

Situation of Coping Practices of the Hazards and Disasters at Urban Poor Community in Dhaka City (1991-2017)

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Abstract: The urban poor community in Dhaka city is vulnerable to various environmental hazards e.g., fire, flood, water-logging, diarrhea etc. The risk is increasing for the arising tendency of the hazards due to the climate change effects. The inhabitants have mitigation and preparedness activities as well as the government organizations and NGOs have also different actions to reduce the risks and impacts. This paper aims to know the situation of mitigation and preparedness activities to reduce the risks and impacts, and the situation of response and recovery practices at the hazard prone urban poor community in Dhaka city. The data has collected firstly from the secondary sources to find out the hazard and disaster incidents and the affected communities or areas since 1991 to 2017. Then the primary data has collected by a questionnaire survey from the twelve affected communities as well as field observations. There are various coping practices have found to reduce the risk and impacts but not satisfactory. The mitigation activities e.g., use of safe oven, maintaining life insurance, road expansion etc. are very poor. Preparedness activities for the potential hazards are also poor, which increases the possibility of impacts. The emergency response actions are hampered for the narrow roads and no road connection. The relief provision as the recovery practices is helpful but not adequate as the needs. A large proportion of the households have to be indebted to fulfill the needs. Their socio-economic development is hindering for the poor coping practices of the hazards and disasters. It is necessary to improve the coping practices to ensure the sustainable development.

Key Words: Disaster; mitigation; preparedness; response; recovery; Dhaka city.

I. INTRODUCTION:

The urban poor are affecting for environmental hazards¹ and disasters² due to their vulnerable living condition in Dhaka city. They are vulnerable to various types of the hazards e.g., fire, flood, water-logging, earthquake, diarrhea, cholera, structural collapse etc. Short duration high intensity rainfall is increasing in Bangladesh for the impact of changing climate (A. Islam, et al., 2014: 54), which has relation with some hazards e.g., water-logging and flooding. The increasing tendency of the hazards and disasters due to the climate change effects is raising the risk at urban poor community³ in the city. Management or coping practices are important to reduce the risk and consequences. "The current hazard adjustment paradigm and accompanying model of human choice classify hazard adjustment into four phases or stages of emergency management: mitigation, preparedness, response and recovery" (Mileti, 1999; Prater and Lindell, 2000; Tierney et al., 2001 cited in Paul, 2011:157). The inhabitants in the urban poor community have mitigation and preparedness activities to reduce the risks and impacts. The government and Non-Government Organizations (NGOs) have also different activities including response and recovery actions. The City Corporation Disaster Management Committee has responsibility for risk reduction and all other activities related with disaster management that is comprised with representatives from all stakeholders in the city (GOB, 2010). In the community level, Community based Organizations (CBOs) and local councilors are the direct actors to perform the function. In the disaster management policy, emphasis has given on comprehensive disaster management as hazard and risk identification with people's participation, preparedness for disaster and effective response with coordination instead of previous relief and rehabilitation approach (GOB, 2015). Although the government has given importance on risk and impact reduction due to the increasing trend of population as well as hazards in large cities, the living condition is very risky yet in the urban poor community. The hazards and disasters affect the inhabitants frequently causing casualties and damages of properties. In this circumstance, it is necessary to know the situation of existing coping practices of the hazards and disasters which can be helpful for further improvement of coping practices.

II. OBJECTIVES OF THE STUDY:

This paper aims to know the overall situation of coping practices of the hazards and disasters at the urban poor community in Dhaka city. The specific objectives are:

- To know the situation of mitigation and preparedness activities to reduce the risks and impacts; and
- To know the situation of response and recovery practices after the hazards and disasters.

III. STUDY AREA:

The Dhaka Metropolitan city is referred as Dhaka city (Figure-1) in this study. The area of this city is 315.98 square kilometer with a total population of 8,906,039 according to population and housing census in 2011 (BBS, 2014: 58). This area covers both of the Dhaka North City Corporation (DNCC) and Dhaka South City Corporation (DSCC) at present. The number of slums in DNCC

¹ Environmental hazards are "extreme geophysical events, biological processes and technological accidents that release concentrations of energy or materials into the environment on a sufficiently large scale to pose major threats to human life and economic assets," Smith and Pettley (2008: 12). In general, environmental hazards are unusual natural, technological or man-made incidents which create sufferings to people by obstructing normal functioning of life and livelihood, damaging properties or business and sometimes cause casualties.

