

Fire Disaster and Risk Reduction: Perspective of Private Universities in Dhaka City

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Abstract

Background: Natural and manmade disasters in different scales are very common in Bangladesh. Fire disaster is causing huge loss of lives and properties. Human awareness and appropriate supportive facilities can play a vital role in fire disaster risk reduction. The university community like students, faculties, and employees can play an effective role in the fire disaster risk reduction process.

Objective: To prepare the university community for the reduction of fire disaster risk to save the lives and assets.

Methods: Students, faculties and employees of the private universities in Dhaka city were respondents. A semi structured questionnaire used to collect data. A total of 300 respondents were in the study. The study was conducted from July 2021 to October 2021. Data were analyzed by SPSS 16.0 version software.

Results: Most of the participants (98.5%) age was from 20 to 23 years and among them 69.6% male. Finding reveals that 20% of the subjects do not know their university is equipped with firefighting facilities or not. Only 45% participant is able to operate the firefighting tools. Among the participants only 12.7% faced the fire occurrence in their university. From the study assumed that electrical short circuit (70.1%) is the highest cause of fire occurring. Overloaded electrical circuit and faulty electrical wiring are responsible for fire accident 33.8% and 28.9% respectively. The results showed that the remarkable consequences of the fire incidents are people's injury 63.2%, loss of life 54.9%, economic loss 45.1%, business hampered 25.5%. The study found 76.5% university is equipped with firefighting facilities and a small number of participants (4%) do not know about their university's condition in this regard. Fire extinguisher (carbon dioxide cylinder) 77.9%, fire detector or fire alarm system 41.2%, separated or dedicated water storage 23%, sprinkler fire system (SFS) 14.2%, and hose reel 13.2% are very common in all universities. Among the installed facilities 56.9% found in functioning mode and 36.3% does not aware about the facilities. Results also revealed that 75% university did not arrange any training on fire drill. 86.3% feels the university should have a "Fire Incident Command System" (FICS).

Conclusion: Almost 100% respondent expressed their demand training on firefighting. All of the respondents emphasized on establishing effective Institutional Command System (ICS) for fire disaster risk reduction and management as well as feel that the university should have a 'Fire Incident Command System (FICS) with people's awareness program.

Keywords: Fire Disaster, Risk Reduction, Private University, Fire Incident Command System (FICS), Incident Command System (ICS), University Resource Officer (URO).

BACKGROUND

Fire disaster is causing huge loss of lives and properties. Among the known natural and man-made disasters like fire disaster has the most devastating events that cost of life and properties (Shaluf 2007; Xin& Huang 2013). Globally, many recurring fire incidences have been reported (Ibe et al. 2014). Study on the human awareness about

fire hazards and the evaluation of the preparedness are among the key elements of assessing fire risks (Siu 1999). The assessment of the fire risks and the public perceptions are the essential elements for reducing the risks and it is important to include in the provision of fire safety and management (Chow & Hung 2010; Gwynne 2008; Ibrahim et al. 2011; Zmud 2008) (Kihila 2017). Prevention, reduction and appropriate responses depend much on the public awareness as well as the availability and condition of supportive facilities (Kihila 2017). High population density, unplanned urbanization and industrialization and not maintaining building code are some of the risk factors behind the fire disaster. Fire incidents are the common scene in Bangladesh and various related study shows that occurring fire incidents are increasing day-by-day. According to the official statistics of Bangladesh Fire Service and Civil Defence (BFSCD), a total of 19672 fire incidents took place around the country in the year 2018 from which 6208 incidents took place in Dhaka city (Chisty, Rahman 2020). National Plan, different Acts, Policies and Standing Orders on Disasters (SOD) work as guideline for disaster Management. The SAARC Framework for Action (SFA) and Sendai Framework for Disaster Risk Reduction (SFDRR) 2016-2030 are also the guiding line for Disaster Management (DM) in Bangladesh. Education is considered to have a deep association with disaster awareness (Muttarak & Lutz, 2014). It enables the dissemination of current disaster-related information and human capacity building (Takahashi et al., 2015). Educational institutes can provide information, such as knowledge, skills, attitude, and values, that students need in any environmental challenges. (Cabilao-Valencia et al., 2019). From several studies, it is clear that fire disaster risk is high in urban settlements and Dhaka city is in the danger zone. Not only prevention and reduction, public awareness is also taking part as important tool for appropriate response, so awareness to fire hazards and preparedness are considered as key elements of assessing fire risks.

