

Health Disorder of Climate Migrants in Khulna City: An Urban Slum Perspective

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ABSTRACT

As the most vulnerable climatic region in the country, Khulna City is increasingly experiencing climate-change-induced urban problems. For instance, occupancy by climate migrants (delete the term “illegal migrant”), drainage congestion, water logging and reduced fresh water availability are all increasing problems. In the last decade, the population in the city increased by more than 20 per cent due to migration from nearby climate vulnerable districts. This study explores the health disorders of climate migrants occupying the urban slums and squats of the Khulna City area. This study found that these climate migrants settled in the urban slums and squats and, as such, they do not have access to urban amenities such as clean drinking water, hygiene services, and health facilities. This study noted that these displaced people are at increased risk of health issues from unhygienic and overcrowded living conditions and from water and sanitation problems. They often suffer from different waterborne diseases, under-nutrition and micronutrient deficiencies. This study suggests that there is a need for better planning, preparation and training in Bangladesh to which migrants move, including better training in health and related services on how to recognize and respond to health problems that may be slow to manifest. Education and training also need to be provided for the migrants themselves, to help them adapt culturally and to enhance their skills and potential for employment.

INTRODUCTION

It is broadly anticipated that climate change will cause large-scale displacement of people in the coming years (Pachauri et al., 2014). In both rural and urban areas, migration flows and risk rates are rising where people are exposed to extreme weather events, particularly in those developing countries with lower incomes (Pachauri et al., 2014). Twenty-two million people worldwide were displaced by natural hazards in 2013, and it is projected that up to 250 million people may be displaced by climate change by the year 2050 (Yonetani, 2014). The world has experienced rapid growth in its urban population from 746 million in 1950 to 3.9 billion in 2014, and by 2050, an addition of 2.5 billion is projected (United Nations, 2014). The increasing number of climate migrants moving into informal urban settlements is contributing to the rapid growth of the world’s urban population.

Global climate change will affect the health of vast urban populations. Food and water-borne diseases such as cholera, diarrhea, typhoid and hepatitis will increase due to inadequate sanitation and drinking water sources. Additionally, warmer cities will contribute to the rise in respiratory illness due to the high level of pollution (Martine and Marshall, 2007). Global warming and heat stress

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will be very acute in cities, due to the increased influence of the urban heat island (UHI). The UHI will result in an average temperature rise of 1 to 3° C due to the change in spatial distribution of urban land surface and the decrease in urban green space (Lin et al., 2013). It is a proven truth that climate change will predominately affect developing countries and marginal poor communities, with the result being a shortage of sufficient food and nutrients, fresh water, and deprivation of other essential human needs (Stephenson et al., 2010).

Bangladesh has an urban resident population of nearly 35 million. Being a most climate-vulnerable country, Bangladesh is increasingly experiencing climate-induced problems such as erratic rainfall, water logging, reduced fresh water and ground water availability, increased heat and climate extremes increased vector and waterborne diseases (Alam and Rabbani, 2007). The rapid growth of Bangladesh's urban population is primarily driven by rural-urban migration to escape climate vulnerable areas and to take advantage of better employment opportunities. Climate migrants often cannot meet the expense of proper accommodation and therefore start living in densely populated, informal, urban settlements. Being informal settlers, these people have limited access to water and sanitation, education, healthcare and social services.

Most of the slum settlements in question are built on empty government or private lots. Being mostly situated in low-lying areas, these slums are vulnerable to frequent inundation arising from poor drainage systems as well as other natural calamities. The greatest concentration of urban informal settlements is present in Dhaka (see Table 1). The other main cities of Bangladesh also have large concentrations of slum clusters, for example, Chittagong has 1,814, Khulna has 520, Sylhet has 756, and Rajshahi has 641 slum clusters. The remaining slums are spread throughout the country (Rashid, 2009).

Incidences of malaria have increased rapidly in Bangladesh over the last 30 years. Malaria is now considered a significant public health concern, with 14.7 million people in Bangladesh categorized as being at high risk of catching the disease (Reid and Sims, 2007). Dysentery, diarrhoea, dengue hypertension and asthma are closely associated with heat stress and have increased in urban areas of Bangladesh in recent years. Water-borne diseases such as diarrhoea, dysentery and vector-borne diseases like malaria, dengue, asthma, etc. have also increased throughout urban slums and squatters during the reported time (Table 2).

This study examines the physical and mental health disorders of climate migrants residing in informal settlements such as slums and squats in the Khulna City Corporation (KCC) area.