² Disasters are "Severe alterations in the normal functioning of a community or society due to hazardous physical events interacting with vulnerable social conditions, leading adverse human, material, economic, or environmental effects that require immediate emergency response to satisfy critical human needs and that may require external support for recovery," IPCC (2012: 558).

³ Urban poor community means the totality of inhabitants who live in different spatial areas with poor housing and environmental condition. The ownership of the land or house may be legal or illegal to the settlers. For example, slums are urban poor communities.

area is 1639 with a population of 499,019 and the number of slums in DSCC area is 1755 with a population of 147,056 according to slum census in 2014 (BBS, 2015: 21, 131). The density of slum population in Dhaka was 891 persons per acre where the overall gross population density of the city was 121 persons per acre in 2005 (CUS, 2006: 40). The city and adjoining areas are composed of alluvial terraces and low-lying areas, which are part of the Madhupur tract. The elevation of greater Dhaka lies between 2 to 13 meters above mean sea level (Nishat, et al., 2000: 5). The city experiences a hot, wet and humid tropical climate. Nearly 80 percent of the annual average rainfall of 1854 millimeters occurs during the monsoon season which lasts from May to September (Wikipedia, 2020). The city is almost bounded by Buriganga, Turag, Balu and Shitalakshya rivers.

IV. DATA AND METHODOLOGY:

In this study necessary data has collected at first from the secondary sources to find out the hazard and disaster incidents and the affected urban poor community. Then, the primary data has collected by a questionnaire survey at twelve affected communities as well as field observations. Methods of data collection and analysis have given below:

4.1 Secondary Data:

Daily newspapers were chosen as the main source to find out the hazard and disaster incidents at the urban poor community in Dhaka city. At least two national daily newspapers of the same day were searched from the year of 1991 to 2017 to find out the incidents and the affected community or area. The Daily Ittefaq was one of the newspapers, which searched from January, 1991 to December, 2017. Other newspapers, which were searched as the complement with it were the Daily Bangla from January, 1991 to September, 1997; Daily Sangbad of 1997; Daily Inqilab of 1998; and Daily Prothom Alo from November, 1998 to December, 2017. These newspapers were seen in the National Library of Bangladesh and the National Archives of Bangladesh. Other secondary sources were also used for the secondary data. A brief of the incidents of major hazards and disasters and the affected community or area since 1991 to 2017 (Table-1) has given below:

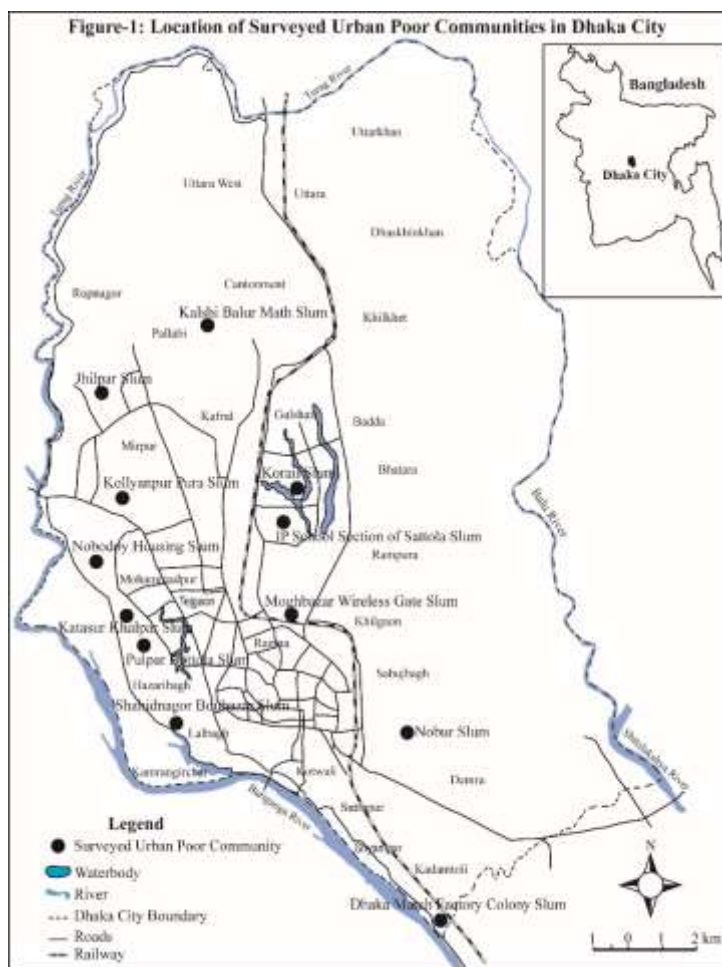
Table-1: A Brief of the Incidents of Major Hazards and Disasters and the affected Urban Poor Community or Area in Dhaka City (1991-2017)

