

Causes and consequences of fire hazard in slum settlements in Dhaka city: A case study on Basbari and Kawran Bazaar slum, Dhaka, Bangladesh

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Abstract

Fire hazard in Dhaka city is a common incident. Slum areas are very vulnerable to fire hazard because of flammable building materials like timber, bamboo, wood, plastic etc. The aim of this study is to identify the causes and consequences of fire hazard of Basbari and Kawran Bazaar slum. Based on a detailed questionnaire survey the study is highlighted the causes and consequences of fire hazard that recently took place in Basbari and Kawran Bazaar slum settlements. The results of this study bring out the coping strategies which usually slums dwellers follow within their limitations. In Basbari slum last fire incident occurred at mid night on 16 February in 2017 caused death of a child and in Kawran Bazaar slum fire occurred on 1 January in 2018 at mid-day. Around 100% respondents in both the slum settlements have the witness of fire hazard. It is found that more than 70% respondents have lost their property and livelihoods. Firefighting and evacuation are very difficult in slum area because of high density of population, narrow lanes and irregular houses. Proper

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awareness and training to evacuate the slum settlements promptly can reduce the casualties and damage of properties from fire disaster.

Key words: hazards, slum settlements, fires, urbanization, Bangladesh

INTRODUCTION

A disaster is a serious disruption of the functioning of a community or society causing widespread human, material, economic or environmental losses which exceed the capacity of the effected community to cope using its own resources (UNISDR, 2009). According to Myers and Bedford (1981), disasters are social phenomena which stem from the interaction between hazards and vulnerabilities. The statistics above show that fire disasters affect more people in Africa and Asia than in other continents even though damages incurred are relatively low compared to the other areas. This is because in Africa and Asia, most large scale fire disasters occur in slums. Fire disasters regularly occur in slums and since Asia leads with the number of people living in slums, it follows that fire disasters have been seen to be common in these areas (ISDR, 2004). Urbanization is one of the most important demographic shifts worldwide in the past century. It represents a substantial change of how most of the world population has lived for the past century and several thousands of years (Akpan, 2006). It follows that a substantial majority of the world population now lives in cities. This has been attributed to the lure of cities offering better employment, education and healthcare. However, rapid and often unplanned growth is often associated with poverty, environmental degradation and population demands resulting in slum settlements (Habib, 2009). Urbanization is therefore a major factor in the growth of vulnerability, particularly of low income families living within

slums (Wisner *et al.*, 2004). World population is projected to increase to 9 billion by 2050 versus today's figure of 6 billion and almost all this growth will be in Africa and Asia. With population increasing by 1.2 billion most of this additional population will protectively live in cities and majority will find their way to slums (UN-HABITAT, 2011). Disaster preparedness and mitigation categorize the main methods of protecting communities against fire disasters. Preparedness entails policies and procedures designed to facilitate an effective response to a disaster while response are actions taken immediately, during and after a disaster to protect people and property and to enhance recovery. Mitigation entails actions taken before or after a disaster to reduce impacts on people and property. The use of these methods by slums residents and local authorities ensures disaster risk reduction in slums, while their absence spells doom. Slum fires impose significant social and economic costs including loss of life, destruction of health, property dwellings and jobs (Twigg, 2004). The present study was undertaken with objectives to identify the causes of fire hazard in Basbari and Kawran Bazaar slums, Dhaka, Bangladesh and to examine the consequences of fire disaster on slum dwellers in study areas.

METHODOLOGY

Study area

Basbari slum of Mohammadpur and Kawran Bazaar slum were the targeted study area of present study (Figure 1).

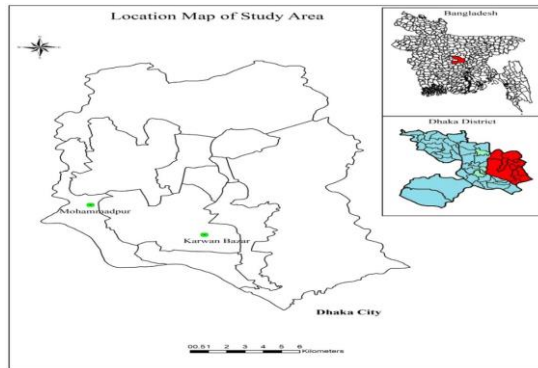


Fig. 1: Location of survey area a) Basbari slum Mohammadpur, b) Kawran Bazaar slum

Seriously affected area

In Basbari slum more than 70% household were burnt and Karwan bazaar slum more than 20% households were totally burnt.

Last affected time approximate

Survey area 1: Basbarislum, Mohammadpur - 16 February 2017 around 3.25 am (Table 1).

Survey area 2: Kawran Bazaar slum -1 January 2018 around 12.15 pm (Table 2).

Table 1: General information of the study area.

