

Preparedness Planning and Management: A Literature Review Emergency Fire

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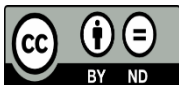


Keywords:

disaster; fire preparedness; planning and management; practices; response

ABSTRACT

Global policies on fire disaster management have highlighted individual and community responsibilities and roles in managing risk and promoting coping capacity. Establishment of local preparedness technique is viewed as a vital element in real response and rescue. The main purpose of the paper is review. This review paper represents a synthesis of available literature on emergency fire disaster preparedness published between 2000 and 2020, based on eligibility criteria. We performed a systematic search using electronic as well as manual methods for published articles. After that, we identified fire preparedness planning and management strategies suitable for developing countries like Bangladesh context. However, people require sufficient knowledge, motivation and resources to engage in preparedness management activities. Public involvement has now been acknowledged as one of the main factors in reducing fire disaster risk. Fire disaster management from probable reaction, comprehensive risk reduction culture, and the capability of disaster management system in refining the response and recovery management can help to mitigate the challenges in Bangladesh. So, the target is to build resilience through improved disaster risk reduction policies and practices, and similarly maintain and improve capacity fire services. Furthermore, studies are needed to analyze the conditional cash transfer interventions to prevent fire disaster in Bangladesh and other countries would provide better evidence.



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1. INTRODUCTION

Disaster is a horrendous occurrence that causes destruction, decline, production degradation, and human life loss [1], [2]. Disasters impede economic growth, contribute to poverty, waste of time, money diverted, delay in progress, severe financial losses, human misery, and death [3], [4]. The effect of a natural or a risk caused by man may lead to disasters. Natural hazards include earthquakes, seismic eruptions, hillsides, tsunamis, storm surges, tornadoes, etc. [5]. Human-made disasters include illicit oils or accidental

spills of toxic or chemical or nuclear disaster and finally, fire, which is typically a frequent, eye-catching catastrophe everywhere in the world [6] that cannot be expected or tracked and because of its rapid expansion leads to massive loss of life and property [7], [8].

Fire is the fourth leading global cause of accidental injury, with more than 150,000 deaths per year [9]. More than 95 percent of fire deaths or burn injuries occur, where deaths are almost six times greater than in high-income countries [10], [11]. The correlation of residential fire frequency and social and economic characteristics of residents and the living and neighborhood conditions has been demonstrated over many years [12], [13]. The related cost of property damage and livelihoods in low and middle-income countries is possibly essential but is often not reported. The occurrence, effects, and causes of urban fires are not unknown, they are poorly captured officially and vary between countries and cities [12], [14]. Urban housing which are reasonable to bear cost, accessible has not reserved pace globally at the rising time of population [15]. Thus, people are bound to live in low-slung housing or within informal settlements. Urban fires are examples of a global problem which the UN Office for Disaster Risk Reduction calls "an extensive risk," i.e., a broad-based risk [16] "of repetitive or persistent low or modest hazard conditions, often very localized in nature, leading to weakening cumulative effects"[17]. This issue is mostly ignored as a policy issue, partly because of a lack of accurate information on the national and local incidence and effects, coupled with insufficient financial, technical, and manual capacity to act in a way that reduces the fire risk [14], [18]. However, the essence and the complexity of the problem can be demonstrated by several examples. Bangladesh Fire Service and Civil Defense (BFGD) reported over 150,000 fire incidents causing 1587 deaths from 2006 to 2016 in Dhaka. In November 2012, 112 people were killed and several hundred wounded by a fire at a Dhaka garment factory [19]. The fire ravaged South Africa's informal settlement, some 3,600 homes being burned [20]. On 16 July 2004, 93 children were killed and 21 injured by fire at a government-assisted school in Kumbakonam, India [21]. 7 million people in India have burnt annually, of which 0.7 million need hospital admission, 0.24 million disabled [22], and some 0.14 million die every year from burn injuries. So burns lead to a death every four minutes [22], [23]. In Nepal, between 1990 and 1996, fires destroyed 38,924 houses. Over 700 people died, and around 40000 houses were destroyed in a fire disaster in Myanmar between 2011-2019 [24]. In April 2014, about 2900 homes in Valparaiso, Chile, were destroyed by fire, and 12500 people been displaced [25].