MATERIALS AND METHODS

This study mainly followed both qualitative and quantitative approach to explore the physical and mental health disorders of climate migrants residing in both formal and informal settlements of the

TABLE 1
SLUM SETTLEMENT HOUSEHOLDS SURVEYED BY CITY IN BANGLADESH

City	No. of households	Percentage (percent)
Dhaka (capital)	673883	64.6
Chittagong	266182	25.5
Khulna	37826	3.6
Rajshahi	27665	2.6
Sylhet	18313	1.7
Barisal	19460	1.9
All cities	1043329	100

Source: Rashid, 2009.

TABLE 2
INCIDENCES OF SOME MAJOR CLIMATE SENSITIVE DISEASES DURING LAST DECADES IN
BANGLADESH

Disease	Incidences	Duration	Average incidences per year
Diarrhoea	48301636	1988-2005	2841273
Skin Diseases	23607833	1988-1996	2623092
Malaria	1018671	1974-2004	33956
Mental disorders	201881	1988-1996	22431
Dengue	19830	1999-2005	3305

Sources: DG-Health, 1996, 1997; BBS, 2010.

Khulna City Corporation (KCC) area. Both primary and secondary information was collected and incorporated into the study. Primary information was obtained through different research tools including household surveys (HS), key informants interviews (KII), focus group discussions (FGD), land use surveys, etc. Secondary information was collected from related institutions including Khulna City Corporation (KCC), Khulna Development Authority (KDA), GO-NGO, urban health delivery systems, hospitals, clinics and Khulna Water Supply and Sewerage Authority (KAWASA).

A reconnaissance survey was conducted in the study area, which informed the final questionnaire and study framework. In the current study, 150 households (HH) were selected by a convenient method and interviewed using a semi-structured questionnaire. Further, six FGDs were undertaken to record the informal opinions of the participants in squats, slums and lower class residential areas in three wards of the study area. Four key informants interviews (KII) were conducted explore the problems and solutions behind the problem with KCC, KDA, Hospital, and KAWASA. Finally, a land use survey was conducted in the three most densely climate migrant-populated wards of the study area to understand housing patterns. The data was analysed using statistical techniques.