Fire disasters occur throughout the world, resulting in injuries, numerous deaths, and substantial damage to homes and businesses (World Fire Statistics Bulletin, 2012). The most destructive incidents that have been recorded resulting in loss of life and property involve fire disasters in secondary schools and tertiary institutions (Xin and Huang 2013). Disaster Risk Reduction (DRR) acknowledges the significant role played by the social and adaptive abilities of communities as effective components to successful preparedness against disasters. Having a deep understanding of fire safety measures, as well as knowing the appropriate actions to take in the event of a fire, is of utmost importance when it comes to shaping the future of a particular area. It is crucial for safeguarding both individuals and their belongings from the devastating consequences of fire disasters. Therefore, community involvement and capacity are essential to preparedness (Nelson, 2014). Insufficient allocation of personnel and inadequate training of fire service providers make a bad situation to worse (Nasimiyu2017). The nonexistence or deficiency in the upkeep of the installed facilities is regarded as a significant obstacle to fire prevention. Consequently, institutions that neglect this crucial aspect are extremely susceptible to fire risks (Kihila, 2017). In-depth interview conducted to know the existing fire disaster risk reduction perception, preparation and policies to build more capable fire fighters in the university community and to find out the ways of fire disaster risk reduction. The underlying principle behind this is that by being well-prepared as a community and effectively managing fire risks, the losses incurred from such disasters can be minimized, ultimately leading to the preservation of human lives (Nasimiyu2017). The outcomes of the study keep contribution to the nation for fire safety.

OBJECTIVE:

To prepare the university community for the reduction of fire disaster risks.

Specific objectives:

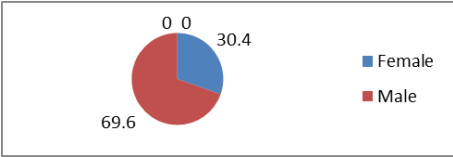
1. To identify the community's perception of fire disaster
2. To examine their potential to respond to fire disasters
3. Design a tool to strengthen fire disaster preparedness and response capacity
4. To prepare the possible guidelines for the university communities for fire disaster risk reduction.

METHODS:

Students, faculties, and Registrars of the private universities in Dhaka city were respondents. Ten universities were randomly selected among 105 universities. A semi-structured questionnaire was used to collect data. Total of 300 respondents were in the study. Respondents were selected purposively. The study was conducted from July 2021 to October 2021. Data were analyzed by SPSS 16.0 version software. Prior permission and inform consents were taken from each respondent and their privacy and confidentiality were maintained strictly.

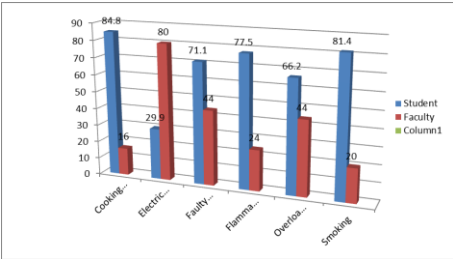
RESULT AND DISCUSSION:

Figure 1: The figure shows the distribution of sex of respondents (n=300)



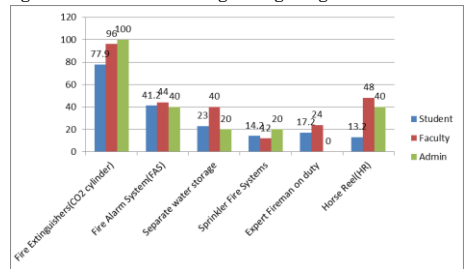
Among the student respondents, 98.5% was from age group 20-23 years and 69.6% was male and 30.4% female. Another study showed the respondents were 51.4% female and 48.6% male (Khila 2017)

Figure 2: The figure shows the most common causes of fire hazard in the universities (n=300)



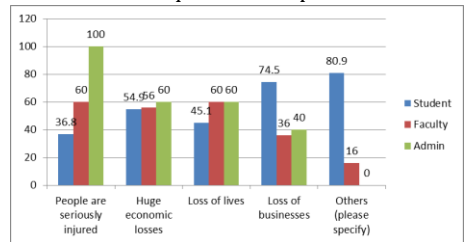
Faculty's opinions (80%) reveal that electrical short circuits are the most common cause, faulty electrical wiring and overloaded electrical circuits both are the same as 44% as the second cause of fire hazard. On the other hand, 84.8% of student's opinions shows cooking equipment is the main cause and almost same (81.4%) smoking, flammable chemicals 77.5%, 71.1% faulty electrical wiring, and overloaded electrical circuits 68% responsible for fire occurrence.