Studies have been carried out to find effective strategies for managing different forms of disasters and are being suggested and addressed. As the informal settlements are illegitimate or impermanent and not planned or legalized by the state, it means informal settlements can be planned and formed by inhabitants in different ways [16]. This review focuses on accidental fires which is caused by naturally and unnaturally within the informal settlements or low quality building. The accidental fire that triggered the major tragedy in many situations, there is still a lack of fire safety, and focus on the emergency preparedness response. Innovation, policy analysis, technology development, tests, and reviews of various techniques will aid many people's lives before they wait for fire brigades or other moving vehicle fire- extinguishing. Therefore, the main aim of this paper is to review literature on emergency fire disaster preparedness published over the past 20 years and summarize the programs, strategy against fire to minimize the disaster.

2. Materials and methods

This review paper with the objectives of collect information relating to fire preparedness management. We searched published articles in four scientific databases included PubMed, Web of Science, Google Scholar and Scopus from 2000 to October, 2020. A broad search was performed using the keywords alone or in combination and title search included "Emergency", "Disaster," "Fire," "Preparedness," "Planning," "Management", with Boolean operators, and "Emergency fire disaster preparedness planning and

management in developing/developed countries”. A manual search of all referenced articles followed the unique searches. English language article, quantitative, cross sectional, qualitative, pilot study, survey, retrospective case study, quasi experimental study related articles during the time period of 2000–2020 were selected for this review after searching from the four databases.

2.1 Eligibility criteria

For selecting articles following inclusion criteria was considered: (a) articles which were published in English language, (b) articles that published with main focus on fire preparedness, and (c) this review included only original research and peer-reviewed journal articles. Exclusion criteria included studies published in languages other than English. In addition, editorials, commentaries, expert opinions, study protocol and reports were excluded. Furthermore, the full text article which was not available excluded.

At the initial search stage, 252 relevant articles identified and added in the rayyan.qcri.org. Then, 185 duplicate and irrelevant articles were removed by review of the title and abstract. Three authors have reviewed the title and abstract of the relevant articles in the rayyan.qcri.org by following the protocol. 67 relevant articles were identified for full texts screening. 32 articles were excluded for irrelevant subject and included 35 articles after full text screening with relevant to the objectives of the study. Again, 11 articles were excluded for irrelevant study design. Finally, 24 articles were selected and evaluated by two authors to final review. The review procedure was charted in Figure 1.

2.2 Data analysis

A thematic synthesis approach was used to analysis collected information and identify all themes [26, 27]. Two authors extracted the data and coding of findings for each study from the included studies into an extraction datasheet. The following were included for the data extraction of the included studies: first author, publication of year, study area/country, subject/samples, aim/objective, type of study, and summary findings. The correctness and comprehensiveness of the extracted data were checked by one author. Sorting of the relevant literature is shown in figure 1 below.