Major Hazards and Disasters	Year of the Incidents and Affected Community or Area (1991-2017)
Flood	Six floods had occurred in Dhaka city since 1991 to 2017 in the years of 1995, 1996, 1998, 1999, 2004 and 2007. In the flood of 1995 and 1996, many areas of the eastern part and some low-lying areas in the western part were inundated. The flood of 1998 had affected 58 wards out of 75 on that time. In the flood of 1999, low-lying areas mostly in the eastern part were flooded. The flood of 2004 had affected 48 wards in the city and the flood of 2007 had affected many areas of the eastern part and Kamrangirchar in the western part.
Water-logging	Many urban poor communities had water-logged in different areas of the city in the years of 1991, 1993, 1998, 2004, 2007, 2009, 2013, 2015 and 2017. Among all incidents, the highest 341 millimeters heavy rainfall in a day on 13 September 2004 and the 333 millimeters heavy rainfall within nine hours on 28 July 2009 had created very severe water-logging to many urban poor communities.
Diarrhea and Cholera	Huge number of people were affected by diarrhea and cholera during the flood of 1998, 2004 and 2007. Only in the flood of 1998, 284 people had died and 191,867 people had attacked with diarrhea and other diseases in the city*. A large proportion of them were the urban poor. Increased number of diarrhea patients have also found during a heat wave on 18 April in 2017**.
Dengue and Chikungunya	The yearly number of overall dengue affected people in Dhaka city ranged from 375 to 6,232 since 2000 to 2015 and highest number of deaths were 93 in 2000. About one person of per eleven had attacked with chikungunya fever in the city in 2017.
Fire Hazard	A total of 233 incidents of fire hazard had occurred at urban poor community in Dhaka city according to newspaper reports since 1991 to 2017. Lowest three to highest sixteen fire hazard incidents had occurred per year. These fire hazards had caused total 137 deaths, 1514 injuries and damages of 79,862 houses or rooms.
Structural Collapse	Five incidents of structural collapse have found since 1991 to 2017 at the urban poor community. Among them, the incident at South Begunbari of Tejgaon Industrial Area on first June 2010 had caused 25 deaths when a five storied building had collapsed on four three-storied tin-shed houses and the incident of Jhilpar slum at Rampura on 15 April 2015 had caused 12 deaths and 30 injuries when a two-storied tin-shed house of 28 rooms had collapsed and drowned in water and clay.

Source: Daily Ittefaq (January, 1991-December, 2017); Daily Bangla (January, 1991-September, 1997); Daily Sangbad (January-December, 1997); Daily Inqilab (January-December, 1998); Daily Prothom Alo (November, 1998-December, 2017), *Nishat et al. (2000: 233), **The New Nation (2017:1)

4.2 Primary Data:

A questionnaire survey of 240 respondents (household heads or other family members) had conducted from December 2016 to March 2017 in 12 affected urban poor communities (Figure-1). These communities were selected randomly from the collected list of all hazard and disaster incidents affected communities. Twenty questionnaires had filled up randomly from each community, which had experienced at least one incident of hazard or disaster. Surveyed urban poor communities were: Kalsi Balurmath Slum, Pallabi police station; Jhilpar Slum, Shah Ali police station; Kollyanpur Pura Slum, Mirpur police station; Korail Slum and Sattola Slum of Banani police station; Nobodoy Housing Slum, Adabar police station; Katasur Khalpar Slum and Pulpar Bottola Slum of Mohammadpur police station; Moghbazar Wireless Gate Slum, Ramna police station; Shahidnagar Boubazar Slum, Lalbagh police station; Nobur Slum, Jatrabari police station; and Dhaka Match Factory Colony Slum, Kadamtoli police station. The data collected by questionnaire survey were edited, coded and analyzed partly by manually and partly by computer aided program as Excel to find out the average, percentage etc.