Region	Name of the District	Name of the thana	Name of the selected slum	No. of the total affected household	Surveyed Households	Total Households
S-W Region	Dhaka	Mohammadpur	Basbari slum	200	23	Around 300
S-W Region	Dhaka	Tajgaon	Karwan Bazaar slum	50	27	Around 600

Questionnaire design

Questionnaire preparation is an important part of this study. A draft questionnaire was prepared and tested on household and

the requirement of the questionnaire was reviewed. According to the sample size a questionnaire was formed considering the identifying socio economic and agricultural changes in the water logged area. After reviewed draft questionnaire, final questionnaire was prepared. The existing socio-economic condition, such as professions, income, expenditure, education, land values of the household etc. data was collected. The data was collected through personal review. A set of questionnaire was developed which covers the information necessary for the study.

Sample unit and sample size determination

The two slum Bastoli slum and Karwan bazaar slum were selected as a good representative of the fire disaster condition. These two slums were selected on the basis of random sampling. Households have been taken as a sampling unit. The household members whose ages are more than 20 years and have vast knowledge and experience regarding fire disaster are treated as sampling unit.

Primary data collection

Primary data can be collected either through experiment or survey. A total number of 50 respondents of Basbari slum, Mohammadpur and 50 respondents of Karwan bazaar slum responded to the questionnaire having open and closed end forms from which the research finding has come out. But in the case of survey, data can be collected by any one or more of the way like- Simple random sampling, Purposive sampling, Systematic sampling, Cluster sampling etc. Among of them ‘Simple random sampling’ have done in this research (Kothari, 2008).

Secondary data collection

Secondary information such as statistical data, report, maps has been collected from various Government and Non-Government Organizations such as: Demographic information from Bangladesh Bureau of Statistics, Dhaka, Journals and papers relevant to the study from NGO's, of Dhaka.

Data processing and analysis

Data was collected from the primary and secondary sources which have been assembled and presented in tabular form using the computer software named MS Word and MS Excel and analyzed according to objectives of the study. Most attention has been given in this phase because any wrong observation might cause wrong result. Processed data have been analyzed in the possible simple format. The analysis is statistical and calculative as far as possible for the purpose of the study.

RESULTS AND DISCUSSIONS

Demographic profile of the respondent

From the household survey of Basbari, Mohammadpur and Kawran bazaar slum it is known that around 10% families are single, 54% combined and 36% are extended family. So it is clear that most of the families are combined or large family in slum areas. The number of single families in Basbari is more than Kawran Bazaar.

Family member of the respondents

There are 10 families in the study areas, but every family has 3 members. There are 22 families every family has 5 members .There are 26 families in the same area every family consists of 8 members. It means to say that their population level is very high (Figure 2).

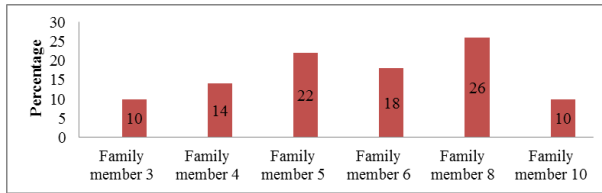


Fig. 2: Family member of the respondent

Gender of the respondents

There were 42% female respondent and 58% male respondents. Most of the families are male dominated comparatively.

Occupation of the respondents

From the household survey of Basbari and Kawran Bazaar slum it is clear that there are many people of the different professions. It is known that 18% respondents are day labors, 6% are rickshaw pullers, 24% are housewives and 22% are shopkeepers. Among them 8% are maid, 6% respondents cooked foods, 6% people sell vegetables for their livelihood (Figure 3). Besides all those occupations, there are also some occupations like van driving, Black smith and bus helper.

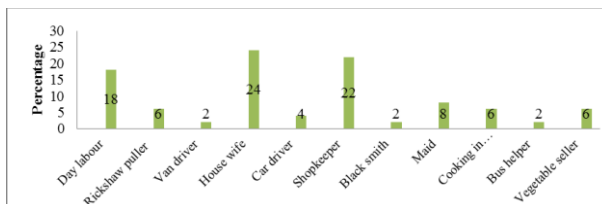


Fig. 3: The occupation of responder

Main income source of family

From the household survey in Basbari, Mohmamadpur and Kawran Bazaar slums it is known that the dwellers main income sources are shop- keeping (28%), daily laboring (26%), rickshaw pulling (22%), vegetable selling (12%), house maid (2%), black smith (6%) and cooking for lunch supply (4%).

Education level of the respondent

From the household survey of Basbari and Kawran bazaar slum it is known that more than 40% respondents are illiterate. There 18% respondents those who passed are class two, 15% passed are class five. The education level is very poor in the slum areas. This indicates that their knowledge about fire safety mechanisms is very low.

