHC) services. The project is now in its third phase, which will run until mid 2017 (UPHCDSP, 2014 and Bari, 2012).

MOLGRDC made contractual arrangements with NGOs for supply of integrated PHC services which helps fill the service delivery capacity gap of urban local bodies (i.e. Dhaka City Corporation), and ensures that a standardized approach to pro-poor targeting occurs that maximizes service uptake by the poorest (Nasreen, *et.al.*, 2007). In the absence of local government capacity to deliver PHC services, the UPHCSDP project was initiated as a PPP in which the public sector provides a regulatory and stewardship responsibility, but service provision is contracted out to NGOs.

A Project Management Unit (PMU) is located in the Local Government Division of MOLGRDC, with Project Implementation Units (PIU) established in city corporations and selected municipalities in which UPHCSDP is operating withaim to reduce mortality and morbidity and improve the health status of the urban poor, especially women and children, by improving their access to efficient, effective and sustainable PHC services by application of focused health services like maternal and child health including immunisation and family planning services (UPHCDSP, 2014). These services are provided through Comprehensive Reproductive Health Care Centers (CRHCC), PHCs, and PHC outreach centres (Satellite clinics) in partnership areas that are run by partner NGOs. The system has an integrated management information system (MIS) for information sharing among the EPI, TB and family planning programmes. Free services are provided to the poorest through a 'red card' - an identifier system, although its effectiveness in identifying and reaching the poorest is unclear (Ahmed, *et.al.*, 2013). The evaluation of an early project showed its beneficial impact such as increased access to quality services (e.g., skilled attendance at birth) and essential drugs at no cost to the poor and marginalised, establishment of an effective referral system, and delivering user-friendly services especially to women and children (HPNSSP 2011-2016, MOHFW).

Maternal and reproductive health services of MarieStopes: Building awareness and providing services

Marie Stopes began its operation in Bangladesh in 1988 in Chittagong primarily offering menstrual regulation (MR) services to the disadvantaged women in urban slums and in poorer neighborhoods in urban areas (Marie Stopes in Bangladesh, 2015). An innovative model of mini clinics served by paramedics and located in the hearts of the slum was developed to meet the huge unmet need of the slum women and children for sexual and reproductive health (SRH) and general health services at an affordable price. At present, Marie Stopes operates nine mini clinics in different cities of the country. These mini clinics are linked with Marie Stopes' bigger referral centers in respective areas.The clinic runs in flexible hours, six days a week, while EPI services are provided in association with Dhaka City Corporation on every Sunday. The quality of services, including the clinic environment, is maintained according to Marie Stopes Quality Standards and Processes (Increasing Family Planning Access and Choice, MSI, 2012).

For developing ownership and acceptance, Marie Stopes organizes community support groups who have direct influence on local community. They are primarily nominated from ward councilors and/or prominent school teachers who regularly conduct quarterly meetings to draw up action plan to meet the desired target. In order to sustain, the MCs charge a nominal cost for services depending on the economic status of households by enrolling them into Sujog (opportunity) card with subsidy in fees for

treatment and services. For street dwellers, there are upgraded mini clinics where paramedics offer services by referring complicated cases to facilities where qualified doctors attend patients(Increasing Family Planning Access and Choice, MSI, 2012).

The Safe Abortion Access Project (SAAP) provides services for unwanted pregnancy for young women in urban areas irrespective of socioeconomic status. The MR plus project for garment workers (Phulki project) and adolescent girls provides awareness services on reproductive health issues including how to seek services on unwanted pregnancy, family planning issues, etc. through field promotion officers who work in the pharmacies. They also act as referral channels to static MCs. Another project called Shokhi operates with joint cooperation between women's rights-based organisations to improve knowledge on women's reproductive health rights and issues related to gender-based violence among women in slum areas. The VSC roving team and the field coordinators work in coordination with the government for awareness programmes in the community on family planning and the MR plus information is integrated in DGHS-MIS (MarieStopes in Bangladesh, 2012 and Increasing Family Planning Access and Choice, MSI, 2012).

Dushtha Shasthya Kendra (DSK)

DSK was established in 1990s to address healthcare needs of the slumdwellers in Dhaka. DSK has diversified its activities over time. DSK is committed to address various social and economic problems of the economically depressed and vulnerable groups in general, of which women constitute a specific category (Nasreen, *et. al.*, 2007). Its main objective was to develop a health delivery system that in long run would be self-sustainable. DSK has gradually experimented with various dimensions of development paradigm and continuously tried to design and adapt its policies and programmes to address the 'Development questions' and eventually has evolved in its present form. Initially, it started with responding to demand for water bolstered by the community's willingness to pay. The communities who formed self-help groups were provided training on management and maintenance of water points, health/hygiene habits and behavioural change. Later on, the initiative rolled out to offer primary health services to the urban marginalised population (HPNSDP, 2011-2016 and Health approach of DSK, 2014).

The health services of DSK are provided through clinic and community-based interventions. In clinics, there is the provision for consultation with qualified professionals for common diseases including supply of essential medicines, immunization services and antenatal care. For outreach community, the community health workers convey health messages (as part of health promotion) in registered households and disseminate information regarding common diseases, family planning, antenatal care, immunisation, use of clean water, and sanitation/hygiene behaviour. DSK also provides training on health awareness for mothers in slums and traditional birth attendants (TBA) (Health approach of DSK, 2014).

Concern's Child Survival Programme: empowering the slum community for better health

In 1998, Concern came out of a tradition of directly providing healthcare to poor communities to an approach that empowers communities to manage and implement their own health services in slums of Bangladesh (New Frontiers in Child Survival, 2012). Using existing networks with the government, business and community leaders, Concern united all with one common goal to increase the number of people reached by essential health services and to bring timely and affordable care to the doorsteps of the extreme poor.

Concern set up nearly 100 ward health committees in slums of municipal cities. The team worked very closely with locally elected political leaders to create groups representing a cross-section of the community, including mothers and fathers, business persons, teachers, religious leaders, pharmacists, elderly and youth. With them, they set health priorities, supported the poorest slum dwellers in medical emergencies, organised health campaigns, and leveraged resources from the municipal coffers and the private health service providers (Bangladesh Urban Health Survey, 2008). The Concern team invested in education,

training and meeting with families; facilitating discussions among leaders at local and national levels; building trust in partnerships; and helping government and community leaders reach a common vision.

The urban child survival programme in Bangladesh was evaluated in 2009 after 10 years of operation. The results showed that in the nine municipalities in which the programme was active, it successfully reduced maternal and child mortality and empowered local authorities and community members to coordinate, manage, and deliver healthcare services to the poorest mothers and children on their own, without Concern's help and support (New Frontiers in Child Survival, Concern Worldwide, USA, 2012). Empowerment, ownership and local participation are major key drivers to the sustainability of community initiatives.

Manoshi: taking MNCH services at the doorsteps of the slum women

BRAC, the largest NGO in the world, has initiated *Manoshi* (acronym for mother, neonate and child health in Bangla) project in 2007 not only to bring changes in health-seeking behaviour but also to improve access to healthcare among the disadvantaged and the poor (Afsana 2010). A cadre of female community health workers (e.g., the *Shasthya Shebika* and *Shasthya Kormi*) recruited locally from slums was trained to provide antenatal care (ANC) and postnatal care (PNC) at the doorsteps of slum women and succeeded in identifying nearly 100% of pregnancies with over 90% registered for ANC. This first contact during pregnancy period, in fact, connects a woman to a continuum of care. Besides, *Manoshi* operates 364 BRAC Delivery Centers (BDC) in slums of different cities, each covering 10,000-15,000 population and staffed with 2-3 trained Urban Birth Attendants (UBA) supervised and supported by *Manoshi* midwives, and facilitating quick referral of complications to hospitals (Nasreen, *et al.*, 2007). The unique feature of the *Manoshi* referral process is that there is a resident referral officer at the identified facilities (e.g., Dhaka Medical College Hospital) who takes charge of the referred patient immediately on reaching hospital and arranges for immediate care from the doctors and nurses. Beginning in the slums of Dhaka city, *Manoshi* was expanded to eight major city corporations in six years reaching nearly seven million slum dwellers (*Manoshi* Annual Report 2013). As a result of this intervention in slums, the rate of 4 ANC visits was doubled in five years from 26 to 51%, PNC visit increased from 28 to 64% (Sarker, *et al.*, 2012; Alam, *et.al.*, 2012), and an increase in hospital delivery from 15 to 40% (Alam, et al., 2012). It was possible due to convenient location of BDCs within slums, trust and relationship built up with UBAs/health workers and more importantly, referral support for complications. To control unnecessary referrals and therefore increase C-section (C-sections increased to 24% in intervention areas in 2011 compared to 14% in the non-*Manoshi* areas, the national average being 16% in urban areas, Alam, *et al.*, 2012; BDHS, 2011) from increasing rate of hospital delivery, the BDCs were upgraded to maternity centres staffed mainly with trained *Manoshi* midwives (Annual Report 2012). They are now offering assisted delivery care, which is likely to reduce unnecessary referrals thereby minimising c-sections, health expenditures and further risks. The inequalities between slum and non-slum women in antenatal and postnatal care use has been reduced over the years in *Manoshi* areas compared to comparison areas with cost for ANC, PNC and child delivery care in BDC at USD 2.2, USD 2.3 and USD 13 respectively (Sarker, et. al., 2011).

Manoshi has shown that the scale and impact can be demonstrated by using community health workers to enhance coverage, utilisation and outcome by reaching low-cost relevant services to the doorstep, and linking emergency cases to hospitals by ensuring their care in time (Sarker, *et al.*, 2012). A clean private birthing centre encourages pregnant slum women to leave home because this is coupled with referral support where readily accessible transport and physical and financial support in referral hospitals are arranged.

Conclusions and recommendations

In a country with over 160 million people, it is imperative that the government plays the major role as purveyor and facilitator of healthcare services (Ali, 2011). But government alone cannot create a significant impact. Income-earning opportunities in urban areas have created an 'arrival city' in urban slums, which will continue to grow. Further progress will depend on how well the State addresses the

existing and emerging health challenges of the urban poor. The Urban Health Strategy, 2011 developed in recent years has yet to be endorsed by the government. The government is still indecisive of recognition of slums, permanence of habitat and policy and plan showing their low levels of commitment for better health of the urban poor. Without immediate and effective management, slum growth will perpetuate chaotic living conditions and accompanying societal and physical illnesses. The government, civil society, NGOs, development partners and all others should be more innovative in planning, investing and implementing interventions to address the upcoming health challenges (Ali, 2011).

As rural healthcare models proliferate and are refined across Bangladesh, it also become necessary that the healthcare needs of the urban poor are given more attention. There are significant costs – economic and health — to the conditions borne by the urban poor, and different innovative models are needed to alleviate and promote the poor's primary healthcare needs. There is no single formula for healthcare of the urban poor, as has been shown by the programmes of different organizations above. In the absence of MOHFW in providing primary healthcare in the urban areas, the non-state sectors had been the essential driving force, supported by the extensive network of secondary and tertiary facilities in the public sector. The governments of many developing countries across the world have failed to provide free primary healthcare to the urban poor. In such situations, for-profit private providers can play a role as they operate economies of scale, and bring in professionalism (Bangladesh Public Policy Watch, 2004).

Bangladesh is now on the road to ensure access to quality healthcare for all when they need it, and at an acceptable/affordable cost i.e., universal health coverage (UHC). Initial steps such as designing a financing policy and a human resource policy have been done, communication strategies formulated, and piloting of social health insurance scheme initiated. One of the important aspects of UHC is extending health service coverage to sections of population hitherto excluded such as the extreme poor and disadvantaged (Expanding Social protection for Health, 2013). Given the sheer increase in number, the urban poor especially the slum population needs urgent attention. There is a need for better organization and management of existing urban health delivery infrastructure i.e. LGD, MOHFW, urban local bodies (ULB), private and NGO facilities. The partners in health service delivery within the slums must come forward to adopt a more inclusive approach to improve human resources for primary health and essential service delivery including the approach of strengthening community health solution for long-term sustainability (Ali, 2011).

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Chapter four

WATER SANITATION AND HYGIENE
THE URBAN REALITIES

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Aftab Opel and Md Khairul Islam

INTRODUCTION

Globally, over 750 million people live without access to safe water and nearly 2.5 billion people live without access to sanitation facilities (WHO and UNICEF 2013). Significant correlations exist between access to improved water sources and indicators for Millennium Development Goals (MDG) 1 (poverty and hunger), 3 (gender equality), 4 (child mortality), 5 (maternal health) and 6 (diseases), and between improved sanitation and indicators for MDG goals 4 and 5 (Cheng *et al.* 2012a). A child dies every 21 seconds in today's world from a water-related illness (www.water.org) because water and sanitation independently contribute to child mortality outcome (Cheng *et al.* 2012b).

Safe water, safe sanitation and improved hygiene practices are the three essential factors that contribute to overall well-being of the people (Islam and Opel 2012). Evidences suggest that improved water supply reduces diarrhoea morbidity by 21%, ascariasis by 29%, hookworm infection by 4%, trachoma morbidity by 27%, while additional improvement of drinking water quality would lead to a reduction of diarrhoea by 45%. Improved sanitation reduces diarrhoea morbidity by 37.5% (WHO 2004). Improved access to these services creates significant health outcomes (Brown, Cairncross and Ensink 2013) and economic benefits (WSP 2011, Haller, Hutton and Bartram 2007) and is considered to be one of the primary drivers of public health (WHO 2004).