4.3 Field Observation:

Field observations were done immediately after the recent hazard incidents and occasionally to know about the actual situation of the affected urban poor community. When a field observation was done, information from the affected community people have gathered with direct conversations as well as some photographs have taken off.

V. SITUATION OF MITIGATION AND PREPAREDNESS ACTIVITIES:

The situation of mitigation and preparedness activities has described below:

5.1 Mitigation Activities:

Activities to Reduce the Risk and Consequences:

The households mostly use the traditional knowledge to mitigate the risk of hazards and disasters. The Table-2 depicts that 56.25 percent households have improved the housing structure and 30.42 percent households are keeping valuable things at safe places to reduce the risks and consequences. Improved housing structure includes lifting the floor of house, wall to protect the spread of water in the house (Figure-2), strengthening structure changing stilt and other materials in the house etc.

Table-2: Mitigation Activities to Reduce the Risk and Consequence

<i>Mitigation Practices</i>	<i>Number of Households</i>	<i>Percentage of Households</i>
Housing structure improved	135	56.25
Keeping valuable things at safe place	73	30.42
Using safe oven	21	8.75
Keep children at kith and kin's home	4	1.67
Have life insurance	4	1.67
Others (wall to protect water, road expansion, shifting house and cook outside of house etc.)	14	5.83
No steps have taken	76	31.67

Source: Field Survey December, 2016-March, 2017

Then, 8.75 percent households are using safe oven, 1.67 percent households keeping children at kith and kin's home, 1.67 percent households maintaining life insurance and 5.83 percent households' others mitigation activities (Table-2). On the contrary, 31.67 percent households have not taken any steps for disaster mitigation. Mitigation activities as use of safe oven, maintaining life insurance and road expansion etc. are very poor, which are essential to reduce the risks and impacts.



Figure-2: Wall to protect water of flood and water-logging at Dhaka Match Factory slum (Source: Author)

Activities to Raise Public Awareness:

The survey data explores that only 21.25 percent respondents have participated at drill or awareness raising activities and 78.75 percent respondents have not participated in these activities among the 240 respondents. Among the respondents who have participated in these activities, 30.91 percent have responded that those activities are run by NGOs and 25.45 percent by Fire Service and Civil Defense (Table-3). Then, 3.64 percent have responded that those activities are run by Red Crescent Society and only 1.82 percent by each of ward disaster management committee and CBOs. Remarkably, 36.36 percent have responded that those activities are run by other organizations i.e., garments industry, serving office, schools and match factory.

Table-3: Organizations Run the Drill or Awareness Raising Activities

<i>Organizations</i>	<i>Number of Respondents</i>	<i>Percentage of Respondents</i>
Fire Service and Civil Defense (FSCD)	14	25.45
Ward Disaster Management Committee	1	1.82
Ministry of Health	0	0.00
Non-Government Organizations (NGOs)	17	30.91
Red Crescent Society	2	3.64
Community Based Organizations (CBOs)	1	1.82
Others (Garments Industry, Serving Office, Schools, Match Factory)	20	36.36
Total	55	100.00

Source: Field Survey December, 2016-March, 2017

The responsible authorities should understand that public awareness as non-structural services can reduce a large proportion of the risks and impacts. In the reality, structural services are expensive and difficult to implement than the non-structural services. So, stress should be given on awareness and public education, which can play important role to reduce the risks and consequences.

5.2 Preparedness Activities:

The situation of preparedness activities of four potential hazards as fire, flood, water-logging and earthquake have collected by questionnaire survey and other hazards have known through observation and secondary sources. The preparedness activities have described below:

Preparedness Activities for Fire Hazard:

The Table-4 shows that keep storage of bucketful water in the kitchen is responded by 97.08 percent households, keep storage of sand in the kitchen by 11.67 percent households and putting off cooker after cooking by 89.58 percent households.