Figure 3: From the figure we find the existing firefighting facilities in the Universities (n=300)



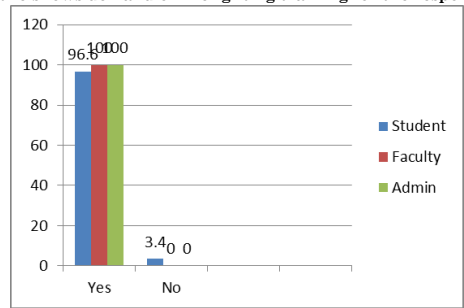
Most universities have fire extinguishers like CO₂ cylinders only but other facilities like Hose reel, and separate water storage (23%) are rare. From Kihila J (2017) we found Tanzanian educational institutions had 70% fire-fighting water storage facilities. 40-44% university has the Fire Alarm System (FAS).

Figure 4: Distribution of consequences bad impacts of fire incidences (n=300)



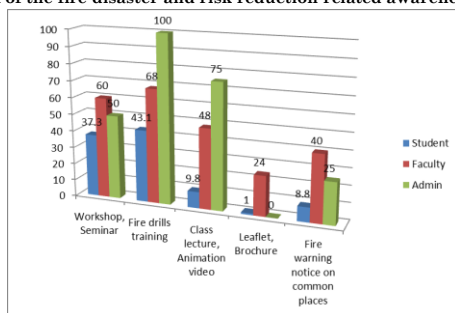
From the study we find if fire occurred people were seriously injured, huge economic loss, loss of lives, loss of business opportunities are very common issues that was similar to the Mumbai and Sharjah fire incidences, World Trade Centre (Cowlard et al. 2013), Sweden incidence in 1998 killing 63 people and huge were injured (Cassuto & Tarnow 2003).

Figure 5: Figure shows demand of firefighting training for the respondents (n=300)



Fire drill training is a most essential tool to grow self-response in the students as well as faculty, admin, and employees also for fire disaster risk reduction. 100% of participant (students, Faculty, Admin personnel) expressed their willingness to train on fire drills. Our study results are supported by Kishoyian et al. 2021, who found 90% of respondent was poorly prepared on fire preparedness, so they needed training. It is also supported by Kisumu Kenya which observed poor fire knowledge preparedness (Keve, 2015).

Figure 6: Distribution of the fire disaster and risk reduction related awareness and training (n=300)



The study reveals that 37.3% respondent gives opinions on the importance of workshops and, seminar, 43.1% responded on fire drill training, 9.8% thought that class lectures and animated videos and 8.8% responded on warning notices on the university premises. Another study (Kishoyian 2021) found 97.3% of the respondents were not aware of the evacuation procedure. Ayona (2016) found majority students were not practicing fire response measures such as drills in institute in which firefighting equipment were used.

CONCLUSION:

All educational institutions should regularly practice simulated exercises and evacuation drills in cooperation with the relevant government agencies. All of the respondents emphasized on establishing effective Institutional Command System (ICS) for fire disaster risk reduction and management as well as feel that the university should have a 'Fire Incident Command System (FICS).

Recommendations

Some specific recommendations are given for the fire disaster risk reduction in the university community.

1. Arranging fire drills, fire handling and standard operating system (SOP) training in a frequent manner with the help of an expert fire team in short intervals maybe three times a year
2. Fire evacuation drill and rescue demonstration training especially using installed fire extinguishers
3. Arranging a firefighting awareness program through workshops, seminars, and class lectures and mostly display notices/guidelines including the contact details of the nearest firefighting team in visible places on the university premises
4. Firefighting and training-related topics may be included in the General Education (GED) Course.
5. Appoint a designated person who will work for fire disaster risk reduction
6. Organize exhibitions or training for the university students and employees in fire safety measures at regular intervals.
7. Installing smoke detector
8. Initiate the 'Fire Incident Command System (FICS) by appointing a designated person who will know the basic principles and basic structures and functional areas of the ICS.
9. Installing digital firefighting system, Servicing the equipped firefighting facilities in a regular interval

10. Capacity-building training among the students based on their capacity.

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