Growing literature suggests that the benefits of increased water and sanitation coverage cannot be achieved in full without safe and improved faecal sludge management which is mostly an ignored and less understood area in many developing countries including Bangladesh (Opel 2013, Chowdhry and Kone 2012). Pit emptying and sludge transportation is often done in many developing countries manually, but for practical reasons they do not transport extracted sludge to a safe distance for disposal. As a result, the risk of faecal matter re-entering the domestic environment remains high which is a great public health concern and low income people are the worst sufferer (Opel 2012, Eales 2005, Ingallinella *et al.* 2002).

Hygiene promotion, the other important component closely related to water and sanitation, is considered to be the most cost-effective interventions to prevent disease (Jamison *et al.* 2006). Handwashing with soap alone turns out to have a greater impact on diarrhoeal disease than water supply and sanitation (Curtis and Cairncross 2003, Allison *et al.* 2008). The practice of washing hands with soap by the birth attendant and the mother significantly contributes to lower neonatal mortality and maternal infections (Rhee *et al.* 2008). However, handwashing with soap at critical times is not a common practice in Bangladesh (ICDDR,B 2011). Fear of disease generally is not the motivation for those who washed their hands with soap, rather it was disgust, nurture, comfort and affiliation that facilitated hand washing behaviour (Curtis, Danquah and Aunger 2009).

No access or limited access to safe water, safe sanitation and improved hygiene has huge economic and health implications. Since poor people are the most excluded and deprived groups to access services (Hickey and du Toit 2007, Islam and Opel 2012), the burdens of limited or no access are mostly borne by them.

Situation of water, sanitation and hygiene: the urban scenario

Bangladesh has made slow progress in reaching universal access to safe water and safe sanitation. The country is ontrack to reach the millennium development goal on water while is seriously offtrack to achieve the stipulated target of sanitation (WHO and UNICEF 2013). The situation is rather complex in urban areas for various reasons such as growing poverty, insufficient infrastructure and inadequate institutional responsibility.

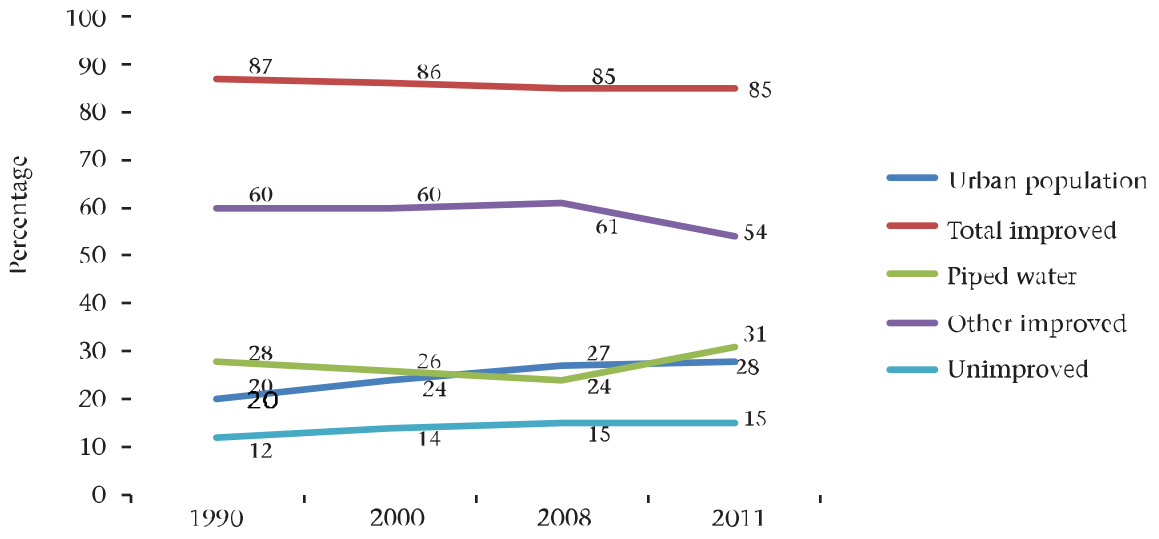
Access to safe water in urban areas

Rapid and unplanned urbanization and urban population growth in Bangladesh (Nazem 2011, Jahan and Rouf 2011) have inevitably increased the demand of water in the urban areas and have emerged as a complex challenge for the country. Joint Monitoring Programme (JMP) data suggest that the pace of urban population growth outnumbers the progress in improved water coverage in Bangladesh (Fig. 1) (WHO and UNICEF 2013). As a result, water poverty and deprivation increases in the urban areas, which has enormous health implication for the poor and low income communities.

In between 1990 and 2011, urban population has grown by 8% while the use of improved water sources has declined by 2%. During the same period, use of unimproved water sources in urban areas has increased by 3%. Piped water supply in the dwelling, which is mainly provided by the government, increased by 3% during this period, but the other types of improved water supply (i.e., shallow tubewell, deep tubewell, etc.) have declined by 6%. However, in recent times, between 2008 and 2011, access to piped water into dwelling has increased by 7% while the same percentage of users of other improved sources has declined. This scenario strongly suggests that low income people living in slums and squatter settlements in urban areas are the worst sufferer of declining water service coverage.

Although JMP data provide an indicative picture but the definition used by JMP to measure progress by considering the people who only use an improved water source provides only a partial picture (Opel and Islam 2013). If we consider reliability, accessibility, quality and quantity of water available to the households, than the scenario becomes somewhat different. A recent study conducted in low income settlements in three major cities in Bangladesh suggests that on average 90% of the households had access to

Fig 1. Population growth and use of water sources in urban areas in Bangladesh



Source: WHO and UNICEF 2013

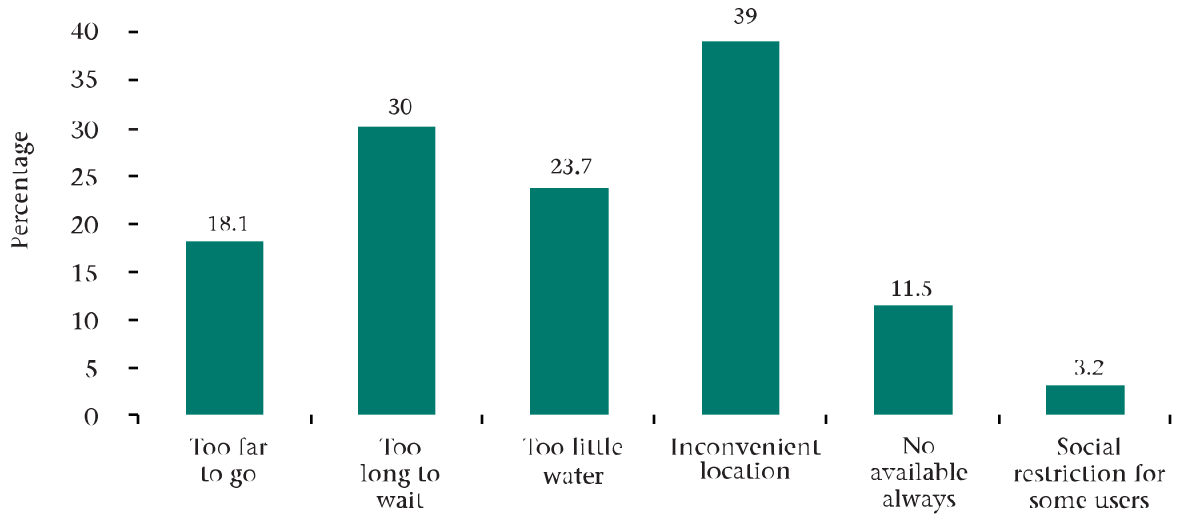
improved water sources as per the JMP definition (WaterAid and PMID 2012). However, water quality tests conducted on several parameters [arsenic, iron, manganese, chloride and total thermo tolerant coliform (TTC)] showed that 40% of these water sources did not produce safe water, showing a completely different picture of access to safe water in cities.

This study suggests that access is difficult for the low income people and that many people do not have access to minimum acceptable quantity of water (20 litre per capita per day) that they may need to meet their consumption needs as well as maintain hygiene. The study furthermore suggests that 18% of the people have to travel >50 meters to collect water, 30% have to wait in the queue for more than 15 minutes to collect water, and 24% people do not get more than 20 litre water/person/day in their households (Fig. 2). This situation does not guarantee that required level of consumption and hygiene is maintained on a regular basis and people under these contexts live in 'high health risk 'with constrained access (Howard and Bartram 2003). On social indicators, 39% of the study people reported that location of the water point was inconvenient for them to collect water, 11% reported that water was not available when they needed, and finally 3% reported that they faced social restriction in accessing a particular source (WaterAid and PMID 2012). Only 10% of the water facilities were owned by the poor people individually or collectively, and 33% water sources were not legal. This study suggests that water insecurity is extremely high for the low income people since the existing systems and regulations often do not allow them to access legal source of water. Thus, water insecurity is extremely high among these low income people. This is also confirmed by official sources that 0.68% legal water consumers are from the low income settlements (Khan 2013).

Implication of low access to water

Investment in water is cost-effective (Clasen 2007, Haller, Hutton and Bartram 2007). An estimate of 2006 suggested that in Bangladesh, an investment of US$ 1 for water might generate a net direct and indirect benefit of US$ 3.5. By meeting MDG water goal, Bangladesh can avert 4.2 million diarrhoeal cases and 4,040 deaths per year. By meeting universal water coverage, predicted diarrhoea cases averted will be 10.5 million and predicted deaths averted will be over 10,000/year. This estimate suggested that about US$ 53 million might be required to benefit 20.5 million people, which would generate a total economic benefit of US$ 185 million (Hutton,

Fig 2. Difficulty of accessing water by low income households in the urban areas



Source: WaterAid and PMID 2012

Haller and Bartram, 2006). Current scenario might be somewhat different with inflation, population growth and further spread of arsenic contamination in groundwater, etc.

Access to sanitation in the urban areas

Bangladesh has done remarkable progress in reducing open defecation. Its position is second in the top 14 countries, which managed to reduce the rate of open defecation by 25 percentage points or more since 1990. In between 1990 and 2011, Bangladesh achieved 9.9% annual decline in the rate of open defecation (WHO and UNICEF 2013).

However, the success in the reduction of open defecation has not resulted among people striving for safe sanitation. As a result, the country is seriously off track in reaching the MDG for sanitation. The progress in terms of people use improved toilet has increased by 16% in between 1990 and 2011, but the growth was not sufficient to reach the stipulated target (Fig. 3). On the other hand, data further suggest that it took a downward trend during 2010–2011. It is therefore highly unlikely that the remaining 14.5% coverage of improved sanitation would be achieved by 2015 if no drastic measure is taken.

Fig 3. National improved sanitaton coverage trend

Source: WHO and UNICEF 2013

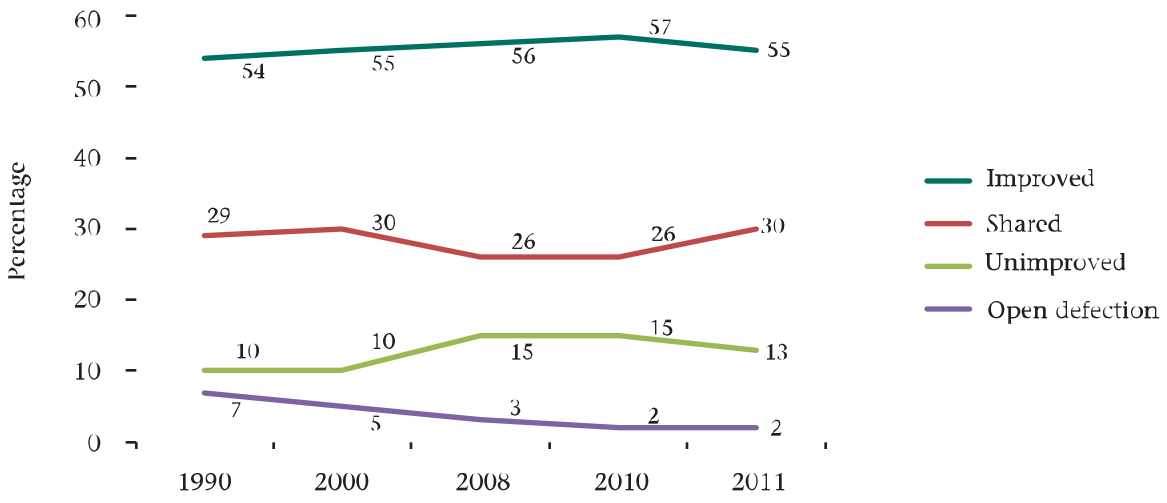
While the national scenario shows a declining trend, urban sanitation presents an even worst scenario. There has been hardly any progress since 1990 in terms of population use of improved sanitation (Fig. 4). There has been some improvement in 2010 when the coverage peaked to 57% but it came down to 55% in the following year. This is mainly because the population growth in urban areas outnumbered the service coverage in cities and towns.