Table-4: Preparedness Activities for Fire Hazard

<i>Preparedness Activities</i>	<i>Number of Households</i>	<i>Percentage of Households</i>
Kept storage of bucketful water in the kitchen	233	97.08
Kept storage of sand in the kitchen	28	11.67
Putting off cooker after cooking	215	89.58
Forbidden children to play with fire	62	25.83
Use safe oven to cook	21	8.75
Others: (covered the cooker)	1	0.42
No early preparation	2	0.83

Source: Field Survey December, 2016-March, 2017

Then, forbidden children to play with fire are responded by 25.83 percent households, use safe oven to cook food by 8.75 percent households and other activities by 0.42 percent households (Table-4). On the other hand, 0.83 percent households have responded that they have no early preparation. The preparedness as the use of safe oven and keeping storage of sand are not satisfactory.



Figure-3: Risky oven used to cook food at Moghbazar Wireless Gate Slum (Source: Author)

Preparedness Activities for Flood:

The Table-5 shows that elevated the floor of the house as the preparedness for flood has responded by 32.08 percent households, arrangement of safe drinking water by 5.83 percent households, and others preparedness activities by only 0.83 percent households.

Table-5: Preparedness Activities for Flood

<i>Types of Early Preparedness Activities</i>	<i>Number of Households</i>	<i>Percentage of Households</i>
Elevated the floor of the house	77	32.08
Arrangement for safe drinking water	14	5.83
Others (keep oral saline, set up pump)	2	0.83
No early preparation	162	67.50

Source: Field Survey December, 2016-March, 2017

On the contrary, no early preparation is responded by 67.50 percent households (Table-5). Although a large proportion of the households are in risk of flood, most of them have no preparedness.

Preparedness Activities for Water-logging:

The Table-6 shows that elevated the floor of the house as the preparedness for water-logging is responded by 49.17 percent households, arrangement for safe drinking water by 14.17 percent households and clean the drain with community people by 4.17 percent households. Then, make-shift bamboo pathway to walk on water is responded by 8.33 percent households and other preparedness measures by only 1.67 percent households.

Table-6: Preparedness Activities for Water-logging

<i>Preparedness Activities</i>	<i>Number of Households</i>	<i>Percentage of Households</i>
Elevated the Floor of the House	118	49.17
Arrangements for Safe Drinking Water	35	14.17
Clean the Drain with Community People	10	4.17
Make-shift Bamboo Pathway to Walk on Water	20	8.33
Others (Elevated bedstead, Keep Goods on High Place, set up Pump, Keep Oral Saline)	4	1.67
No Early Preparation	109	45.42

Source: Field Survey December, 2016-March, 2017

On the contrary, 45.42 percent households have responded that they have no early preparation for water-logging (Table-6). So, the preparedness for water-logging is poor, which increases the possibility of impacts.



Figure-4: Elevating the floor of a house at Jhilpar Slum in Shah Ali Police station (Source: Author)

Preparedness Activities for Earthquake:

The situation of preparedness for earthquake is not good at the urban poor community in Dhaka city. The survey data indicates that only 24.58 percent respondents know what to do at earthquake among the all respondents. There is not any preparation e.g., improving the housing condition and keeping first aid materials for the potential earthquake. Although the urban poor are in huge risk of fire during earthquake, most of them are unaware about it.

Preparedness Activities for other Hazards:

Preparedness for other hazards is also not good. The urban poor are in most risky situation of diarrhea, cholera, dengue, chikungunya etc. Poor environmental condition, lacking of urban basic services and lacking of awareness among the people is responsible for these hazards. City corporations and NGOs are providing various services e.g., water, sanitation and paved footpath etc. in some urban poor communities (M. Islam, 2017: 200) but many communities are out of these services. Water pollution is also affecting them various ways but activities are very limited. According to Ahmed (2014: 751), “there is a lack of real political commitment for pro-poor policies and there are very few agencies active in cities”. Structural collapse of the two or more storied informal houses has become one of the severe hazards at urban poor community in recent years but there is not any monitoring or controlling activities to prevent this hazard.

VI. SITUATION OF RESPONSE AND RECOVERY PRACTICES:

The situation of response and recovery practices in the urban poor communities has described below:

6.1 Situation of Response Practices:

Accessibility of Response Car in the Community:

The survey data explores that there are obstacles to enter the response car in the community according to 59.58 percent respondents and no obstacles according to 40.42 percent respondents. Among the respondents who have responded obstacles to enter the response car in the community, narrow roads are responded by 53.15 percent, no road connection by 44.76 percent and other types of obstacles (keep goods and materials on the road) by 2.10 percent (Table-7). Emergency response activities i.e., fire extinguishing and rescue is hampered for these kinds of obstacles, which help to increase the impacts.