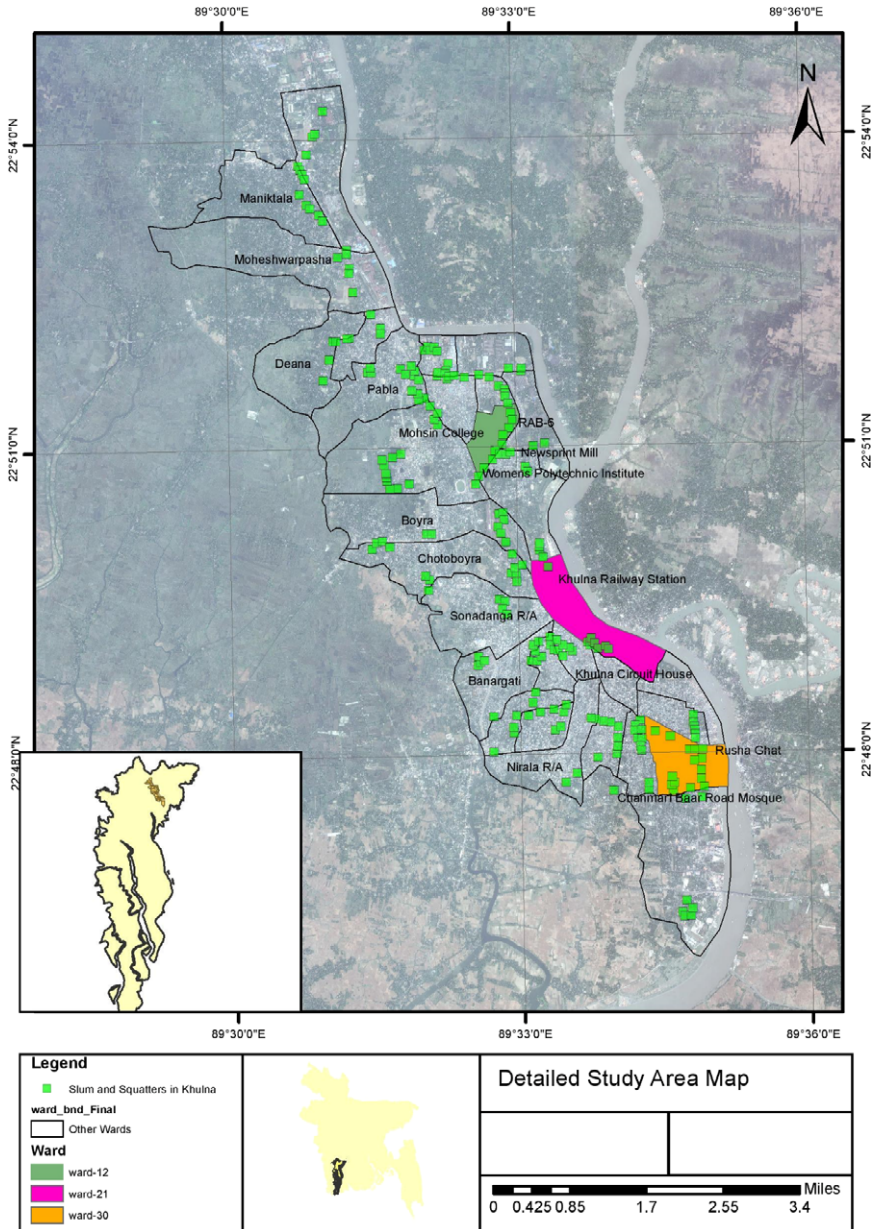
STUDY AREA

The study was conducted in wards 12, 21 and 30 of KCC as this is where most of the climate migrants have taken shelter according to local leaders, community members and experts. These wards cover the riverside and rail station side of KCC. Khulna city (22.46-22.58°49'0"N 89.28-89°37'0"E) is the third largest metropolitan city in the country. It is also a divisional city with a total area of 59.57 square km. KCC has a population of 1,400,689 with 52.79 per cent of the population being male and 47.21 per cent being female (BBS, 2011). The literacy rate of KCC is 61.4 per cent for male and 54.8 per cent for female (BBS, 2011). Households in these wards (12, 21 and 30) are considered as low-income households (KCC, 2015). Inhabitants in these wards predominantly engage in informal labour such as rickshaw pulling, hawking, van pulling, day labouring and portaging. During the last fifteen years, a more than 50 per cent increase in the population of these wards, due to an influx of migrants from nearby climate vulnerable areas such as Satkhira, Bagerhat, and Khulna, was observed (KCC, 2014). Figure 1 displays the study area.

RESPONDENTS OF THE STUDY

A total of 426 climate migrants participated in the study (Table 3). Of the participants, 150 selected in a convenient way delivered their experience in the questionnaire survey, 65 participated in the

FIGURE 1
STUDY AREA (KHULNA CITY CORPORATION)



focus group discussion (FGD) and six were involved in the key informant interview (KII) for having diverse information. It is noted that 63 per cent of the study population were female. For finding the health disorders of all age groups, gender issues were strongly considered; and adolescents actively participated in the study.

TABLE 3
TYPE OF RESPONDENTS

Type of respondents	Number	Percent (percent)
Male	170	37
Female	256	63
Total	426	100

RESULT AND DISCUSSION

Bangladesh was the greatest sufferer of climatic disasters in the decade 1999-2009 (Harmeling, 2010). The country is in the top Most Vulnerable Countries (MVCs) for flooding, cyclone and storm surges. The coastal zone of the country is naturally susceptible to climate-induced disasters. These disasters have a devastating effect on the lives and livelihoods of those living in these areas. Current sea-level rise trends suggest that a one-metre increase will submerge almost 18 per cent of the country's coastal zone (Stern, 2007; Sarwar and Khan, 2007). To date, more than one million people have already lost their homes with 70 per cent becoming landless due to river erosion. Initially, these people stayed in nearby areas but increased knowledge and awareness about their circumstances, namely that a slow siltation process and high population pressure will make their condition worse, has prompted them to move to urban areas instead (Abrar and Azad, 2007). In general, poor households are more vulnerable to the climate change as they lack both the social and the financial capital to undertake long-distance movement. In some cases, they want to move to nearby areas, but face higher risks in doing so (Khatun, 2013).

Age of Respondents

All age groups are victims of climate displacement. Due to the limitation of extracting exact information, this study ensured active participation of respondents between the ages of 15 and 72 years old. The average age of most of the interviewees was between 30 and 60 years old. On the basis of age classification 30.79 per cent of respondents were 15-19 years, 3.69 per cent were 20-24 years, 5.42 per cent were 25-29 years, 9.61 per cent were 30-34 years, 12.07 per cent were 35-39 years, 7.39 per cent were 40-44 years, 8.37 per cent were 45-49 years, 6.90 per cent were 50-54 years, 7.88 per cent were 55-59 years, 3.69 per cent were 60-64 years, 3.20 per cent were 65-69 years and .99 per cent were 70-74 (Figure 2).