Like the national scenario, the urban sanitation has also seen a decline in open defecation as well as unimproved sanitation coverage over the past 20 years. However, the use of shared toilet has been increasing in the urban areas. This is probably because most of the migrant population concentrate in the low income settlements where provision of private or household latrine is rare to high cost, low affordability, lack of space to construct toilets, etc.

While the urban sanitation scenario is so dismal, the scenarios in the low income settlements in cities and towns are even worst. Current data on slum population is not available, but an estimate of 2005 suggested that about 35% of the population in five major cities live in slum settlements. Of them, 29% have access to safe sanitation (CUS 2006). A recent study in Dhaka, Chittagong and Khulna cities suggests that the situation in the slums and low income settlements in those cities are getting worse. On average, 6% of the sample households have access to improved sanitation as per JMP definition. The average number of households sharing a toilet is also extremely high in these contexts. On average, nearly 30 households use a toilet, and probably is the main reason that most of the toilets are unhygienic (WaterAid and PMID 2012).

In addition to household toilets, every city and town require the service of public toilets for the commuters, and the floating people. Unfortunately, there is no comprehensive study avaialble on the coverage and situation of public toilets at national level. A recent study on Dhaka city, however, suggests that this is another seriously neglected area. While an estimated half a million people require the service of public toilets in the city, 10 out of 64 public toilets (with open access facilities) are in operation in

Fig 4. Sanitation trends in the urban areas



Source: WHO and UNICEF 2013

the city which is extremely inadequate to meet the demand. The study reported that there is a serious management failure associated with mismanagment of the service. As a result, although private leaseholders who suppose to provide managemnt function are making huge profit out of this through selling water, etc., the city dwellers remain almost unserved (CUS and WaterAid 2011).

Implications of low access to sanitation

Implication of no or low access to safe sanitation is extremely high. A recent study estimated that inadequate and unsafe sanitation cost Bangladesh US$ 4.2 billion each year, which was equivalent to 6.3% of gross national product in 2007 (WSP 2011a). However, investment on sanitation is even more cost-effective than water (Haller, Hutton and Bartram 2007). In the developing regions, the return on US$ 1 investment is in the range of US$ 5-46, depending on the intervention (Hutton, Haller and Bartram 2007). An estimate of 2006 suggested that in Bangladesh, an investment of US$ 1 for sanitation might generate a net return of US$ 6.4. By meeting MDG sanitation goal, Bangladesh can avert 6.8 million diarrhoeal cases and 6,470 deaths per year. By meeting universal sanitation coverage, predicted diarrhoea cases averted will be 27.8 million and predicted deaths averted will be 26,583 per year. This estimate, done in 2006, suggested that about US$ 113 million might be required to benefit 18 million people, which would generate a total economic benefit of US$ 725 million (Hutton, Haller and Bartram 2006).

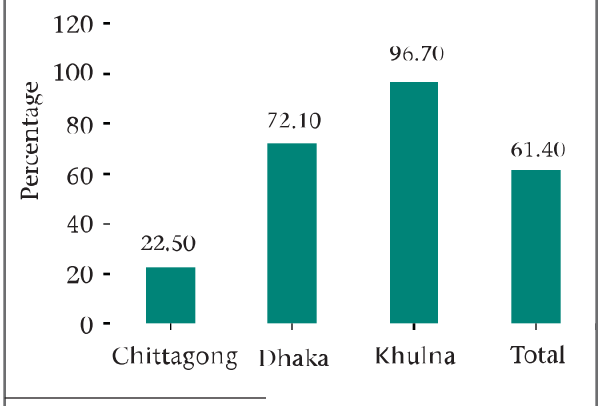
Faecal sludge management

The importance of faecal sludge management is overlooked in Bangladesh and many other developing countries. The only sewerage treatment plant available in Bangladesh is located in Dhaka, which covers 20% of Dhaka city. A comparison of sewage production and capacity of the treatment plant suggests that about 1% of the sludge produced through out the country goes to this plant. Unfortunately, the remaining goes to the environment untreated (Opel 2012).

A recent study outside the sewerage coverage area in Dhaka suggested that 55% residential buildings in those areas do not have any septic tanks. Among those buildings which have septic tanks 36% require empting when they are full. All the buildings which do not have

any septic tanks and all the septic tanks which do not require emptying when they are full are connected either with surface drain or with storm drainage systems that take all the sludge to the rivers that surround the city (Opel and Islam 2013). This means that the city dwellers might be getting the benefits of having improved sanitation but those who lives on the periphery or outside the city are affected by inefficient sludge management.

Fig 5. Latrine outlets in slums to open drains



Source: WaterAid and PMID 2012

Another study conducted in the low income urban areas in three big cities in Bangladesh suggests that most of the toilet outlets are connected to the surface drains, waterbodies or open places (Fig. 5) which seriously contaminate the environment. These toilets might be improved, thus do not harm their immediate users but releasing sludge into the environment is a great health concern for neighborhood (WaterAid and PMID, 2012).

In absence of a proper sludge management system, manual emptier, who operates informally, dominate the pit emptying and transportation markets in the rural and urban areas. Most often these manual emptier do not transport sludge to any safer distance. They usually dump sludge into open environment, which ultimately increase the risk of faecal matter re-enter into the domestic environment (Opel 2012). There have been some initiatives to introduce vacutug based pit emptying and transportation service in some municipalities, but they have not been successful for various reasons (Opel and Bashar 2013).

Hygiene

Good hygiene practice maximises the benefits of having increased access to safe water and safe sanitation, which ultimately creates enormous health and economic outcomes. Personal hygiene, menstrual hygiene, food hygiene, toilet hygiene, environmental hygiene, etc. are essential for preventing diseases and other problems related to water and sanitation. However, preliminary analyses of a national level hygiene assessment in Bangladesh suggest that although most people know about the benefits of improved hygiene practice, but the practice level is very low, particularly among the poor (ICDDRB and WaterAid 2014). Findings reveal that urban households when compared to rural households were more likely to have a hand washing location for post-defecation use with water and soap available, more likely that mothers and youngest children have clean hands,and more likely to have soap for hand washing in the households. This study also examined the hygiene situation at nationally representative samples of schools, restaurants, and hospitals.The findings show that although the situation is better in the urban areas compared to that of rural areas, nonetheless all these important institutions show a low level of hygiene facilities and practice.

Implication of unimproved hygiene practice

Unhygienic behaviour has a high toll. Latest DHS (2011) suggests that episode of diarrhoea and acute respiratory infection (ARI) is still high in Bangladesh among under-5 children. Consequently, neonatal mortality rate (NMR – 32 per 1,000) and infant mortality rate (IMR – 43 per 1,000) have not been reduced much (NIPORT *et al.* 2013). Improved hygienic practice, particularly hand washing with soap can significantly lower diarrhoea, ARI and neonatal and infant mortality.

Poor hygiene practices (as well as lack of clean water and basic sanitation) disproportionally affect women and girls (WHO and UNICEF 2004). The high incidence of hygiene-related illnesses impacts on school attendance, attainment, and the future economic prospects of children. These also impact economic

productivity of the working-age population, in terms of work days lost due to illness, days lost due to caring for ill family members, and the economic costs of medical treatment (O'Reilly *et al.* 2008, Barkat 2010). The promotion of hand washing with soap has been identified as possibly the most cost-effective health intervention to reduce the global burden of disease, at a cost of just US$ 3 per Disability Adjusted Life Year averted (Jamison, *et al.* 2006).

Regulatory framework and political commitments

The National Policy for Safe Water Supply and Sanitation was adopted by the government of Bangladesh in 1998 is the most comprehensive policy document governing water supply and sanitation sector (GoB 1998). The National Sanitation Strategy (2005) was prepared to guide and coordinate the National Sanitation Campaign promoted by the government and other stakeholders in the light of policy principles stated in the National Water and Sanitation Policy 1998 (GoB 2005a). In 2005, the Pro-Poor Strategy (GoB 2005b) was formulated to provide safety net to the poor. The National Water Policy 1999 and the National Water Management Plan 2004 (GoB 2004) give broad directions for water resources management involving seven sectors, including WSS sector.

Later in 2008, the government acknowledged that "the poorest of the poor have ....the greatest difficulties to acquire their right of subsidised sanitation services. It therefore recommended for increasing public funding for sanitation improvement" (GoB 2008). In the position paper prepared for SACOSAN 3, the government of Bangladesh made a set of recommendations which also showed the government's enhanced commitments towards the problem. In 2009, the government acknowledged that one of the major impediments to achieving many of the MDG goals is the challenge of addressing the issues of equity and exclusion. In the MDG progress report, the government of Bangladesh accepted the fact that there were poverty pockets throughout the country where benefits of development were not reaching as needed (GoB 2009). However, to address the equity and exclusion issues with regard to sanitation, the way forward as described in the document appears somewhat ambiguous. Importance is only given to the "improvement in quality and quantity of ecologically sound innovative sanitation facilities, expansion of sewerage systems and waste water treatment capacities in large urban areas and sludge removal/disposal systems for rural latrines."

Finally, the on-going efforts to develop the National Strategy for Water and Sanitation for Hard to Reach Areas of Bangladesh (GoB 2011a) indicate that the commitment to address the challenges of equity and exclusion at the policy level remains high. The National Water Policy that has been approved in 2013 has space for commercialisation of water and limits one's right to the natural resource for household or agricultural uses.

If we look at the operationalisation stage of these important policy instruments, the situation unfortunately is not very conducive to development. There are designated Water Supply and Sewerage Authorities (WASA) in a few big cities (four out of eight city corporations). There is no particular authority to provide these important services in the remaining big cities, small and medium towns. Where there is city corporation, there is a special department who look after water and sanitation programme. In the municipalities, there is hardly any person responsible to provide these services. As a result, the vast majority of the urban people have to rely on self-service.

Financing water, sanitation and hygiene

Although policy-wise Bangladesh reflects a very positive stand of the government to develop the water and sanitation sector to bring the excluded in the service coverage, the financial flow into the sector suggest that the sector is not sufficiently resourced to reach its goal. An analysis of the national budget over the past seven fiscal years suggests that the water and sanitation sector has consistently been less prioritized. Allocation for water, sanitation and hygiene has always been less than 0.5 per cent of the GDP. Water and sanitation sector received 0.24% of GDP, 1.19% of the national budget and 3.94% of the national development budget for the 2013-14 fiscal year (Barkat, Poddar and

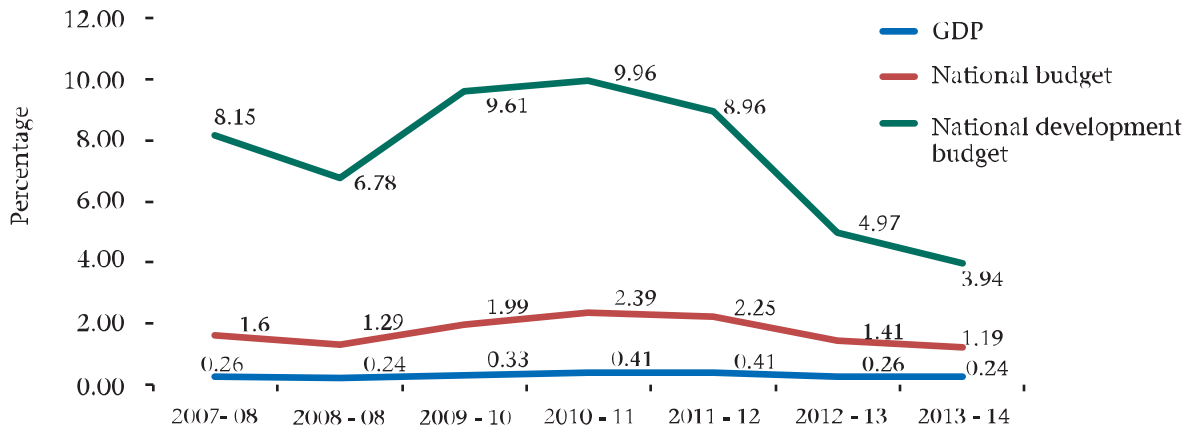
Abdullah 2013). The current fiscal year (2013-14) has received the lowest allocation among the last seven fiscal years.

Further analysis of the national budgets for the last seven fiscal years suggests that the allocation has historically been urban biased. Although the demand in the urban areas has been increasing with increasing urban population growth, the allocation has been disproportionately biased towards urban (Fig. 6). This biasness was extreme in the year 2011-12 when the urban areas got 93.9% of the total allocation. Within the broader category of urban, the big cities got disproportionately higher allocation while many municipalities and small towns did not even receive any allocation at all (Barkat, Poddar and Abdullah 2012).

On the other hand, although the government policies and strategies put special emphasis for targeted programme for the poverty prone areas, hard to reach areas and low coverage areas, the allocations are not equitable (Barkat, Poddar and Abdullah 2012, 2013).