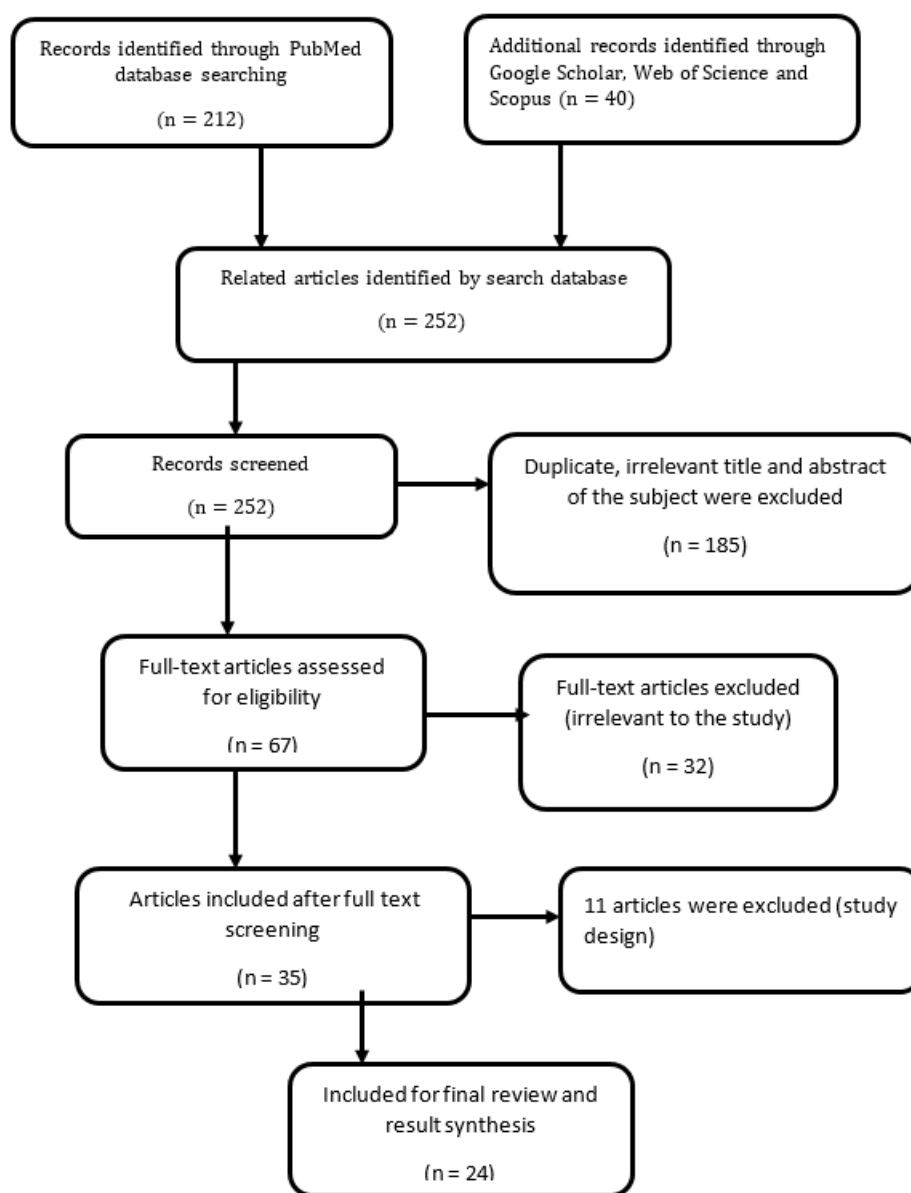


Figure 1. Steps used to sort out relevant literature.

3. Results and Discussion

This review described the findings based on: (1) Methodology, (2) Fire preparedness planning, and (3) Fire disaster management. The preliminary synthesis of literature was showed independently to each of the included article layouts (Table 1).

Table 1. Characteristics of included studies.

Ref.	First author, year	Study area	Subject	Aim/Objective	Study	Findings

[28]	David Jaslow, 2005	USA	58 elderly residents	To examine the fire safety awareness and practices of a group of older people in a Nursing home.	Questionnaire Survey Study	40% felt they were not at risk of fire. 28% of people will try to find a fire source instead of an escape from the building. The building fire plan was known to just 42% of the population. The fire alarm was ignored by 12% of residents and could not be heard by 35%.
[16]	David Rush, 2020	New Delhi, Cape town, Lebanon	Informal settlements	To examine fire risks in informal settlements in New Delhi and Cape Town, and tented informal settlements in Lebanon.	Case studies	Residential fire risk is often tackled by accessible, affordable, safety-compliant housing. That said, important interim measures can be taken to mitigate fire risk, driven by high population densities; flammable housing materials; undependable or unreachable access to safe power sources; and –within the case of Cape Town and New Delhi particularly – the lack of fireside services to succeed in sites of fire. However, these public risks are embedded in distinct social, economic and political contexts that has got to be located at the middle of any intervention.
[29]	Olivia Carter-Pokras, 2007	USA	51 individuals	To illustrate the level of awareness of Latin American immigrant citizens about emergency preparedness.	Qualitative Study	Few participants obtained details about emergency preparedness, and most did not have an emergency plan, as in previous studies. The outcomes of critical messages and motivating factors can be used to produce direct, priority communications messages for Latin American immigrant communities in the United States concerning emergencies and emergency preparedness.

[30]	Elvira Kaneberg, 2016	Sweden	20 individuals	To analyze the Swedish emergency preparedness network Supply Chain to understand the needs of the Supply Chain Network	Qualitative Study	Consequently, part of the absence of a shared threat profile, critical capability remains outside preparedness planning, for instance, military, industry, voluntary and unclear regulations. The establishment of the SC network indicates that military, commercial and voluntary sectors need to be targeted, and they can improve the networks in terms of initial planning. In a reformed framework, the civil defense must be reinforced in an all-hazards approach that involves the full scale of the threat, and demonstrating essential functions.
[31]	Ove Njå, 2018	Norway	2 fire event cases and a workshop with 26 experienced participants	To show how representatives from fire and rescue service deal with the uncertainties and expectations of road tunnel fire and rescue system	Workshop on focus group study.	The safety concern of tunnel fire which is related to the Norwegian emergency response personnel's state of efficiency both in pre- and post-accidental phase. The tunnel fire safety condition is so unclear and fragmented. In the future, it will make road tunnels, subsea crossing more complex. It will be very challenging for all parties, including road owners, road users, vehicle producers, emergency responders, and authorities.