Income of the Respondents

It was found that 6.25 per cent of respondents had a monthly income above 10000 BDT/month while 20.25 per cent had a monthly income of 4000-6000 BDT/month. The most common income group is between 2000-4000 BDT/month representing 39 per cent of respondents. It was also shown that 12 per cent of respondents have a monthly income below 2000 BDT/month (Figure 3). The respondents' households predominately consist of 4-5 members, and due to this, the interviewees can be said to be indigent. Due to low-income levels, it is evident that the climate migrants in the study area are leading a miserable life.

Origin of Climate Displaced Respondents

Khulna city is a recipient of climate migrants from nearby climate distressed areas. Most respondents were displaced by climate exposure in Kayra, Paikgacha and Dacope of Khulna district

FIGURE 2
AGE OF THE RESPONDENTS

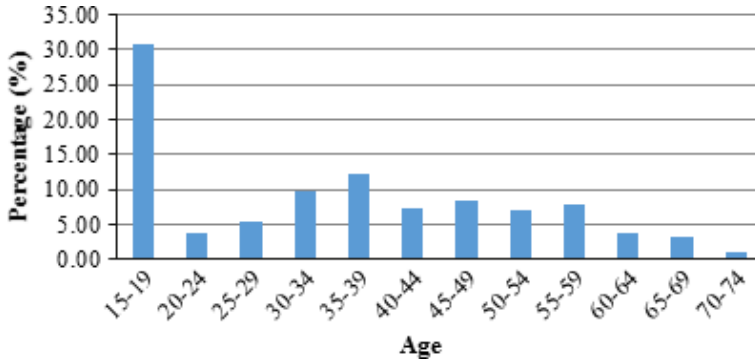
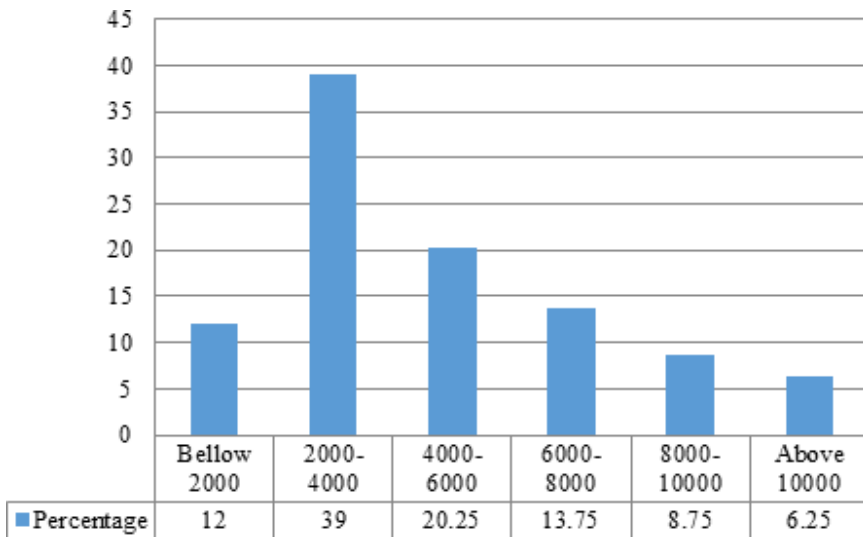


FIGURE 3
INCOME OF RESPONDENTS



(Table 4). Bagerhat is in the second position of the origin of displaced people. Some people were displaced from Satkhira, Patuakhali, Bhola, Pirojpur and Noakhali district. Bhola and Noakhali are river erosion people (Figure 4). The displaced people were predominately pushed from these districts due to riverbank erosion.

Causes behind Displacements

Multiple responses were recorded under this heading. Among the 400 climate-displaced respondents who settled in KCC, 79.3 per cent said they were displaced primarily due to livelihood insecurity. The second highest was 78.2 per cent, who said they were displaced because of agricultural damage. Agricultural production is hindered due to water and land salinity and water logging in

TABLE 4
ORIGINS OF CLIMATE-DISPLACED RESPONDENTS

District	Sub-district	No. of displaced respondents	Percentage of total respondents	Reason for displacement
Khulna	Kayra	62	15.5	livelihood insecurity
	Paikgacha	57	14.25	livelihood insecurity, agricultural damage
	Dacope	34	8.5	livelihood insecurity
	Total		38.25	
Satkhira	Tala	45	11.25	water and land salinity, water logging
	Shyamnagar	37	9.25	water and land salinity
	Kaliganj	38	9.5	water and land salinity
	Total		30	
Bagerhat	Morelganj	22	5.5	water and land salinity, agricultural damage
	Rampal	43	10.75	water and land salinity, agricultural damage
	Ashasuni	19	4.75	water and land salinity, agricultural damage
	Total		21	
Patuakhali	Kalapara	12	3	River erosion, salinity intrusion
	Bhola	7	1.75	River erosion
Pirojpur	Patharghata	18	4.5	River erosion
Noakhali	Hatiya	6	1.5	River erosion
Total		400	100	