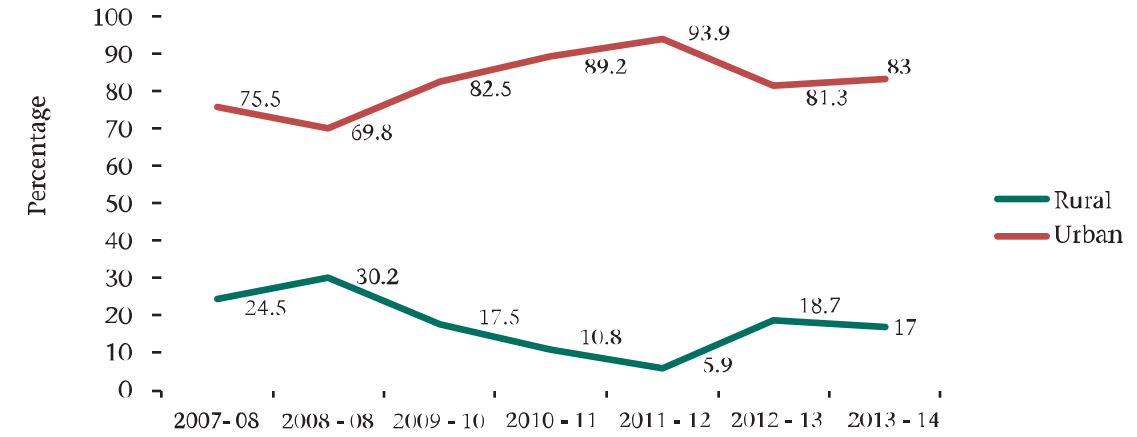
Detailed budget analysis suggests that allocation to tackle the causes of low coverage got little or

Fig 6. Allocation for WASH as % of GDP, national budget and national development budget



Source: Barkat *et al.*, 2013

Fig 7. WaSH budget for rural vs. urban



Source: Barkat *et al.*, 2013

no attention. For example, since the biggest challenge to meet the MDG water goal is arsenic contamination in ground water and increasing saline intrusion in the coastal areas, there has not been any major programme taken or financed to mitigate these problems. Similarly, since urban sanitation has becoming a complex issue with the rise of population and urban poverty, there has not been any targeted programme or financial allocation to tackle this problem.

Conclusions and ways forward

Despite enormous health and economic benefits of having increased access of people to safe water, safe sanitation and improved hygiene, the progress over the past decades was slow in Bangladesh. Although JMP suggests that the country is ontrack to achieve MDG water goals but increasing spread of arsenic contamination in groundwater and saline intrusion in the ground and surface water sources in the vast coastal areas, the real coverage might have been declining. The situation of sanitation and improved hygiene practice is worse by any considerations. It is, therefore, naive to assume that the benefits of meeting most other MDG goals might have been yielded expected benefits since water and sanitation have significant effect on the indicators of most of the MDG goals.

Despite having a number of relevant policies and strategies, the water and sanitation sector does not get sufficient government financing to operationalise and implement them. Whatever amount of allocation goes to the sector, most is eaten by the urban centers. However, the analysis suggests that despite most money goes to urban development, the coverage of water and sanitation in urban areas is declining, which strongly suggests that the service coverage is not expanding. Almost all funds are spent either to improve the already available services or to maintain them. This strategy will not sustain. The targets are already set since universal coverage is the ultimate goal. Finding the correct strategies and financing them is the ultimate requirement so that the universal access to safe water, safe sanitation and improved hygiene by all can be achieved soon.

The current trend and nature of economic growth in Bangladesh will inevitably accelerate the growth of urban centres as well as urban poverty. However, as presented in the analysis above, the existing policies, investment priorities and programmes at the public sector give little attention to it. This means that the entire labour force in the informal and part of the formal economy remains totally excluded from the benefits of public sector investments. However, policies and strategies without proper and required investment programme without proper, capable and efficient human resources will not bring any difference. It is, therefore, needed to find out appropriate mechanisms of how to address the need of this huge urban population who remains excluded for long will remain excluded if current development discourse continue to overlook them.

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Chapter five

WHAT HAS ENVIRONMENT GOT TO DO WITH PUBLIC HEALTH

THE RELATIONSHIP BETWEEN URBAN HEALTH AND BUILT ENVIRONMENT

Chapter 5

WHAT HAS ENVIRONMENT GOT TO DO WITH PUBLIC HEALTH

THE RELATIONSHIP BETWEEN URBAN HEALTH AND BUILT ENVIRONMENT

Mohammed Zakiul Islam and Fuad Hassan Mallick

The built environment constitutes a major part of the urban areas of the world and thus plays a role in the health and well-being of urban citizens. Moreover, people are living in the urban areas more than ever before in the history of humankind. According to the statistics of the United Nations (United Nations, 2014) the percentage of population living in urban areas in 2010 was 51.6%, whereas it was only 29.6% in the year 1950. As the main objective of public health is to improve the health of the population at large, therefore, it is clear that improving the built environment will also improve the quality of health. With the growing urban population, the qualities of built environment particularly in the urban areas have become a major concern of public health. Realising this, the World Health Organization (WHO) has taken the initiative to start the Healthy Cities programme back in 1986 (World Health Organization, 2014). Although the developing nations joined this programme later around 1994, today thousands of cities are within the network of this programme. With 30.5% growth of urban population in Bangladesh (United Nations, 2014), the relationship between urban built environment and public health has become a major concern.

By "Health" we understand a person's mental or physical condition. However, health is not only an indicator of a person's internal condition because physical or mental condition also depends upon the environment that the person lives in. According to the founder of Social psychology, Kurt Lewin's famous equation (BfPE), Behavior (B) is a function of the Person (P) in concern and the Environment (E) the person lives in (Bjorklid, 1982). For example, a person living in a walkable neighbourhood, which has proper footpath, is more likely to walk than using a transport to travel a short distance, which in turn may improve the person's health due to the completion of required physical activity. This example shows the indirect link between the built environment we live in and our health and to a larger scale to the public health.

In this chapter, we have tried to explain the current situation regarding how the urban built environment is affecting health in Bangladesh. For convenience, we have identified few aspects of built environment that affect public health. This is not a complete list. We have subdivided these identified items into two major groups: one that directly affects the health and well-being of people and the other that indirectly acts upon public health. However, in real world, the aspects are intertwined with each other. For example, land use planning of a city determines the location of uses, which in turn determines whether a factory is located next to a hospital that may result in noise pollution for the hospital users.

There is a shortage of evidence based scientific study focusing the relationship between public health and built-environment in Bangladesh. Even within the available study's data, a large amount of information is on Dhaka only; studies conducted on other urban areas other than Dhaka are limited. Although data presented here are mostly related to Dhaka, we hope that it will be able to give us an idea about the situation of all urban environment in Bangladesh in general, since the urbanisation pattern is almost same every where in the country.

FACTORS AFFECTING HEALTH DIRECTLY

Noise pollution

Noise can be a source of annoyance, cardiovascular disease, cognitive impairment, sleep disturbance and tinnitus (World Health Organization, 2011). There is a relationship between exposure to acute noise exposure and deficient in long term memory and reading comprehension in children (Hygge *et al.*, 2002). Occupational noise exposure also shows some association with raised blood pressure (Stansfeld & Matheson, 2003).

Unfortunately, there is a correlation between noise and urbanisation mainly due to urban density and motorised vehicles. Urban areas of Bangladesh are suffering from noise pollution. According to the Department of Environment's standard, the noise level should not exceed 60dBA and 45 dBA during day and night respectively. However, studies conducted in Bangladesh indicate that the existing average noise level is beyond the above standards.

According to the State of the Environment Report 2001, out of the 124 areas surveyed in the three cities of Dhaka, Chittagong, and Khulna, in more than half of the areas (60%) average noise level exceeds the permitted limits.

Most of the studies (Monju & Sahnaz, 2002) conducted in urban areas of Bangladesh identified motorised traffic as one of the main sources of noise pollution. The number of motor vehicles have increased exponentially over the years. According to statistics of the Bangladesh Road Transport Authority (BRTA), annually 70,000 new motor vehicles were added to the already registered vehicles of Dhaka city during 2009 - 2012 (Bangladesh Road Transport Authority, 2014). This addition of motor vehicles is exacerbating the already noise problem of the cities. A more recent study (Haq, Islam, Ali, Haque, & Akhand, 2012) shows that the highest average noise level was 85.6 DB at the Sahabagh intersection of Dhaka city (See Fig 1). Two important tertiary level hospitals BSMMU & BIRDEM is located at this intersection. According to the Environment Conservation Rules (ECR) 1997, hospitals are Silent Zone and maximum permissible noise level within the 100-meter diameter is 45db results in further health problems of patients.

Water pollution

Waterborne diseases are major threats to public health in urban areas of Bangladesh. According to one survey, one of the waterborne diseases, diarrhea, continues to be responsible for 14% of all diseases of which 24.4% occur in children under-five (Arif & Mahmud, 2010). Due to absence of any planned water supply system, the slum dwellers are the most affected by the waterborne diseases. In Dhaka, more than 4 million people live in slum area. According to the Multiple Indicator Cluster Survey (MICS) 2009, jointly carried out by Bangladesh Bureau of Statistics & UNICEF, 42% of urban population is without access to any sanitary latrine.

Water Supply and Sewerage Authority (WASA) is responsible for water supply, sewerage, and drainage in Dhaka and Chittagong. Since 1990, Dhaka WASA also provides service to the neighbouring Narayanganj town. In Dhaka city, total water demand was estimated as 2.25 million cubic meter per day while the deficit is around 0.14 million cubic meter per day. At present 87% of the supplied water is from ground water abstraction from Dhaka WASA's 605 deep tube wells (Khan, 2012). Over abstraction is lowering the ground water table at an alarming rate of 2 to 3 meter every year. Moreover, the water supply network is not planned well. Sewage pipes placed near the water supply pipes and poor maintenance (allowing cross-connection between the two systems) result in increasing prevalence of waterborne diseases. The remaining 13% water comes from surface water treatments. With the ground water level receding day by day, WASA is planning to switch from ground water to surface water to meet the demand of water supply (Khan, 2012). However, the condition of surface water is also not so bright. Over the last couple of decades, major industrialisation has occurred in Dhaka, especially in dyeing, washing, and textile sectors. Estimation reveals that there are over 7,000 industries in Dhaka metropolitan area (Sinha, 2014). Most of the wastes of these industries end up in the rivers

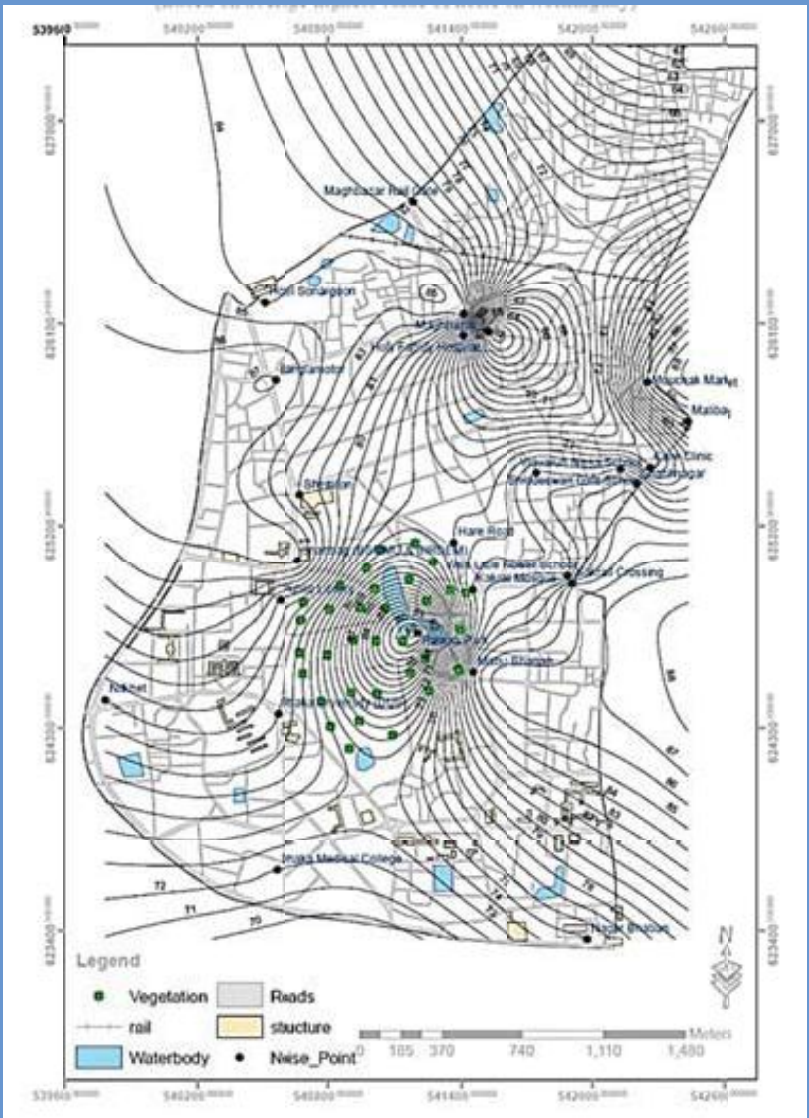

Fig 1.