Time duration of the family for stay

In the slum area the information has come out that there are 6% respondents in the slum areas for 3 years. In these areas 6% are living for 4 years, 10% living for 5 years .It is also known that more than 10% respondents are staying in slum for 10 years. It is also clear that 42% respondents are staying in slum area for 15 years, 6% respondents for 20 years. There are some respondents those who are living in slum more than 20 years (Figure 4). Slum fire disasters are consequences of phenomena or events induced by human activities and habitation, and both man-made and technological in their causation (Baird, 1975).

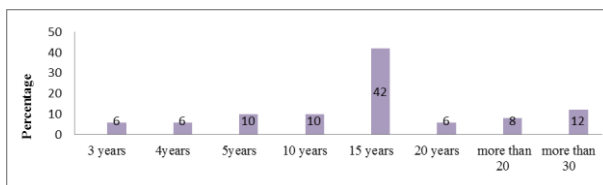


Fig. 4: Duration of stay of the dwellers

Type of disaster that respondents faced frequently and fire incidents

From the household survey of Basbari and Kawran Bazaar slum it is known that they faced mostly fire hazard for a long time. Around 100% respondents said that the fire disaster occurred mainly in their area for many years.

Frequency of fire incident

From the household survey of Basbari and Kawran Bazaar slum, most people said that fire incident occurred more than 4 times in this area (Figure 5). Some people faced thrice, some faced fire hazard twice, few respondent faces only once fire hazard. All the respondents at least have witnessed of fire disaster.



Fig. 5: Frequency of fire incident

Characteristics of their house (wall)

Slum areas are characterized by substandard housing structures (Ratcliff, 1945 and Kristof, 1965) Shanty homes are often built hurriedly, on ad hoc basis, with materials unsuitable for housing. Paper, plastic, earthen floors, mud-and-wattle walls, wood held together by ropes, straw or torn metal pieces as roofs are some of the materials of construction. In some cases, brick and cement is used, but without attention to proper design and structural engineering requirement (Mandelker,1969) Various space, dwelling placement bylaws and local building codes may also be extensively violated (UN-HABITAT, 2007). From the survey in Basbari and Kawran Bazaar slum it is known that Most of the slum dwellers lived in a poor condition. The wall of the house is made of tin and bamboo (96%). Some respondents use politeness (4%) for the walls of their house. Residents of slums are the urban poor who are exposed to risk and vulnerabilities (Murray, 2009).

Fire mainly originated from

From the household survey of Basbari and Kawran Bazaar slum it is known that fire mainly originated from the personal

intention (86%) of powerful people to take possession of the slum. Some people said that fire originated from kitchen (6%) some said from electric short circuit (8%) (Figure 6). In most cases it is the powerful people holding such land under their possession in the city renting to slum dwellers.

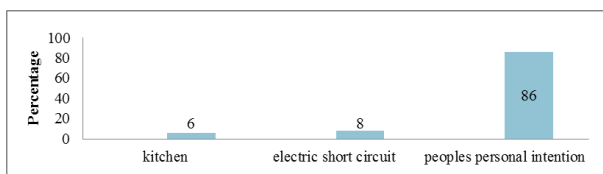


Fig. 6: Fire mainly originated from

Average distance of water source from the respondents household

From the household survey it is founded that there is no water source near their house. Some respondents have water source in a far distance. They have the scarcity of water. Some respondents have tube well in a far distance. They cannot collect enough water for their livelihood purpose (Figure 7).

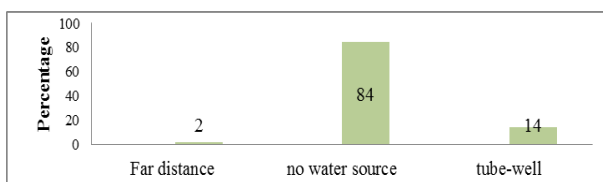


Fig. 7: The distance of water source

Major losses from fire hazard

From the survey of Basbari, Mohammdpur and Kawran Bazaar slum it is found that 70% respondents lost their property, 24% respondents lost their livelihood and 2% respondents lost their family members (Figure 8). In Basbari slum a women lost her boy child from fire disaster. Slum fires impose significant social and economic costs including loss of life, destruction of health, property dwellings and jobs (Twigg, 2004).

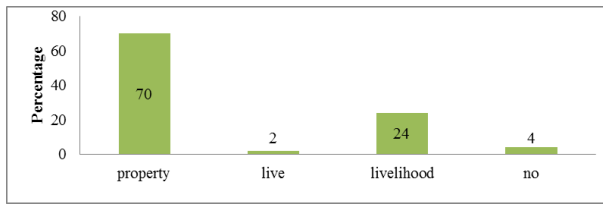


Fig. 8: Major losses from fire disaster

Degree of suffering from various diseases after fire event

From the household survey of Basbari and Kawran Bazaar slum most of the respondents said that they fortunately not suffering from any disease because of fire disaster (Figure 9).