their homeland. It was found that 38.9 per cent of respondents said that their agricultural land was affected by salinity. The lowest responses were 5.6 per cent who said that they were displaced because of their houses were flooded. A small portion of respondents stated that they were displaced due to social insecurity. Women and girls reported that they were victims of “eve teasing”, rape and other social problems, which led to them to displace (see Figure 5).

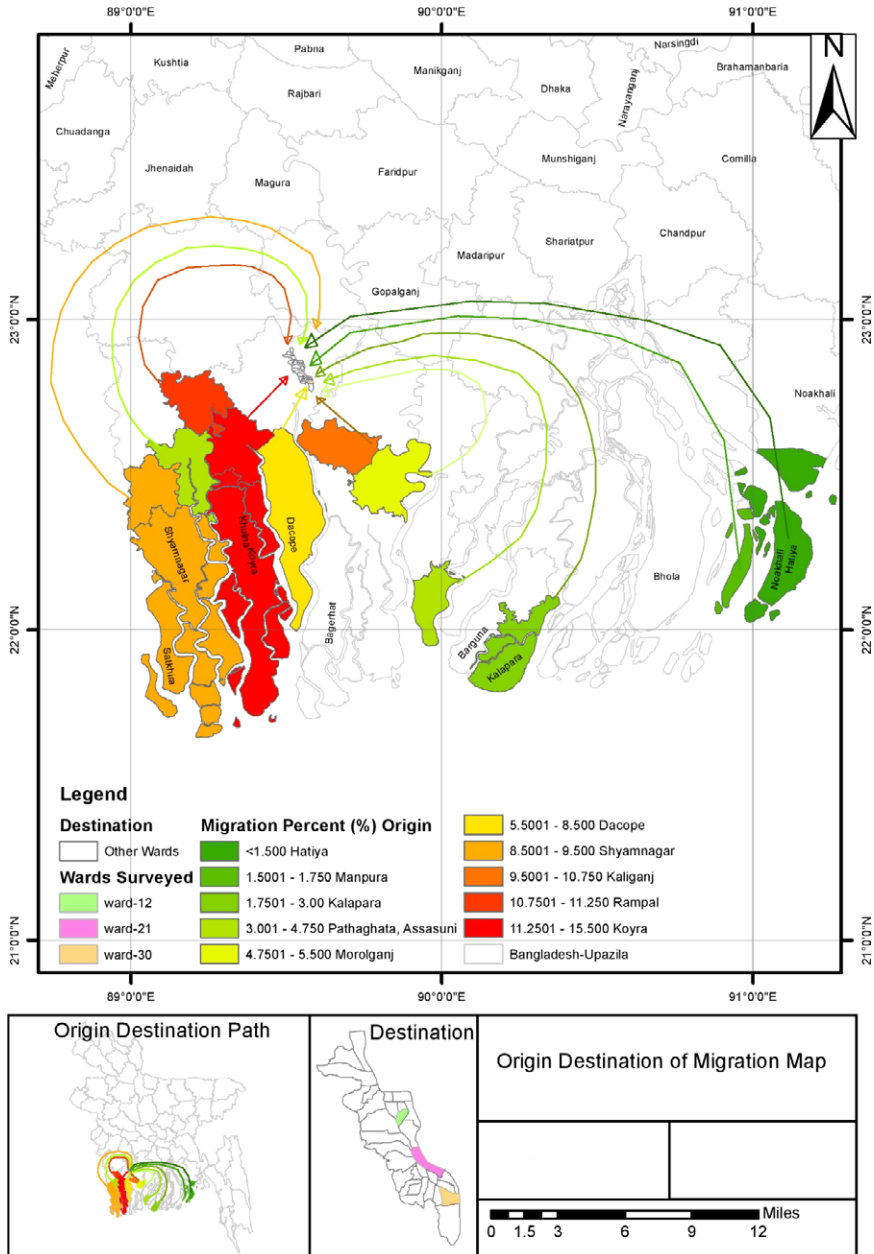
Dwellings of the Displaced People

Many climate migrants were settled in state-owned land in the city corporation areas. These people have been displaced from their origin due to a climate-induced push factor and have no ability meet the higher rental costs in urban areas. As such, climate migrants have been forced to take shelter in state-owned lands. The survey and FGD revealed that 44.25 per cent of the study population were living as unpaying squatters and 15 per cent were living in unpaid slums (unpaid squats and slums: where dwellers do not have to pay for accommodation). It was also found that 26.25 per cent of respondents were living in paid slums, where they are paying around 500.00 BDT/month in rent. A small portion of those surveyed (14.5%) lived in lower-income residential areas and worked as industrial workers or small businessmen (see Figure 6).