Noise pollution level of Ramna area based on averaged value of noise on workdays

Source:
Haq et al., 2012, p.11

making them polluted. There are over 300 various effluent discharge outlets in and around Dhaka city, from nine major industrial clusters including Tongi, Hazaribagh, Tejgaon, Tarabo, Narayanganj, Savar, Ashulia, Gazipur and Ghorashal, according to the findings of a joint study (Ilye, 2012). Of the discharged untreated liquid waste, 61 percent are industrial and 39 per cent are domestic waste (Hasan, 2011). The lone Sewerage Treatment Plant (SWP) in Pagla, Narayanganj can treat only 10 per cent of the waste. Recent study shows that the average NH_3-N, NO_3-N and PO_4 - content in the river water in dry seasons are 0.3 mg/l, 1.8 mg/l, and 1.5 mg/l respectively in Turag, Dhaleswari and Lakhaya river. This remains around the allowable limit of Bangladesh water quality standard but no river meets the surface water standards for Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) (Rahman, 2014). Sometimes the DO (Dissolved Oxygen) reading of the river Buriganga, Turag, Lakhya and Tongi Khal reduces to 0 mg/l at which level no life can survive.

Air Pollution

According to an estimate of WHO, air pollution of urban areas caused 3.7 million deaths worldwide in 2012 (Telegraph, 2014). South-east Asia is the most air pollution prone area. Children are more vulnerable to air pollution because of the immaturity of their respiratory organ systems. The diseases related to air pollutions are Ischemic heart disease, stroke, chronic obstructive pulmonary disease (COPD), lung cancer, and acute lower respiratory infections in children.

Table 1. monthly air quality monitoring report of January 2014

Parameter	Number of days that exceeded the BNAAQ standard	
	Dhaka (Dar-Salam)	Chittagong (Agrabad)
SO_2	0	0
NO_x	14	1
$PM_{2.5}$	26	23
PM_{10}	26	22

Note: Percentage of data captured in the Continuous Air Monitoring Station is not shown in the table (Source: www.case-moef.gov.bd).

The Environment Conservation Act, 1995 and the Environment Conservation Rules, 1997 have been enacted by the Parliament of Bangladesh to safeguard its citizen and the environment. Bangladesh National Ambient Air Quality Standards (BNAAQS) was revised in July 2005. A study conducted in 2010 revealed that government's decision to ban two-stroke three wheeler from Dhaka and the introduction of CNG run vehicle has improved the air pollution situation in terms of CO, NOx, and particulate matter (PM10) in the ambient air (Ahmed & Begum, 2010). However, the following table shows the number of days for which specific pollutant exceeded the BNAAQS according to the data obtained at two Continuous Air Monitoring Station of Dhaka and Chittagong. The table is adopted from the Monthly Air Quality Monitoring Report of January 2014 of the Clean Air and Sustainable Environment Project (CASE). This table shows that urban areas of Bangladesh still have a long way to go to maintain its air quality within BNAAQS.

FACTORS AFFECTING HEALTH INDIRECTLY

There are distal factors that do not affect public health directly but in the end, have a lasting effect and impact on it. These factors work on public health at two different levels: City level and architecture level. We have identified some key factors in this chapter from both levels.

At the city level the main issues that are of concern are land use, transport & mobility and density. Housing condition and consideration of ergonomics affect public health at the architecture level.

Land use

Land use is one of the key aspects of any urban area planning. Land use ensures control of factors that affect public health directly (For example, Noise pollution). The second master plan of Dhaka, known as DMDP (Dhaka Master Development Plan) was carried out for the period, 1995 to 2015 (Dhaka Metropolitan Development Plan 1995-2015, 1995). The third tier of this master plan is Detail Area Plan, known as DAP was formulated for more specific planning proposals based on DMDP's Structure plan and urban area plan for sub-areas of the city. The DAP was supposed to be implemented by 2008. Of the 1,528-square kilometer of plan area, 32 percent [approximately 488 sq.km] has been earmarked for flood flow zones, water retention and water bodies. A large portion of which is already encroached upon (Ali, 2013) to have an adverse effect on public health in terms of flood and food crisis. In absence of a strict land use planning, most of the urban areas of Bangladesh are seen to have incompatible functions placed in close proximity to each other. For example, it is not rare to find residential zone right next to a factory. Improper land use planning is resulting in adverse effect on public health as factors that affect health directly are not controlled.

Transport and mobility

Mobility for a person in urban area is a matter of livelihood. Unfortunately, moving from one place to another in urban areas of Bangladesh is not easy. A public health research team from Boston University and Harvard estimated that the monetised value of $PM_{2.5}$- related (Particulate Material that are smaller than 2.5 micrometer) mortality attributable to congestion in 83 cities of USA in 2000 was approximately $31 billion, as compared with a value of time and fuel wasted of $60 billion (Levy, Buonocove, & Stackellberg, 2010).

Apart from indirect consequences of urban area's traffic congestion, Dhaka's ill transport system is also resulting in injuries and death as a result of traffic accidents. According to Strategic Transport Planning (STP) Report, 77% of all commuting in Dhaka are done by walking and 44% of footpaths are illegally occupied with different types of makeshift settlements which forces people to walk on the road causing road accidents (INC & LTD, 2005). Two thirds of all traffic related fatalities are pedestrian.

Density

The role of population density in terms of urban public health is crucial. According to the census of 2011, the total population of Dhaka

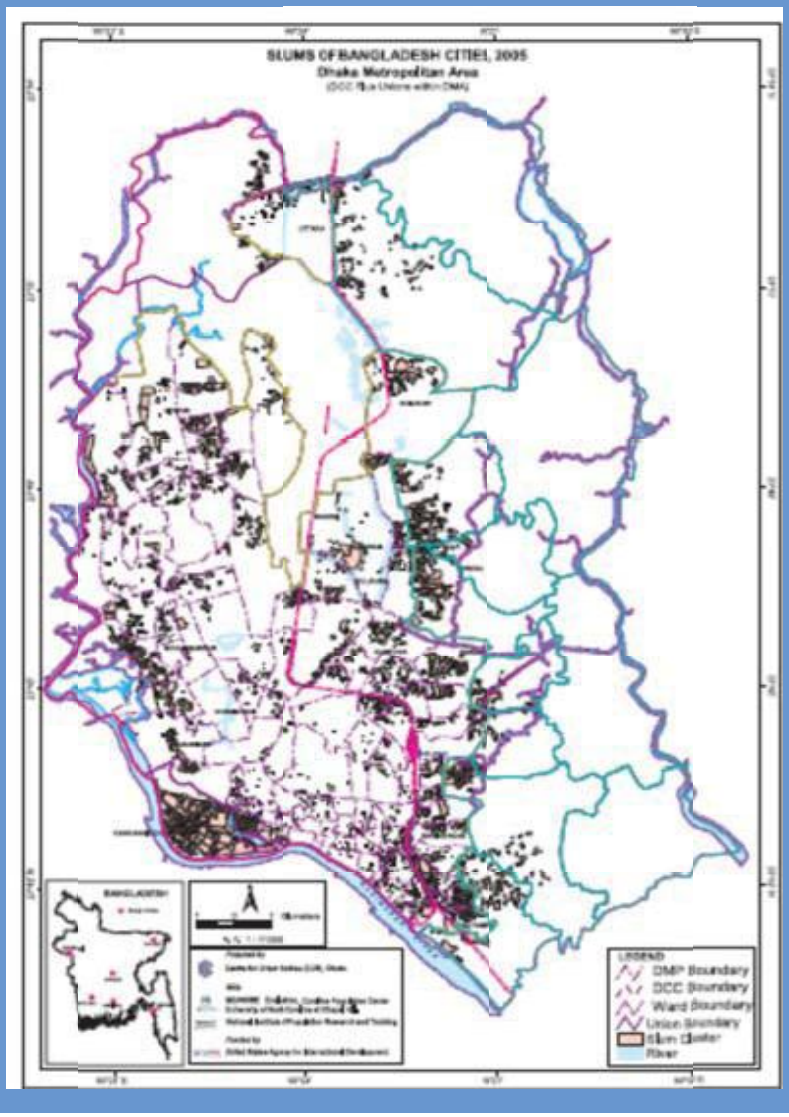

Fig 2.

Slums in Dhaka Metropolitan Area 2005

Source: Islam et al., 2005, p.23

City Corporation Area is 69,70,105. Therefore, on average there are 55,169 persons per square kilometer of the city, making it one of the densest places in the world. A major portion of the city's buildings are not more than two stories high making it even more dense in terms of built forms resulting in the lack of open space. According to a report (Nilufar, 1999), the total park area under the jurisdiction of DCC and PWD is only 0.768 sq. mile. (214,10,611 square feet). If we consider only the open spaces of PWD and DCC then there are approximately 3 square feet of available park area per person in the city. There are other open spaces available besides park areas of DCC and PWD but this information gives us an idea about the lack of open spaces in Dhaka city corporation area. WHO recommends at least 60 minutes per day physical activity for the children of age 5 to 17 years (World Health Organization, 2010). Adults aged 18–64 years should do at least 150 minutes of moderate-intensity aerobic physical activity throughout the week, or do at least 75 minutes of vigorous-intensity aerobic physical activity throughout the week. Lack of open spaces is one of the main obstacles in attaining these recommended physical activity levels in urban areas of Bangladesh and density is one of the key factors responsible for this.

We are already observing adverse effects of lack of physical activity among children's living in Dhaka. A recent study conducted in by ICDDR,B in seven city corporation areas of Bangladesh to explore the food habit and body weight of children reveal that 10 out of every 100 children are overweight and 4 are obese (Daily Star, 2013). The study also reveals that the study children generally are not involved in rigorous physical activity on an average day or in a week. Similar trend was observed among urban women in a previous study, which found 18.9% urban women at risk of being overweight (Shafique *et al.*, 2007). In a society, adult obesity usually precedes childhood obesity. The icddrb's study also reveals that although about 70% children had access to a playground either in the community or in the school; only 45% children actually go to one. This points to the importance of proper urban design e.g., designing the open spaces. Another study has found that even the limited open spaces that the city possesses, fails to encourage variety of activities and lacks accessibility of children (Islam, 2008). Maintenance and security are other issues that discourage people to use these open spaces. Thus, children of Dhaka's urban areas are deprived of outdoor spaces and may suffer from social isolation (Islam, 2012).

Housing

A person spends most of his time during a day in the housing environment and thus, housing environment is very important for health. 37% and 35.4% of the population of Dhaka and Chittagong city respectively live in slum conditions (N. Islam, Mahbub, Nazem, Angeles, & Lance, 2005). This statistics alone reflects the housing condition of the urban areas of Bangladesh. According to the report, "slums" are predominantly very poor housing, with high population density with poor environmental services. It is needless to say that the overall housing condition is poor in a city where more than one third of the population lives in slum areas. This situation is taking its toll on urban health. On average, only 28.8% of the population living in slums of Dhaka, Chittagong, Khulna, Rajshahi, Sylhet, and Barisal uses latrines linked to sewer and septic tanks or are water sealed (Islam *et al.*, 2005).

Professionals such as architects and engineers do not get involved in a large portion of housing environment even apart from the slums. However, according to the "Dhaka Mohanagar Imarat Bidhimala 2008" and "Bangladesh National Building Code (BNBC)", professionals are supposed to get involved in the design and construction processes. Without the involvement of the professionals, the housing units lack proper ventilation and natural lighting, which are essential for the health and well-being of the users.

Ergonomics

Ergonomics is the study that focuses to adapt the environment to the user's need. The domain of ergonomics ranges from deciding the height of a doorknob to the slope of a hospital ramp. It is bound to cause user's mental and physical stress if an environment is ergonomically incorrect. Incorrect ergonomics may result in fatal accident as well. Non-standard height difference between

the bus stoppage and the floor level of the bus may result in fatal accidents. Incorrect seat height of a garments worker may result in spine injury if used for a longer time. Unfortunately, ergonomics is still a new concept both in rural and urban environment of Bangladesh. People usually do not officially report injuries resulted from incorrect ergonomics and therefore they go unnoticed. Majority of the urban public places in Bangladesh do not consider ergonomics during design of structures. For example, absence of proper ramp in the public buildings restricts access for wheel chair users and elderly people that may have impact on mental and physical stress.

Conclusions and recommendations

Unplanned housing and settlements, compounded by widespread poverty (resulting in expansion of temporary settlements like slums) and growth of commerce and industries within urban settlements contribute to the diminished prospect of a building a sound environment. The cummulative impact of these have serious consequenses on the physical and metal health of the urban dwellers, especially the children and the poor.

Urban planning is also crucial to address the issue of health equity. An approach to urban planning that heeds health and its determinants will lead toward sustainable development. "Healthy Urban Planning" should recognise the existence of very diverse contexts, and avoid prescribing generalised interventions. A comprehensive strategy for healthy urban planning should be based on intersectoral action and community involvement with participatory and inclusive approaches. The development of standardised urban metrics and health impact assessment tools can provide opportunities for synergy with urban planning. WHO could support the creation of guidelines and training initiatives on specific areas of interventions for sound built environment such as the promotion of physical activity, "healthy" transportation policies, reduction in sound pollution and active urban design. Finally, working in partnership with various sectors beyond health and urban sectors is an essential requirement.

The important role of built-environment on public health is well understood. However, as mentioned at the beginning of this chapter there is a shortage of studies that are carried out on this issue in the context of Bangladesh. These studies need a multidisciplinary and multisectoral approach. Researchers from both the domain of public health and built-environment need to join in a team, to carry out these essential studies. Prior planned strategies and research designs are also required to implement the findings of research by affecting urban development policy. To accomplish this objective, studies should select controllable independent variables to maximise the impact on the real world (Kuo, 2002).