[32]	Wendy Harte, 2015	South Africa	12 communities	To recognize threats and factors impeding disaster risk management policies and strategies of Dontse Yakhe.	Qualitative Study	This research provides insights into the complex factors that obstruct development and infrastructure development, and risk reduction strategies and shows a gap in policy and practice on disaster risk management of Dontse Yanke.
[33]	Nazia Naosihin, 2020	Bangladesh	15 heads of the family	To explore the situation, risk, and vulnerabilities of fire hazards and investigate Bihari camp's fire preparedness.	Qualitative	This research stated that inadequate preparedness existed among slum people. Almost 95% of people do not take any mitigation approach for reducing the risk of fire. In the Kurmitola Bihari Camp, this is a matter of concern that most of the people were ignorant about fire safety mechanisms and management systems.
[34]	Alberto P. Franciolli, 2016	South Africa	204 residents	To evaluate the awareness and crisis management of Ward 23, cape town residents in an emergency.	Qualitative study	Most of the people had minimal knowledge about emergency procedures, and few did their best to educate themselves. Much of the better-educated citizens appeared to live nearer to the nuclear power station. The lack of understanding of the availability of information, myths about a nuclear threat and a general emergency, or a lack of incentives to educate oneself, due to a high sense of security and the unlikely occurrence, is attributable to the low levels of knowledge and preparedness.

[35]	Ahmad Firdaus Ahmad Shabudin, 2017	Malaysia	120 participants	To stimulate the integration of sustainable concerns into a more extensive planning framework for disaster risk management.	participation observations, surveys, and document analysis	Concerning the perspective of results, it indicates that south-south, ASEAN regional and triangular cooperation and higher education in DRM-SD are meaningful impacts from this project, which can contract several advantages and be advanced as an approach. This project received positives outcomes and valuable information from the respondents for future development.
[36]	Helene Joffe, 2016	USA and Turkey	128 individuals	To identify the approaches developed based on the psychological literature on adequate preparations for natural hazards and health behavior improvements.	quasi-experimental, face-to-face intervention study	The study results, carried out in Seattle, show that while fix-it intervention is sufficient, the mere act of entering people's homes to monitor their readiness level, together with self-reported prevention and socio-psychological orientation towards extreme events, will increase multi-hazard preparation on a longer-term basis.
[37]	Matthew Stewart, 2017	Peru	230 people aged 18-85 years.	Aimed to test preparedness for disasters and understanding of risk in the Trujillo, Peru	Cross-sectional study	The selected communities understand the high effects of disaster and infections but are not sufficiently prepared for possible disasters in the future. 20% of the participants had food supply in an emergency, 24% had a water emergency plan, 24% held an emergency aid kit, and only 20% had the family evacuation plan in place for the study participants.

[38]	Chao Yi Chen, 2019	China	3541 households	To evaluate household preparedness for emergency events and its determinants in China.	Quantitative	9.9% of family units were well cognizant of crises: 53.6% did not have the foggiest idea of what to do, and 31.6% would not like to consider the big picture. A more elevated level of readiness was set up in the members who have performed advanced education (changed OR=0.826 contrasted and the more significant level), partook in crisis preparing exercises (changed OR=2.299), would be wise to crisis information (changed OR=2.043), revealed less destiny accommodation (changed OR=1.385) and more independence (changed OR=1.349), earlier openness to crisis occasions (changed OR=1.280) and held more positive perspectives towards readiness (changed OR=1.286).
[39]	Eunmi Lee, 2019	South Korea	300 college students,	To explore and identify disaster influence on stress, anxiety, and depression among students and how they cope with it.	Quantitative	An insignificant (assuming any) relationship exists between perceived danger and readiness among the individuals who revealed low degrees of self-adequacy. Results propose that self-viability and saw danger work together to encourage people with physical incapacities to find a precautionary way to diminish the consequential unfriendly health impacts of natural and human-made catastrophes.
[40]	B. Daffue, 2018	South Africa	49 adult patients	To assess the causes of burn injuries between adults admitted	Cross-sectional Study	The injury has occurred mainly in the household (77.6%). Three quarters (77.6%), of which 68.4% were associated with domestic activities, have been