Employment of the Displaced People

It was found from this study that 21.5 per cent of study people were involved in day labour, and 16.25 per cent were unemployed. Only 5.25 per cent of the respondents were engaged in industrial work as a labourer, which is considered as a formal job (see Figure 7).

FIGURE 4
ORIGIN OF CLIMATE DISPLACED RESPONDENTS



Access to Urban Amenities

It's found that studied migrants have lack of access to urban services such as gas, electricity, and sanitation facilities. There is no water or sanitation facilities exist either paid or unpaid slums and squats. It is noted that migrants living in residential areas have access to water and sanitation

FIGURE 5
CAUSES BEHIND THE DISPLACEMENT

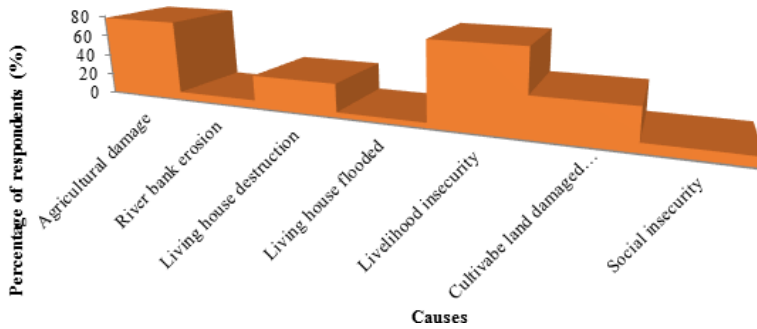


FIGURE 6
RESIDENCE OF DISPLACED PEOPLE IN KCC

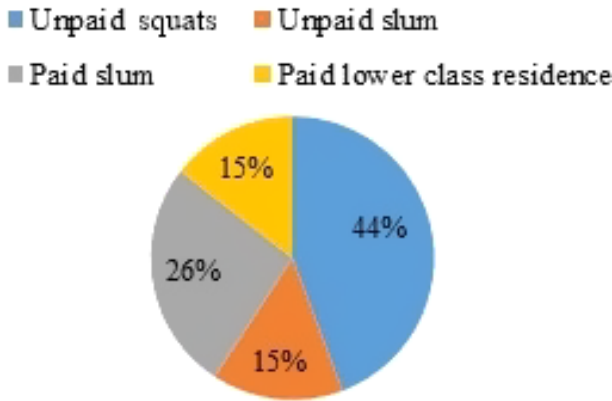
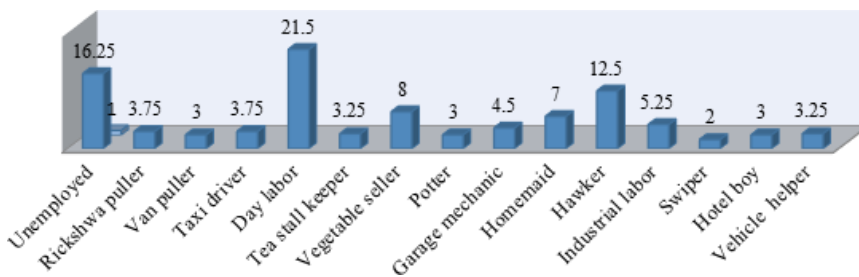


FIGURE 7
EMPLOYMENT OF CLIMATE DISPLACED PEOPLE



services, although sanitation is not hygienic and comes at a high cost. In the slums and squatters, dwellers utilize pond and canal water for their domestic and drinking purposes. There is no formal electricity in the slums and squats. The residents use illegal electrical lines to fulfill their