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Chapter six

URBAN HEALTH GOVERNANCE

Chapter 6

URBAN HEALTH GOVERNANCE

Zakir Hussain and Syed Masud Ahmed

INTRODUCTION

Governance may be defined as the "sum of many ways individuals and institutions, public and private, plan and manage the course of events in a social system" and good governance is one of the important determinants of urban health (Burris *et al.* 2007). Dye (2008) argues that for improving urban health, governance is more important than technical or even financial resources. However, there is no single form or process of governance that guarantees improvement of urban health. The social determinants of health approach stipulate that the level and distribution of health is dependent upon social and environmental factors at different levels of social organisations (Solar and Irwin 2010). In this chapter we will try to look at the governance aspects of urban health care in Bangladesh.

In Bangladesh the healthcare scenario in urban areas is characterised by excess of different facilities and services in secondary and tertiary levels, but there are inadequate primary health care (PHC) facilities and services, especially for the urban poor. Unlike secondary and tertiary care, PHC in the urban areas is not under the jurisdiction of the Ministry of Health and Family Welfare (MOHFW), but the Ministry of Local Government, Rural Development and Cooperatives (MLGRDC). In 1999, the government of Bangladesh signed a memorandum of understanding with the Ministry of Local Government Division of the MLGRDC for establishing strong collaboration between the two ministries to facilitate provision of PHC in urban areas (MOHFW and MLGRDC, 1999). It was agreed that while MLGRDC will provide PHC in the municipalities and cities, it will abide by the standards of healthcare set by MOHFW. In addition, the latter agreed to provide support to the former for strengthening the former's capacity through provision of training and logistics. It was also decided that the urban dispensaries that are managed by MOHFW would be handed over to the Division of Local Government. None of these, however, materialised to any satisfactory extent.

In the urban areas, private sector is relatively strong, unregulated and costly, and therefore, inaccessible to majority of the poor population. Under the circumstances, PHC in urban areas is provided by the Urban Primary Health Care Service Delivery Project (UPHCSDP) funded by ADB, DFID and other donors (UPHCSDP Project summary), and by the non-government organisations (NGO) through the NGO Service Delivery Project (mainly MCH-FP services) funded by the United States Agency for International Development (USAID 2013).

Besides the above-mentioned two major service providers in urban areas, there are some other organisations who also cater to the maternal, neonatal and child health (MNCH) care needs of the urban population especially in the slum areas, e.g., *Manoshi* (meaning maternal, neonatal and child health in Bangla) programme of BRAC (BRAC website). Besides, some ministries and institutions such as the home ministry, railway ministry, and Red Crescent Society also provide hospital care. International NGOs are also visible in different urban areas for their support to the eye care programme of the government. Besides, the private sector hospitals and diagnostic centers are sprawling with amazing pace throughout the country. There is no municipality in Bangladesh now without a private clinic/hospital or a diagnostic center.

ISSUES IN URBAN HEALTH GOVERNANCE

Public-private partnership

Partnership is defined as "a collaborative relationship between entities to work toward shared objectives through a mutually agreed

division of labour" (WB 1998) or "an agreement to work together to fulfill an obligation or undertake a specific task by committing resources and sharing the risks as well as the benefits" (DFID 1999). The UPHCPs and the subsequent UPHCSDP) is an example of a public-private partnership (PPP) where the public sector, i.e. MLGRDC through the city corporation health departments, is the client with a contract management/stewardship role and the NGOs selected through open bidding were the contractors (UPHCSDP Project Summary). MLGRDC provides overall policy guidance and coordination. A National Urban Primary Health Care Committee (NUPHCC) is the supreme overseeing body and a Project Management Unit (PMU) at the central level and a Project Implementation Unit (PIU) at the local level are involved with the day-to-day management of the project. At the ward level, a locally formed coordination committee works to develop awareness about the services available, and ensure grievances and complaints related to the services provided are re-dressed. A unique feature of the project is incentivizing the service providing NGOs based on certain criteria, e.g. the number of poor serviced (at least 30% of people earning less than Tk. 700 per month). It also supports capacity building of the city corporations and municipalities in handling provision and management of PHC in the urban areas, with an external monitoring and evaluation system in place for check and balance. The project was mostly successful to deliver pro-poor good quality PHC services and essential drugs at "affordable, reduced or no cost" (ADB 2007, Ahmed 2007).

However, the governance aspects of the UPHCP partnership are complex and had to go through many 'ups' and 'downs'. The spirit of working together as a team was lacking between the client (the government) and the contractors (NGOs) due to a number of factors such as different perceptions of the partners about their respective roles and responsibilities, mistrust of counterparts about their motives and procedures, lack of flexibility in accommodating changed situations, etc. and the relationship was described best as 'ambivalent' (Alam 2011). The usual mode of operation of the NGOs as independent units had to be sacrificed to a substantial degree due to lack of experience of government agencies to manage relationships with NGOs. This is further compounded by donor requirements which restricted the scope of flexibility for both parties. As a result, the UPHC project is characterised by high "staff turnover, very slow processing of bidding and re-bidding, and a palpable lack of dynamism and innovation" (Alam 2011). Thus, the PPP should be based on mutual respect and benefit and in transparent and accountable environment for achieving a common cause.

Coordination and cooperation

The problem with the UPHCSDP, NHSDP, *Manoshi* in one hand, and the hospital services by the ministries including MOHFW on the other hand, is the complete lack of coordination and collaboration between them. Although there is a general understanding between UPHCSDP and NHSDP on demarcation of their service areas geographically, there is no such understanding with other service providers. There is also lack of coordination between the hospital services provided by MOHFW and other ministries. No standard protocols are followed by these hospitals and diagnostic centers and no monitoring is done by the MOHFW of the hospital services provided by these ministries/agencies or the private sector for quality or licensing conditions. Defining roles and responsibilities of each service provider is essential to deliver a cohesive healthcare service to urban population.

Water and sanitation infrastructure

With the rapid pace of unplanned urbanisation and 'urbanisation of poverty', it has become difficult to mobilise resources for building required infrastructure (which is also costly) in general. Especially, organising healthcare services for the ever increasing urban slum population poses a significant governance challenge. The population in slums lack basic amenities such as basic sanitation, effective waste disposal, prevention of affordable air, water and land pollution, and hygienic living space (NIPORT, MEASURE Evaluation and ICDDR,B 2014). There is scarce provision of health-related services from the public sector (mainly through out-patient departments of secondary and tertiary hospitals) except the

recent UPHCSDP services, and the gap is mainly filled by the NGOs, civil society organisations and philanthropies. The problem of land tenure and temporary nature of settlements discourages the NGO/CSOs in delivering essential water and sanitation services. On the other side, though there are some health facilities available within a 2km distance, but the cost, quality and differential treatment hinder them from accessing the services. Since the slum dwellers constitute a substantial proportion of urban population, which is also progressively increasing, focus on providing sanitation and healthcare services at their doorsteps by the public sector is urgently warranted.

Prioritization of lifestyle diseases

Following the demographic transition, Bangladesh is currently undergoing an epidemiological transition. The lifestyle and living environment in urban areas have been shown to be related with increased risk of chronic diseases such as type 2 diabetes, hypertension and some other metabolic syndromes. Risk factors such as noise pollution leads to hearing impairment, sleep disturbance, stress-related disorder, and cognitive impairment. Air pollution leads to development of asthma in children and adolescents, and exacerbation of asthmatic symptoms in adults. Other adverse effects on health and behaviour associated with increased urbanicity include increased overweight/obesity, decreased physical activity, smoking, increased road traffic accidents, risky sexual behaviour, mental health disorders and increased tobacco, alcohol and drug use (Cyril, *et al.* 2013). Currently, the urban healthcare services are geared to address the MCH-FP issues and some communicable diseases which need a major paradigm shift to cope with emerging lifestyle diseases, especially among the poor and slum dwellers.

What is to be done?

We are soon coming to meet the deadline for achieving MDGs by 2015. The global countdown to design the new development agenda beyond 2015 has begun. In consistent with the call of UN in 2005 and 2012 for facilitating the journey towards universal health coverage ('...the common goal of achieving access for all to a full spectrum of services of good quality...according to need at an affordable cost to consumers') (WHO 2010). Bangladesh has also embraced UHC. We should try to position urban health in its proper place in this endeavour. In order to move forward, the related governance issues need urgent attention.

Defining roles and responsibilities and building capacities of urban health unit under MLGRDC

The role and responsibilities of different actors in urban health sector needs to be clearly defined and respected, their strength with regard to tasks assigned examined and necessary steps taken to build up institutional capacity. To this end the urban health unit created in the MLGRDC needs to be strengthened with adequate and appropriate skills, especially regarding working with NGOs, contract management and coordination and supervision. Career ladder needs to be created for all the health sector officials under the ministry, including the city corporation and municipal health officials.

Coordination among different healthcare service providers

In the urban areas the role and responsibilities of different ministries and agencies is unclear, so does accountability, especially to the consumers who mainly hail from lower socioeconomic strata. There is a need of coordination among different partners to avoid duplication and ensure quality of services at the facilities. The MOHFW has to take a leading role in this function.

Special emphasis on providing services at slums

The service at slums has to be customized according to the need and financial ability of their population. To overcome distance/cost of transport barrier, it has to be provided at the doorstep of the slum population. Awareness building and preventive activities, especially for the lifestyle diseases, should be emphasized.

Measures to manage drug addiction problems and mental healthcare for the vulnerable (victims of interpersonal and sexual violence, abuse, etc.) have to be provided. Necessary planning is also required for meeting the future health needs of the increasing urban population including those due to migration from climate change hotspots.

Use of ICT for urban health

The UPHCSDP has developed a management information system (MIS) for routine data collection from the project NGOs, and also, independent performance assessment. However, a global MIS is needed to record data from all urban healthcare providers, which will provide the evidence base for the policy makers for development of a comprehensive and integrated system of urban healthcare. Investment in establishing the standards and architecture for such a system will facilitate greater insights and points of entry for more efficient management of multiple stakeholders in the area. Products of current ICT revolution have an enormous potential to facilitate this process and be given utmost priority.

A rights-based approach to health service delivery

Human right enhances the scope of accessing healthcare and thereby improves health status. Right to sanitation, water, safe food, healthy environment, adequate housing, education and decent employment, freedom of participation and access to information, and right to life indicate a rights-based approach in providing urban healthcare. Unless a coordinated action is taken in this regard efforts at improving health alone through only health-related agencies will be piecemeal and as such will attain only limited but unsustainable success. It is, however, not possible for the health sector to take up responsibility of ensuring or even facilitating all these facets. The fact remains nevertheless that health sector-related personnel should implement as many of these responsibilities as are feasible and relevant.

An urban health policy?

Progressive urbanization as the country moves towards a middle-income country, and given the complex nature of governance of urban health problems, participation of multiple stakeholders with their own agenda, coordination of different service providers, developing a functioning model of urban PPP, etc. necessitate a separate urban health policy in the coming days, besides national health policy. All the relevant stakeholders (including policy-makers from ministries other than MOHFW) should be involved in its formulation, planning actions, and implementation keeping integrated and coordinated governance in focus.

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Chapter seven

SUMMARY AND POLICY RECOMMENDATIONS

Chapter 7

SUMMARY AND POLICY RECOMMENDATIONS

Syed Masud Ahmed and Abbas Bhuiya

Bangladesh has made enormous progress in health in recent years, surpassing its neighbours in achieving relevant health MDGs. This is all the more commendable because these achievements have taken place within a health system that is frequently characterized as weak and low performing. However, there is no scope for complacence: the maternal and neonatal mortality is still quite high, there are emerging and re-emerging infectious diseases including non-communicable diseases and epidemics of road-traffic accidents, fallouts from effect of climate change on health, and not the least, health crisis in the rapidly growing urban areas. Thus, it needs further miles to go in order to fulfill the national mission of ensuring health care for all through universal health coverage, within foreseeable future beyond 2015.

In Bangladesh, rapid urbanizationin in recent decades presents formidable challenges with respect to urban infrastructure, services and governance, especially in the slum areas where around one-third of the urban population lives. The 5th Bangladesh Health Watch Report, beside analysing issues critical for survival and good health, identifies challenges which need to be overcome if it wants to move ahead with the agenda of achieving universal health coverage (UHC) after 2015. Food and nutrition insecurity of the urban poor and resulting stunting and under-weight; accessing health care from low-cost informal sector due to lack of adequate PHC services, especially in the public sector; poor water, sanitation and waste disposal conditions in the urban slums; health hazards (air and noise pollution, accidental deaths and injuries etc.) arising from poor built environment, transport system, and inappropriate use of land and water bodies; and the overarching problem of governance of the urban health sector are some of the issues highlighted in different chapters of this report.

Food-insecurity and under-nutrition

Findings from the food-insecurity chapter reveal that the burden of food expenditure is disproportionately higher among the low-income group, presenting a substantial challenge in meeting nutritional requirements of the members of the poor households. Also, the poorest urban quintile spent a significantly greater proportion of their income on food than the poorest rural quintile ($p<0.05$). The poor consume significantly less calories (and less proteins and micronutrients) than those who are better-off, even though their energy requirements are higher due to being involved in physically-demanding professions. When different nutritional indicators in slum and non-slum areas were compared, the situation was worse for the former. The food insecurity of urban poor households (64% of slum households and 47% of rural and urban non-slum areas are 'food-insecure') arises from insufficient cash income resulting from irregular employment along with the fluctuation of both wage rates and staple food prices, mostly rice. Coping strategies to allay this situation include borrowing from members of social network in cash and kind, and migration back and forth between urban and rural areas to buffer the risks of lean period of income.