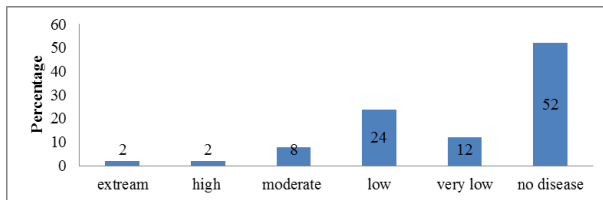


Fig. 9: Degree of suffering from various diseases

Types of Damages they face in their locality

From the survey it is understood that there was a school in Basbari that was totally damaged in fire incident. A health center was also affected by fire disaster. In Kawran Bazaar slum a mosque was damaged by fire hazard (Figure 10). Slum fires impose significant social and economic costs including loss of life, destruction of health, property dwellings and jobs (Twigg, 2004).

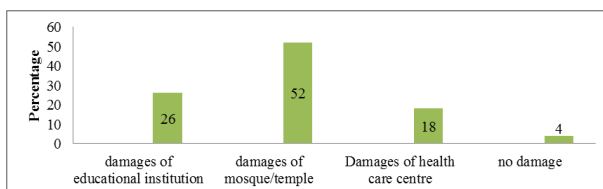


Fig. 10: The damages in their locality

Challenges they faced for housing during disaster

Around 20% people faced damage in their household utensil; almost 80% people said that their living house was fully burnt from the last fire disaster (Figure 11). Murray (2009) list the four causes of fire disasters in slums to be the spatial layout of slums in the form of extreme proximity, narrow alleys and high density shelters, stock piles of combustible building materials, inadequate fire prevention measures and inferior fire suppression techniques.

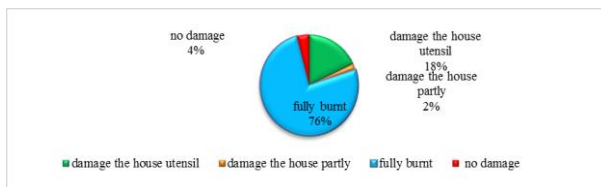


Fig. 11: Challenges they faced for housing during disaster

Financial support from organization

In the household survey of Basbari and Kawran Bazaar slum 24% respondent told that they got financial supports or different kinds of help like cloths, food, bamboo, tin etc. from NGOs. Around 6% respondent got help from Government; around 16% respondent got supports from local people. And other 54% respondent did not get any help from anywhere (Figure 12).

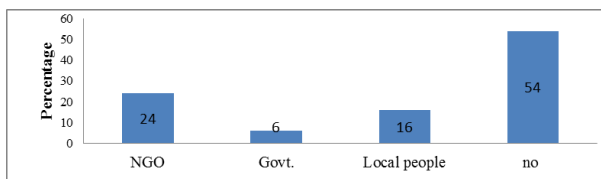


Fig. 12: Financial support from organization

Main problems of managing fire challenges for rescuers

It is understood that there were some challenges in managing fire control. Some respondents gave opinions that the problems

of managing fire were unplanned city growth, poor infrastructure of houses, high density of populations and more congested house. But most of the respondents did not know about those problems (Figure 13).

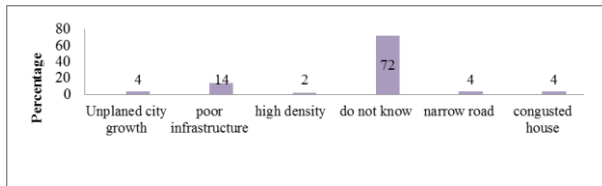


Fig. 13: Main problems of managing fire challenges for rescuers

CONCLUSIONS

The research was about the fire disaster in Basbari slum Mohammadpur and Kawran Bazaar slums. Most of the families are combined and extended family. They are mainly daily labor, rickshaw puller, van driver, shopkeeper, maid, and vegetable seller, some cooked for food delivery purposes. More than 50% people are illiterate. People have faced fire disaster more than 4 times in last 15 years. From the result and discussions part the conclusions can be drawn that the cause of most fire disaster in Basbari and Kawran Bazaar slum is mainly uncertain to all yet, they are not aware about the causes of fire. But the main cause is political intention, some people's illegal intention to take position of the slum area for building multistoried infrastructure. Besides this wood for cooking, illegal tapping of electricity, combustible construction materials and negligible knowledge of firefighting mechanisms are also responsible for fire disasters in slum area. Some people also give opinion that and the congested houses are also responsible to bring the fire large in Basbari slum and Kawran Bazaar slums. The principle solution for fire problems in the slum is to increase awareness on how to mitigate and deal with fire. Government and the fire

brigade should raise awareness among the slum dwellers and improve infrastructure to manage the fire problems.

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