FIGURE 8
DRINKING AND DOMESTIC WATER SOURCES

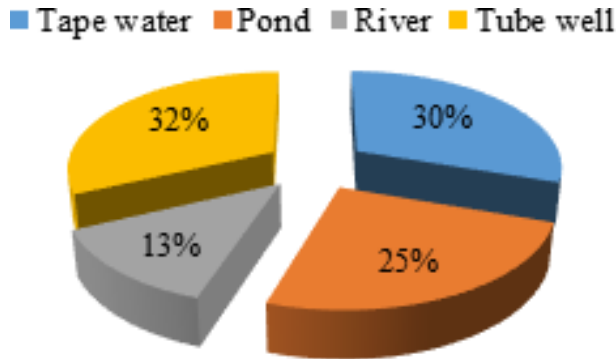
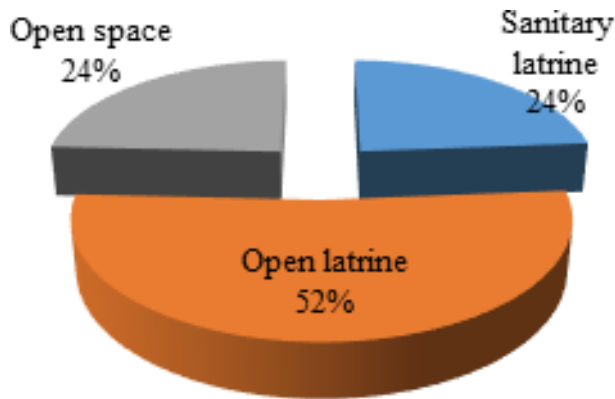


FIGURE 9
SANITATION SYSTEMS OF RESPONDENTS



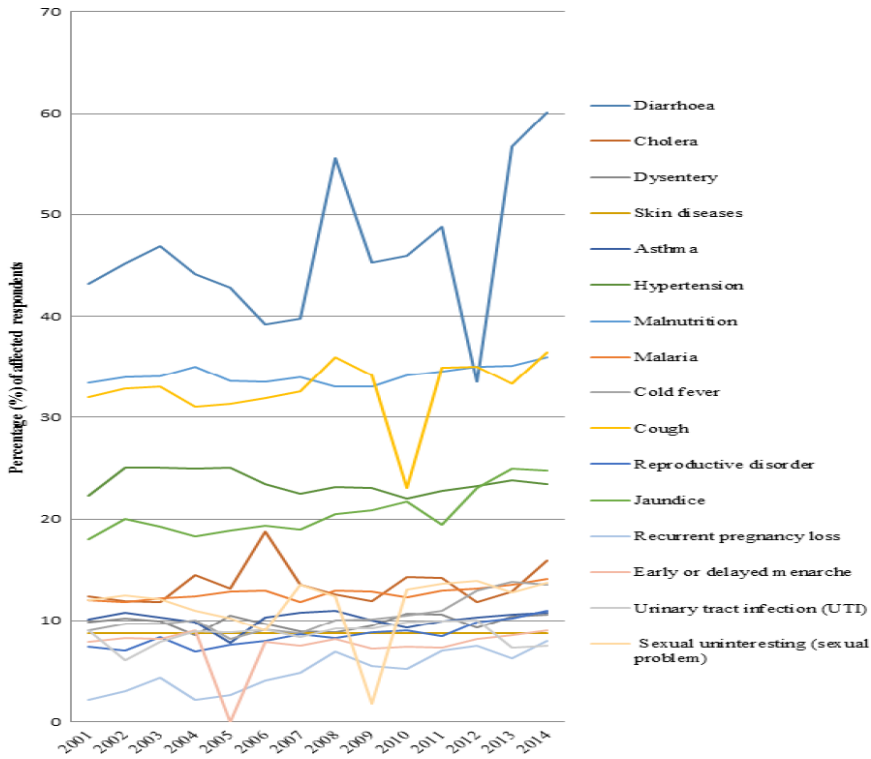
requirements. Figure 8 shows the water source of climate migrants in KCC. Figure 9 indicates that only 24 per cent of the respondents use sanitary latrines. Many children defecate in open spaces, resulting in waterborne diseases being a common health issue throughout the year.

Health problems of climate migrants in study area

Many respondents are suffering from climate-sensitive diseases due to their origin in climate vulnerable areas as well their lack of access to adequate health facilities. Respondents are suffering from diarrhoea, cholera, dysentery, skin diseases, asthma, hypertension, malnutrition, malaria, cold fever, cough, a reproductive disorder, jaundice, recurrent pregnancy loss, early or delayed menarche, urinary tract infection (UTI) and sexual un-interest (sexual problem) (Figure 10). Diarrhoea was the most common disease among respondents, with malaria being the second highest disease.

Figure 11 shows that climate migrants who settled in urban squats, where urban amenities including water, sanitation, and electricity are insufficient, suffer most of the health problems. The information revealed that 60.9 per cent of respondents suffer from diarrhoea in squats for an

FIGURE 10
TREND OF HEALTH DISORDERS OF CLIMATE DISPLACED PEOPLE



average of 14 years compared to 48.2 per cent in slums and 33.1 per cent in lower class areas. The findings illustrated that health disorders vary according to income levels and the availability of health facilities, water, sanitation, electricity, food, etc.