Urban health care services

Majority of the urban health care services are provided by networks of NGOs under the UPHCP (Urban Primary Healthcare Programme) and the NHSDP (NGO Health Service Delivery Programmes). Besides, Maternal Newborn, and Child Health (MNCH) related care is also provided by Brac's *Manoshi* and Concern Bangladesh in the urban slums. However, self-care, home remedies and visits to nearest drug shops are quite common among the poor including slum dwellers, the latter due to low cost and easy accessibility. Programmes like

Manoshi aimed to reduce equity gaps related to access to services by the slum population through primary care facility situated in the locality, supportive referral system, availability of drugs at low cost, and establishing linkages between community and formal providers and facilities. Various cadre of community health volunteers and workers play a key role in implementing these programmes and take the services to the doorsteps of the poor people including slum people. Coordination and cooperation among the multiple service providers, which is less than opimal, is essential for delivering an integrated PHC services in the urban area towards achieving UHC in post-2015 period.

Water and sanitation

Bangladesh has made slow progress in reaching universal access to safe water and sanitation. Findings reveal that the country is on-track to reach the millennium development goal on water while it is seriously off-track to achieve the stipulated target of sanitation though it reduced open defaecation to substantial extent from 33% in 1990 to 4% in 2010 (9.9% annual decline) (WHO and UNICEF, 2013). The situation is rather complex in the urban areas for various reasons such as growing poverty, insufficient infrastructure and inadequate institutional responsibility especially for the slum settlements. There is designated Water Supply and Sewerage Authority (WASA) only in a few big cities (four out of eight City Corporations), but no particular authority to provide these important services in the remaining big cities, small and medium towns. There is no dearth of policies (including a recent one for the population of hard-to-reach areas of the country) in this respect in recent times; the way forward is largely ambiguous. For example, the ambitions in the policies and programmes is not matched by resource allocation (less than 0.5% allocation in water, sanitation and hygiene in the past seven national budgets, albeit biased to the urban areas excluding slums) and as such not equitable towards poverty-prone and hard-to-reach areas including slum areas. Since poor people are the most excluded and deprived groups to access services (Islam and Opel, 2012), the burdens of limited or no access are mostly borne by them.

Effects of built environment and living conditions on urban health

Rapid urbanisation of the country has created new health hazards for the population resulting from air, noise and water pollution, and largely unplanned use of land and water bodies including housing. Large gaps exist regarding our knowledge of health hazards due to these effects of urbanisation due to availability of limited data other than Dhaka City. Thus, efforts to fill-in this knowledge gap for informed urban planning is urgently warranted.

In cities of Dhaka, Chittagong and Khulna, average noise level exceeds permitted limits. Rapid and exponential rise in the number of motorized vehicles has largely contributed to this, disregarding 'silent' zones like hospitals and schools. Waterborne diseases are common in the cities due to inadequate supplies of safe water in cities and towns. Only Dhaka and Chittagong is having dedicated authorities for safe water supply which is extracting water from deep aquifers' (thus lowering ground water and all its consequences) and which frequently get contaminated due to inadvertent mixing with sewerage lines and effluents from industries. Though introduction of CNG run vehicles has reduced the level of air pollution, the urban areas still have a long way to go to maintain air quality to be at par with BNAAQS standards.

In the absence of a strict land use planning, most of the urban areas of Bangladesh are seen to have incompatible functions placed in close proximity to each other, e.g., a residential zone right next to a factory or a commercial centre. Housing in the urban areas are characterised by overcrowding and poor ventilation, not following building codes, and inappropriate designing of the open spaces resulting in e.g., deprivation of outdoor spaces for the children (i.e., playgrounds). The situation is worse in slums, both in terms of space and amenities.

Urban health governance

The fact that PHC in urban areas is not the responsibility of the MOHFW but the MoLGRD and that the latter has neither the experience nor the capacity to provide relevant services, has led a number of players (Go, NGOs, private

sectors, Donors etc.) to coming together in successive UPHCPs to deliver needed services. In this, it brings the government, the NGOs and the donors into a tripartite pluralistic financial and governance relationship. However, this complex public-private partnership model had to undergo many ups and downs due to different perceptions and lack of clarity about the roles and responsibilities of the partners, inexperience of the government agencies in managing such relationships, lack of trust and respect for each, limited flexibility in operation and stringent donor requirements. Thus, it was characterised by high "staff turnover, very slow process of bidding and re-bidding, and a palpable lack of dynamism and innovation" (Alam 2011). Other governance issues identified include lack of coordination among different service providers, problem of organizing water, sanitation and health care services for ever-increasing population in slum settlements due to land tenure problems and temporary nature of the slums and organizing preventive services for life-style diseases arising out of urban living across socio-economic groups.

Recommendations

Based upon the above analysis and discussion, the following recommendations are made:

1. Alleviate food and nutrition insecurity among the urban poor and slum population by supplementing their fluctuating income

Given the rise in the number of urban poor and their involvement in 'cheap and plentiful labour,' their income is unpredictable and irregular. When this is combined with the 'environmental risks of inadequate safe water, pollution, open sewerage and contamination', the problem of urban food and nutrition insecurity will continue to grow unless specific measures are undertaken. As the problem is complex, the solution should also be multisectoral and directed at the root causes such as irregular income, food price fluctuations and constant threat of evictions. In this regard, innovative measures like social safety nets and cash transfer programmes may play a positive role in supplementing fluctuating income including its role in improving nutrition including dietary diversity.

2. Build an integrated infrastructure for PHC service delivery, involving all providersin the urban areas, under a system of pluralistic governance

The problem of PHC services in the urban areas is that it is not consolidated and coordinated resulting in duplication and service gaps. Also, there is no formal referral linkage of PHC services to higher level of care in the secondary/tertiary facilities. Experiences from UPHCP and the likes especially direct our attention to the necessity of accommodating different stakeholders/service providers to come under a common platform in a mutually trust and respectful relationship, and under a pluralistic governance structure where there is clearly defined roles and responsibilities for each partners.

3. Adopt a rights-based approach to health service delivery

For sustainable and pro-active development of policies and programmes in the urban health sector, a demand-driven approach based on 'rights-to-health' (e.g., rights to safe water, sanitation, waste disposal, healthy housing etc.) instead of a benevolent (passive supply-driven, 'evidence-based') approach should be undertaken. This will place the people at the centre, and make providers accountable for 'availability, accessibility, acceptability and quality' of services, at an affordable cost. The approach can also mobilize civil society action to achieve the realization of the rights to health.

4. Adopt an equity lens for urban health care services

Given the level of prevailing inequities among different strata of the urban population (e.g., health and nutrition indicators of the poorest vs least poor, the slum vs non slum poor etc.), equity should be of prime strategyin organizing health and nutrition care services in the urban sector. Delivery of services at the doorsteps of the poor, using community health volunteers/ workers, will go a long way to improve access and useequitably. Information, Education and Communication (IEC) campaigns to raise health awareness of the poor including slum population (the latter around 1/3rd of the urban population in Bangladesh) and information on availability of services will empower them to take informed decisions to access appropriate providers and services.

5. *Ensure basic amenities for the slum population*

Concerted measures to ensure basic amenities e.g., water, sanitation, waste disposal, housing etc. for the urban poor and slum populations should be undertaken for better health of the slum dwellers. For this, land tenure problems of slum settlements need to be addressed in a proper way so that it is possible for NGOs and other stakeholders to provide required services. Besides, appropriate designing of open spaces, proper use of water bodies, and control of air, noise and environmental pollution are needed for general improvement of health status of urban dwellers in general, and slum dwellers in particular.

6. *Reduce air, noise and water pollution*

Adopting mitigation strategies to reduce air (e.g., controlling emission from road traffic and factories etc.), noise (designating places like schools and hospitals as low noise area, restriction in blowing horns etc.) and water pollution (e.g., effluent treatment plant for treating chemical effluents from tanneries and garment factories etc.) substantially so that there is improvement in living environment.

7. Finally, formulate an Urban Health Policy apart from the National Health Policy will help to focus on specific problems of organsing, governing, and delivering and equitable and quality urban health care services and push the UHC agenda forward beyond 2015.

Annex I
BRIEF BIOGRAPHIES OF THE AUTHORS

Chapter 1

DR SYED MASUD AHMED

Professor
Centre for Equity and Health Systems, ICDDR,B and

Director
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James P Grant School of Public Health, BRAC University

Dr Ahmed is the Professor of the Centre for Equity and Health Systems, icddrb and Director of the Centre of Excellence for Universal Health Coverage (www.coe-uhc.org), a joint venture of Centre of Equity and Health System, ICDDR,B and James P. Grant School of Public Health at Brac University. He is also a Professor at the School since 2011. Before joining current position in July, 2013, he was the Senior Research Coordinator at the Research and Evaluation Division of BRAC in Bangladesh. He graduated from Dhaka Medical College in 1978 and received PhD from Karolinska Institutet University, Sweden, in 2005. His research interests include studying the impact of microcredit-based development interventions on health and well-being of the poor, and exploring the mechanisms of such impact; health equity and improving health system's ability to reach the poorest-of-the poor; human resources for health and health professional education, and universal health coverage. Dr. Ahmed has published extensively in national and international peer reviewed Journals including Lancet, Social Science and Medicine, Health Policy and Planning, Bulletin of WHO, BMC Public health, and Malaria Journal and authored book chapters, monographs and working papers. He has a blog at http://syedmasudahmed.blogspot.com named Bangladesh Health Scenario.

Chapter 2

DR ALAYNE ADAMS

Senior Social Scientist
Centre for Equity and Health Systems
ICDDR,B

Dr Adams is a Senior Social Scientist in the Centre for Equity and Health Systems, ICDDR,B where she leads research on urban health systems, and the determinants of health equity in urban areas. She is also the Director, Centre for Urban Equity and Health, JPG School of Public Health. Dr. Adams earned her MPH and PhD at London School of Hygiene and Tropical Medicine, and pursued post-doctoral work as a MacArthur Fellow at the Harvard School of Population and Development Studies. Between 1997 and 2004, she was a faculty member of Columbia University's Mailman School of Public Health. Her current research projects examine a range of demand and supply side challenges related to equitable coverage of urban health services. In addition to longstanding research expertise in public health nutrition, health equity and social determinants of health, she is an experienced methodologist specializing in qualitative analysis techniques, mixed methods approaches, and realist review. Dr. Adams is also active in public health education and is leading a process of curricular and pedagogic innovation and reform at the James P. Grant School of Public Health (JPGSPH), BRAC University. As a founding faculty member and Professor and JPGSPH, she has developed core curriculum and short courses on global health, qualitative methods, urban health governance and public nutrition.

DR TESSA HILLGROVE

Dr. Hillgrove completed her PhD in Public Health at the University of Adelaide in 2009, with her thesis a mixed-methods study exploring the retention of blood donors who had been deferred for a low hemoglobin level. Tessa has worked in research and evaluation in a variety of Australian and international organizations, including VicHealth, the Parenting Research Centre, the Foundation for Young Australians, and the Australian Red Cross Blood Service, and has lectured in public health subjects at the University of Adelaide, Monash University (Melbourne), and the BRAC Institute of Global Health (Dhaka). She has a keen interest in global health, having undertaken two international positions with research groups at Peking University First Hospital, China and icddr,b, Bangladesh, with research focused on strengthening health systems and improving access for disadvantaged populations. She recently joined The Fred Hollows Foundation, an international eye health organization, working with program teams across Africa and Asia to design and implement operational research.

SIFAT YUSUF

Research Fellow
Centre for Equity and Health Systems
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Mrs Yusuf is currently working at icddrb as a Research Fellow in the Centre for Equity and Health Systems. She received her undergraduate degree in Biomedical Science from Queen Mary, University of London in 2011 before moving on to complete her Master's in Public Health from the James P. Grant School of Public Health (JPGSPH), BRAC University in 2013.

Sifat has gained much experience through her work in understanding determinants of health seeking behaviour, qualitative research, and universal health coverage. She has been working under a DFID funded-project looking at the role of private sector in providing healthcare. Her area of interest lies in the field of urban health, health systems and governance, and sexual and reproductive health. She also provides assistance as a Teaching Fellow at JPGSPH by conducting teaching sessions in the Anthropology Qualitative Research, and Sexual and Reproductive Health modules.

DR ATONU RABBANI

Assistant Professor
Department of Economics, University of Dhaka

Dr Rabbani is an Assistant Professor in the Department of Economics at the University of Dhaka. He is also a Senior Research Fellow with the James P. Grant School of Public Health at the BRAC University, a Member/Director of Economic Research Group and an affiliate with the Urban Services Initiative of Jamal Abdul Lateef Poverty Action Lab (based at MIT). Previously, he has worked as a full-time Research Fellow at the Institute of Microfinance (InM) and as a Post-Doctoral Fellow with the Department of Medicine and Center for Health and Social Science (CHeSS), both at the University of Chicago. He specializes on empirical microeconomic research and impact evaluation to address questions in the fields of labor productivity, public health and organizations. He has studied economics at the University of Chicago and the University of Dhaka. He has a number of papers published in international peer-reviewed journals like Journal of Regional Science, American Economic Review Papers & Proceedings, The Lancet, Annals of Internal Medicine, Journal of Biosocial Science, Health Services Research and Archives of Internal Medicine, among others.