Table-7: Types of Obstacles to Enter the Response Car in the Community

<i>Types of Obstacles</i>	<i>Number of Respondents</i>	<i>Percentage of Respondents</i>
Narrow Roads in the Community	76	53.15
No Road Connection	64	44.75
Others (Keep Goods and Materials on the Road)	3	2.10
Total	143	100.00

Source: Field Survey December, 2016-March, 2017

Post-Hazard and Disaster Shelter Management:

The Table-8 shows that 35 percent respondents take shelter at open places and 15 percent at neighbor's home and under construction housings. Then, 12.50 percent respondents get shelter at relief camps or shelter house, 7.50 percent at relative's home, 0.42 percent at employer's home and 29.58 percent at other places e.g., on tin-shed roof, made platform, village home, rented new house etc. So, a large proportion of the affected people have to stay in insecure situation and suffer for the lacking of proper shelter management.

Table-8: Sheltering after the Hazard and Disaster

<i>Types of Shelters</i>	<i>Number of Respondents</i>	<i>Percentage of Respondents</i>
Neighbor's home and under construction housing	36	15.00
Relative's home	18	7.50
Employer's home	1	0.42
Relief camp or shelter house	30	12.50
At open places	84	35.00
Others (on tin-shed roof, on made platform during flood, village home, rented new house etc.)	71	29.58
Total	240	100

Source: Field Survey December, 2016-March, 2017

6.2 Situation of Recovery Practices:*Reliefs Provided to Households:*

Table-9 shows that 40 percent households get rice (around 20 Kilogram), 32.92 percent get made food, 32.08 percent get blanket and 31.67 percent get money (500 Taka-26,000 Taka). Then, 28.33 percent households get crockery, 14.17 percent get clothes, 9.58 percent get lentil, 9.17 percent get housing materials (Tin, wood, bamboo etc.) and 9.58 percent households get other relief items. Relief items e.g., medicine or oral saline, oil, salt, mosquito net and tent are got by very few percent of the households. It is remarkable that 42.08 percent households do not get any relief.

Table-9: Types of Relief Items Provided to Households

<i>Types of Relief Items</i>	<i>Number of Households</i>	<i>Percentage of Households</i>
Money (500 Taka-26000 Taka)	76	31.67
Rice (around 20 Kilogram)	96	40.00
Clothes	34	14.17
Made food	79	32.92
Blanket	77	32.08
Lentil	23	9.58
Salt	6	2.50
Oil	8	3.33
Crockery	68	28.33
Medicine or oral saline	11	4.58
Mosquito net	7	2.92
Housing materials (Tin, wood, bamboo etc.)	22	9.17
Tent or polythine	8	3.33
Others (water, soap, candle, water cleaning tablet, pillow etc.)	23	9.58
No relief has got	101	42.08

Source: Field Survey December, 2016-March, 2017

Misappropriation has found in the relief distribution system to fire hazard affected people at Middle Badda after the fire hazard on 20 July in 2015. According to the district administration, 20,000 Taka and 20 Kilogram rice per household were sanctioned for 450 fire hazard affected households but per household had got only 2000 Taka and 15 Kilogram rice (Daily Ittefaq, 2015: 3). So, a large proportion of the households do not get any relief and in some cases affected people do not get relief properly for misappropriation

Relief Providing Organizations and Persons:

It is found that 45.83 percent households get relief from government organizations, 43.33 percent households from NGOs and 27.08 percent households from local elite persons (Table-10). Then, 11.25 percent households get relief from local social welfare and cooperative society, 5.42 percent households from business enterprises, 2.92 percent from local political organizations and 4.17 percent households from others e.g., saint, employer, foreigner, house owner etc. It is remarkable that affected households get relief from various social organizations and persons out of conventional relief providing organizations.