Health problems during residence in the place of origin

When asked about health problems while living in their place of origin, respondents reported that they faced different health concerns and those problems were not as extreme as they are currently experiencing (diarrhoea, dysentery, common cold/fever, etc.). It is noted that 18.1 percent of respondents said that they suffered from diarrhoea during their residence in their place of origin (Figure 12). FGD and in-depth interviews also indicate similar findings to this statement.

CONCLUSIONS

The outcomes of the study showed that the climate migrants suffer from different health problems in newly settled urban areas. Health burdens depend on the availability of adequate facilities. In squats where urban amenities such as water and sanitation facilities are absent, the health burden is higher. People who are unemployed or engaged in low paid jobs have little choice but to reside in squats. Climate migrants are more susceptible to becoming victims of the health burden in urban

FIGURE 11
HEALTH DISORDERS OF CLIMATE DISPLACED PEOPLE IN URBAN RESIDENCE

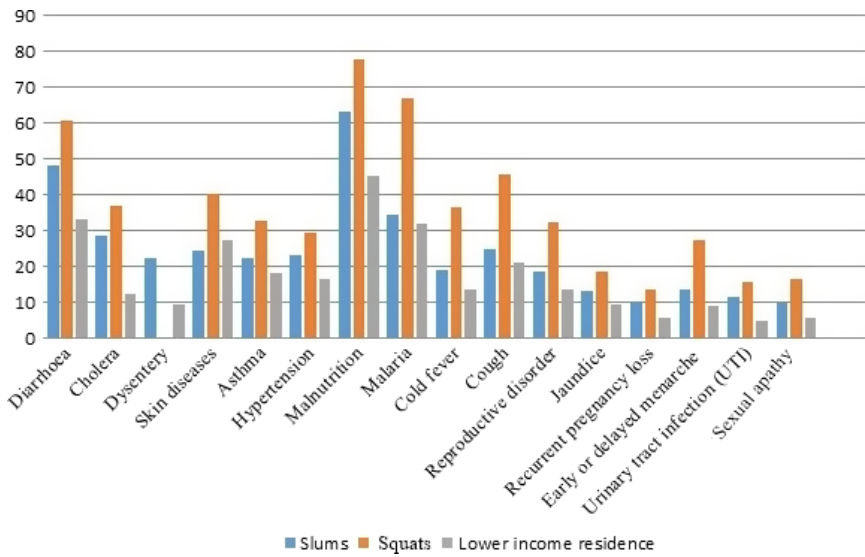
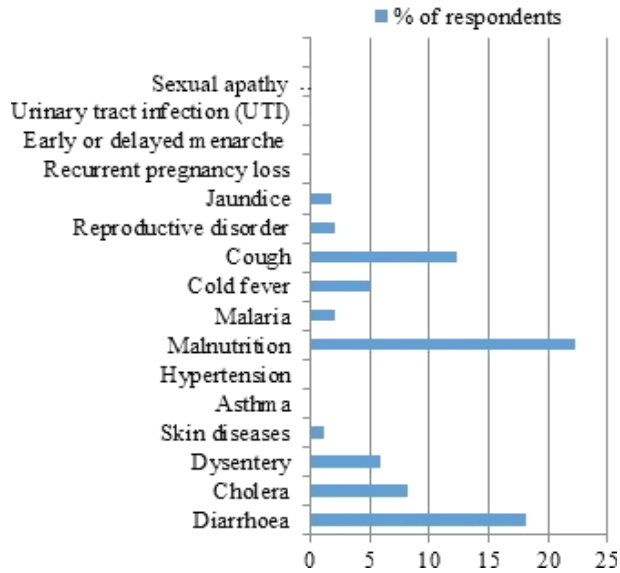


FIGURE 12
HEALTH PROBLEMS IN COUNTRY OF ORIGIN



areas. To overcome this worsening situation, employment and income generating activities should be provided for climate migrants. Further, water, sanitation, electricity and health facilities should be made available to climate migrants in urban areas. The rights of these displaced people,

including the right to health, are often poorly protected in practice. More vigorous application of existing human instruments is needed, as well as clarification and possibly re-definition of the rights of those displaced. There is a need for better planning, preparation and training in Bangladesh to which migrants move, including better training in health and related services on how to recognize and respond to health problems that may be slow to manifest. Education and training also needs to be provided for the migrants themselves, to help them adapt culturally and to enhance their skills and potential for employment.

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