Chapter 3

DR KAOSAR AFSANA

Director
BRAC Health, Nutrition and Population Programme

Dr Afsana is the Director, Health, Nutrition and Population Programme in BRAC, and also a Professor at James P Grant School of Public Health, BRAC University. She is an MD with MPH from Harvard University, USA and PhD from Edith Cowan University, Australia. Her portfolio within BRAC covers a wider spectrum; but, she plays a critical role in reproductive/ sexual health, maternal, neonatal, child and adolescent health and nutrition and m-Health at national/global levels. Prof. Afsana is currently the Member Secretary of Civil Society Alliance for Scaling up Nutrition (SUN) Movement and running the SUN Secretariat hosted by BRAC. Prof Afsana authored two books, 'Disciplining birth. Power, knowledge and childbirth practices in Bangladesh' and 'Discoursing birthing care. Experience from BRAC, Bangladesh' and published papers in peer reviewed journals and books. She is the Section Editor of the Journal of Health, Population and Nutrition. She has been awarded Presidents' Prize for the best thesis on Asian topic by Asian Studies Association of Australia, D.K. Agency India's award for the best Australian doctoral

thesis on an Asian subject and the 2003 University Research Medal and the Faculty Research Medal for the best PhD thesis from Edith Cowan University. In late 2013, *Munoshi* designed by Prof Afsana received Global Innovation Award from Save-GSK.

DR SABINA FAIZ RASHID

Professor and Dean
James P Grant School of Public Health (JPGSPH)
BRAC University

Professor Sabina Faiz Rashid has been working in Bangladesh since 1993. She joined the James P Grant School of Public Health at Brac University in 2004. Her areas of interest and expertise are ethnographic research, academic teaching and advocacy in the areas of Gender, Sexual and Reproductive Health and Rights, Urban poor populations in slum settlements, and Reform and Innovations in Public health Curriculum for Health Professionals of the 21st Century. Dr. Rashid serves as an International member of the WHO Secretariat - Health Systems and Policy Analysis, and was technical Advisor to the Department of Reproductive Health and Research, World Health Organization in Geneva, Switzerland. She is also a member of the international organization Coalition for Bodily and Sexual Rights (CSBR since 2007), and Academic Advisory Group Member of Sexuality and Development, Institute of Development Studies, Sussex, UK. She is member of the National Working Group - Bangladesh Health Watch (a national civil society initiative since 2009) which serves as a watchdog on citizen's health in the country. Currently she is part of an Organizing Secretariat, which is organizing the International Urban Health Conference in May (24-27) and will be Chairing a plenary session on 'Urban Health and Service Delivery, ' and also serves as a member of the Executive Committee of ICAAP, an international conference on HIV/AIDS being organized in November in Bangladesh. It is expected that more than 4000 participants will be attending from all over the world. Dr. Rashid has been teaching at the School since 2005 and leads the modules and short courses on Gender and Sexual and Reproductive Health and Rights and provides training to undergraduate students on Sexuality and Rights. She is a Visiting Professor (since 2007) at Berlin School of Public Health, Charite, Germany. She is part of an informal network that works closely with the sexual minorities (LGBT) community and is establishing– SHARENET, a virtual platform in Bangladesh, at the Center for Gender at the School. This platform will serve as a space for discussions and support on sexual health issues, which remain controversial and stigmatized. Dr. Rashid is currently leading a program on "Developing the Next Generation of Public Health Leaders' (funded by USAID) to create innovative programs and encourage young women, non doctors and candidates from marginalized backgrounds to participate in public health education, research and future training, to encourage public health leaders to remain in the country but also contribute to the field. In the past, Dr. Rashid was awarded a Fellowship at the Asia Research Institute, National University of Singapore in 2006, and in 2011, a Fulbright Scholar award at Mailman School of Public Health, Columbia University, conducting research on Bangladeshi immigrants' health and well-being

KUHEL FAIZUL ISLAM

Senior Researcher
James P Grant School of Public Health (JPGSPH)
BRAC University

Mr Islam completed Masters in Public Health (MPH) from BRAC University. He earned his BSc. in Biology (major) in Molecular Genetics from University of Victoria, Canada. He worked as a Research Technical Officer at King Faisal Specialist Hospital and Research Center in Saudi Arabia for a Tuberculosis project involving Molecular typing and Gene extraction of the mycobacterium tuberculosis. He was a Microbiologist and Laboratory Coordinator at International Organization for Migration (IOM) in Dhaka. He is currently working as a Senior Researcher and Internship Coordinator at James P Grant School of Public Health (JPGSPH), BRAC University. He teaches in MPH program at JPGSPH. He co-authored a report on health systems strengthening in context of Bangladesh for USAID's Health Systems and has presented an abstract in an international conference on health and cultural transformation – social and developmental initiatives. He has abstracts accepted for publication at international conferences on urban health research. He has recently co-authored a handbook on "child eye health in Asia "in collaboration with Orbis International.

PRIANKA HASHIM
High School Senior
Parkland High School, Allentown, USA

Ms Hashim is currently a high school senior at Parkland High School in Allentown, Pennsylvania,USA. She interned at JPGSPH during the summer of 2014. This fall, she plans on pursuing a double major in both Biology and Public Health. This is her first international publication and it has sparked an interest in the field of research. She has worked with children for three years tutoring French and Math. She is fluent in English, Bengali, French, and Latin. She has been on the Principal's List for academic excellence since the 6th grade and received the President's Award in both 5th and 8th grade.She has been nationally ranked for consecutive years in both the National Latin Exam and Le Grand Concours throughout her high school career. Her career goal is to become a Trauma Surgeon.

Chapter 4

AFTAB OPEL
Social Anthropologist
WaterAid Bangladesh

Mr Opel is a social anthropologist currently working for WaterAid in Bangladesh as Research Manager. He has over two decades of research experience in different South and East Asian countries on a range of development issues. His current focus of research is issues related to water, sanitation and hygiene leading to programme development and policy. Opel's career also includes research and programme development in the areas of climate change, poverty and vulnerability, migration, alternative livelihoods, education and early childhood development. Most recently, he completed several projects in Bangladesh on impacts of climate change on water, water privatization and its impacts on poor, issues of fecal sludge management, and hygiene behaviour change. He developed and advised several WASH programmes for WaterAid in Bangladesh. He led teams of experts at BRAC University Institute of Educational Development in Bangladesh on education programme and curriculum development, Afghanistan Research and Evaluation Unit in Afghanistan on several multi-country (Iran, Pakistan and Afghanistan) projects on livelihoods, vulnerability and population movements, with Royal Foundation in Thailand on alternative livelihoods, and with Plan Bangladesh on education programmes.

KHAIRUL ISLAM
Country Representative
WaterAid Bangladesh

Mr Islam is one of the leading public health and development professionals of Bangladesh. He has worked in various capacities in different development organizations in Bangladesh and Africa. Dr. Islam has been associated with the drafting of the national health policy and national population policy of Bangladesh; and sits in several policy making committees related to water, sanitation and hygiene in Bangladesh and in the region. Currently, he is working in the field of water, sanitation and hygiene as the Country Representative of WaterAid Bangladesh.

Chapter 5

DR MOHAMMED ZAKIUL ISLAM
Associate Professor
Bangladesh University of Engineering & Technology

Dr Islam is an associate professor in the Department of Architecture at the Bangladesh University of Engineering & Technology (BUET), Dhaka. Dr. Islam is also a visiting faculty of BRAC University, North South University, and American International University-Bangladesh. He is a registered architect and a full member of the Institute of Architects Bangladesh. His research experience includes working at the Natural Learning Initiative (NLI) at the College of Design, North Carolina State University, USA. Dr. Islam graduated from the Department of Architecture, BUET. Upon his graduation, he worked under Late Architect Muzharul Islam (Fellow of American Institute of Architects) till he started his graduate study at the School of Architecture, University of Texas (UT) at Austin, USA. He completed his Master in Architecture in 1999 to come back to Dhaka to join the Department of Architecture, BUET. As a practicing architect, he was commissioned several projects and received Berger Best Young Architect award in 2005 for his design of the Ferdous Nasir Charity Clinic at Mirzapur. Dr. Islam started his PhD in Design under the direct supervision of Professor Robin Moore in 2005. He received First Place at the Annual North Carolina State University Graduate Research Symposium and Landscape Architecture Research Award in 2008. He completed his PhD and returned to BUET to start teaching in 2009.Research interests include the impact of environment on human behaviour. He has presented in numerous international conferences and published in international journals. His recent journal publication includes Environment and Behavior. Currently, he is the Principal Investigator (Bangladesh) of the IPEN (International Physical Activity and Environment Network).

DR FUAD HASSAN MALLICK

Pro-Vice Chancellor,
Professor and Founder Chairperson
PPDM, BRAC University

Dr Mallick is the Pro- Vice Chancellor, Professor and founder Chairperson of Department of Architecture and founder Director of the Postgraduate Programs in Disaster Management (PPDM) at BRAC University. Dr. Mallick graduated from Department of Architecture, Bangladesh University of Engineering and Technology and did MPhil in Housing studies from University of Newcastle upon Tyne, UK and PhD in Environment and Energy Studies Program from Architectural Association Graduate School, London, UK. He did pioneering research on thermal comfort for Bangladesh and published extensively on this. His research background is on environmental aspects of architectural design, low income and rural housing, architectural education and in the last few years, disaster management and climate change. He has written book chapters and published journal articles on disaster management and climate change issues. He is currently involved in research projects with three UK universities, dealing with Climate Change and the Built Environment, Climate Change and Urban Poverty and Disaster Education. Dr. Mallick was also the team leader for the design and construction of the projects "Disaster Resilient Habitat", and "Climate Change Adaptation in Secondary Cities in Bangladesh and Vietnam". He has been a reviewer for the Aga Khan Award for Architecture and a member of Aga Khan Education Program's thinking group for conceptualizing a School of Architecture and Human Settlements for the Aga Khan University. He is the Vice President of the Asian Universities Network for Environment and Disaster Management (AUEDM), which has a membership of 22 Asian universities. He has published extensively and has recently co authored a book on Bangladesh's first modern architect Muzharul Islam.

Chapter 6

DR ABU MUHAMMAD ZAKIR HUSSAIN

Freelance Consultant

Dr Hussain graduated from the Dhaka Medical College in 1976, did Master's in pubic health from the National Institute of Preventive and Social Medicine (NIPSOM), Dhaka University in 1979, and PhD in Biomedical Sciences from the University of Hawaii, USA in 1988. Dr Hussain taught community medicine and epidemiology in NIPSOM from 1980 to 1991. In 1992 he joined the Directorate General of Health Services and left as the Director of Primary Health Care & Disease Control in 2000. He was also the director of the Institute of Epidemiology, Disease Control and Research (IEDCR). Dr Hussain was the team leader and partnership agreement specialist in the Urban Primary Health Care Project in its first phase from 2000 to 2002 and a staff consultant of the Asian Development Bank for the second phase of the Project in 2006. Between 2010 and 2013 he served at the South East Asia Regional Office of the World Health Organization as the Regional Adviser of Environmental Health & Climate Change. Dr Hussain contributed in formulating different health and nutrition programmes such as Health & Population Sector Strategy document (1977), Health & Population Sector Program (1998), Health Nutrition and Population Sector Program 2003-2011 (2005), and the first draft of the current Health Population and Nutrition Sector Development Program 2011-2016 (2010). Dr Hussain was actively involved in drafting the health policy of 2000 and 2011. Dr Hussain is currently working as a free lance consultant and is involved with the Save the Children, Institute of Public Health Nutrition (on behalf of UNICEF), the Bangabondhu Sheikh Mujib Medical University and Health Economics Unit of the Ministry of Health & Family Welfare, Government of Bangladesh

Chapter 7

DR ABBAS BHUIYA
Deputy Executive Director
ICDDR,B

Dr Bhuiya is a social scientist and has been the Deputy Executive Director of ICDDR,B since July 2010. He has nearly 30 years of professional experience in the field of community health research with special focus on equity issues, behaviour change, and community initiative for the improvement of health, especially of the poor. He got his PhD from Australia National University in 1989. Experienced in designing and conducting large surveys, evaluation of health and development programmes, and monitoring of outcomes with equity focus. Published extensively in peer reviewed journals, and authored book chapters and edited books.

Annex II

LIST OF PREVIOUS PUBLICATIONS OF BANGLADESH HEALTH WATCH

Bangladesh Health Watch Reports

1. The State of Health in Bangladesh 2006 Challenges of Achieving Equity in Health
2. The State of Health in Bangladesh 2007 Health Workforce in Bangladesh: Who Constitutes the Healthcare System?
3. Bangladesh Health Watch Report 2009 How Healthy is Health Sector Governance?
4. Bangladesh Health Watch Report 2011 Moving Towards Universal Health Coverage

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