Table-10: Relief Providing Organizations and Persons

<i>Types of Organizations and Persons</i>	<i>Number of Households</i>	<i>Percentage of Households</i>
Government Organizations	110	45.83
Non-government Organizations (NGOs)	104	43.33
Business Enterprises	13	5.42
Local Social Welfare and Cooperative Society	27	11.25
Local Political Organizations	7	2.92
Local Elite Persons	65	27.08
Cultural Groups	0	0.00
Others (Saint of Chormonai, employer, foreigner, house owners)	10	4.17

Source: Field Survey December, 2016-March, 2017

Post-Hazard and Disaster Indebted Situation:

The survey data indicates that 73.33 percent households become indebted to overcome the post hazard and disaster hardship and 26.67 percent households do not become indebted. Among the households who have become indebted, 48.86 percent

households have to borrow money to buy food, 41.48 percent to reconstruct house and 31.82 percent to buy household goods (Table-11). Then, 16.48 percent households have to borrow money for treatment, 6.25 percent to do business, 2.27 percent to repair house and 3.98 percent for other reasons e.g., to buy clothes, working tools, rickshaw etc.

Table-11: Reasons to be Indebted in Post Hazard and Disaster Situation

<i>Reasons to be Indebted</i>	<i>Number of Households</i>	<i>Percentage of Households</i>
To reconstruct house	73	41.48
To repair house	4	2.27
For treatment	29	16.48
To buy food	86	48.86
To do business	11	6.25
To buy household goods	56	31.82
Others (to buy clothes, working tools, rickshaw, etc.)	7	3.98

Source: Field Survey December, 2016-March, 2017

They have to borrow money to accomplish their urgent needs because the provided relief can fulfill very small amount of the need. They have to bear long-time burden of loan for the impacts of the hazards and disasters. Their socio-economic improvement cannot be sustainable although they come to the city with a hope of prosperity. Thus, the sustainable development is hindering for the poor coping practices of the hazards and disasters.

VII. CONCLUSIONS AND RECOMMENDATIONS:

7.1 Conclusions:

The situation of coping practices of the hazards and disasters at the urban poor community in Dhaka city is not satisfactory, although various activities have found to reduce the risk and impacts. Many inhabitants do some mitigation activities such as improvement of housing structure and keeping valuable in safe places but other mitigation activities e.g., use of safe oven, maintaining life insurance, road expansion etc. are very poor, which are essential due to live in very congested housing condition. The increasing tendency of the hazards and disasters due to climate change effects such as flood and water-logging also undermines the mitigation activities which are taken by the inhabitants. Although the inhabitants in the urban poor community are in huge risk of multiple hazards, only 21.25 percent respondents have taken part in the awareness raising activities. The key components of disaster awareness at the urban poor community e.g., ward disaster management committee and CBOs have found less active in awareness raising activities. Many of the households have some preparedness e.g., keeping water and sand for fire hazard, lifting floor for flood and water-logging etc. but preparedness activities e.g., arrangement of safe drinking water during flood and water-logging, cleaning the drain etc. are not good. Preparedness for earthquake and other hazards are very poor.

The emergency response activities such as fire extinguishing and shelter management are also poor. About sixty percent respondents have responded that there are obstacles to enter the response car in the communities i.e., narrow roads, no road connection etc. Most of the households have to stay in insecure situation arranging shelters by themselves because very few of them can take shelter at relief camps or shelter houses. Although the relief assistance get by most of the households are helpful to survive in the post hazards and disasters situation, is not adequate for the recovery of damages and losses. A large proportion of the affected households become indebted to fulfill the urgent needs e.g., to buy food, reconstruct house, to buy household goods, treatment etc. They have to bear the burden of loan for long time for the impacts of the hazards and disasters. The poor coping practices of the hazards and disasters are hindering the sustainable development. It is necessary to improve the response and recovery practices to reduce the impacts. Finally, proper attention should be given on improving overall coping practices coordinating with all stakeholders to ensure the sustainable development.

7.2 Recommendations:

Recommendations according to the findings of the study are as follows:

- The government should emphasize on mitigation activities by providing disaster resilient housing and urban basic services with coordination among responsible government organizations, NGOs and house owners.
- Awareness and public education programs should run engaging CBOs with ward disaster management committee in the hazard prone urban poor communities targeting multiple hazards rather than single hazard-based program as they are in risk of multiple hazards.
- The government should strengthen monitoring system to find out the risky situation and possibility of new types of hazards as the dengue and chikungunya due to climate change effects.
- The responsible authorities should take necessary steps to expand roads and connect the communities where roads do not exist for quick access of response car.
- The city corporations should have a plan for post hazards and disasters shelter management at all wards in the city.
- Government should increase the amount of relief assistance and develop equitable relief distribution system for all affected people.

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