				to the Burn Wound Unit at Bloemfontein.		considered accidental. 39.5% of patients used alcohol at the time of this accident. Eleven incidents (22.4%) were intentional, with an attack attributable to 63.6% of the incidents. Flames (59.2 percent) and hot liquids were the primary reasons for burn injuries (22.5 percent), and the left front thigh was the most common area of injury.
[41]	Jennifer E. Marceron, 2018	USA	294 respondents	To identify a comprehensive theoretical framework for people with physical disabilities that moderates the interaction between perceived danger and emergency response behavior.	Cross-sectional Study	Initially affected by the disaster (4.9%), and 82.0% had been taught on reaction methodologies to fiascos. The apparent danger of common calamities (1-10) had an average score of 4.89, and that of social catastrophes (1-10) had an average score of 6.41. Calamity dependability (1-5) had an average score of 3.02, level of calamity reaction procedures (1-4) had 2.77, the measure of data about disasters (1-5) had 2.06, and the degree of fiasco reaction abilities (1-5) had an average score of 2.23. Stress (1-5) had an average score of 2.91, uneasiness (0-3) 0.58, and misery (1-5)
[42]	Lu Chen, 2017	China	31 areas	To Assess the significant intention of the danger of natural disaster in China and	Quantitative	The catastrophe hazard consequences of China's 31 regions are summed up as follows: Firstly, the space dissemination design for catastrophe hazard is that west- focal is weighty; also, east is light; besides, comparable zones have huge,

				study the principle highlights between various		diverse danger level; thirdly, provincial weakness file breaks the wonder "the further developed the economy, the bring
				districts.		down the weakness"; fourthly, hazard list results affirm again the significance to diminish local weakness.
[43]	Isabela Wilfred Mtani, 2018	Tanzania	110 Households	To analyze the unique fire chances in informal settlement settings and the network's ability to decrease these dangers through arranging. also, execution of metropolitan fire chances control.	A pilot study	44% of Mchikichini ward occupants utilize perilous electric works, draw in unregistered electrical experts for establishments, what is more, fixes in opposition to makers' determinations and utilize non-normalized electrical apparatuses with no legitimate support. This incorporates risky electric practices by occupants, the helpless limit of inhabitants to battle fires when begun, restricted admittance to structures by firefighting gear because of spurning of arranging guidelines, and insufficient attention to neighborhood government heads of the extent of fire chances.

[44]	Emily Ying Yang Chan, 2018	China	64 Dong clan family respondents in the first intervention in 2015, 58 respondents joined in the second in 2016.	To Analyze the viability of an up-close and personal network put together wellbeing schooling mediation concerning chance insights, explicitly the Health-EDRM information of fire risks among high-hazard ethnic minorities in rustic China	Cross-sectional survey	The related elements of fire hazard insight, counteraction, and reaction mindfulness/ information at benchmark were assessed. Subjects showed a better agreement that fire covers could battle a blast if utilized suitably, and that information was supported for 17 months. The meditations were compelling in improving fire counteraction and reaction information. Directed mediations ought to be coordinated by networks' culture, the advancement of financial flourishing, and way of life rehearses.

[45]	Greta Tam, 2018	Hong Kong	sample size 1020	To analyze the residents' readiness level in the occasion of a general disaster or episode of irresistible illness and to distinguish appropriate channels for network illness surveillance and danger correspondence.	cross-section al study	Total respondents interviewed was 1020, and the reaction rate was 45.9% (1020/2223). (59.2%) had excellent family unit readiness, a total family readiness unit (3.4%). Albeit just 46.6% of all-inclusive communities had long haul medicine, 157/206 (76.2%) with constant infections had long haul medicine. Female respondents with advanced education and higher family unit pay were connected with excellent family unit readiness. TV and phone were the favored channels to get and report irresistible illness data, individually.
[46]	Emily Ying Yang Chan, 2019	China	1000 individuals	To examine the relationship between the social-demographic condition and risk perception of transportation safety.	a cross-section al telepho ne survey study	87% use public transportation daily. After a metro fire crash, the self-reported trust in metro safety was 85.6%. Females were more likely to be worried about transport protection if they had lower incomes and single people. Roughly 46.1–63.2% of respondents had the right fire-related awareness of health response. Earlier initial assistance training (32%) is related to fire response awareness in a mixed pattern.

[47]	Jacob M. Kihila, 2017	Tanzania	250 individuals	To determine the level of preparedness for fire disasters management	A pilot study/ Questionnaire Interview	60% of the firefighting facilities were not maintained regularly, 50% had stored some harmful materials, 70% had insufficient firefighting water storage. Furthermore, 51% of respondents have
				expertise among the selected ten higher education institutions.	was study	not had firefighting facility installed; 80.7% have never had firefighting and preventative training; have never participated in a fire fighting installation (95.6%), and have been unaware of the contacts of their firefighters (81.5%). Prevailing circumstances have shown that higher education institutions are not well equipped to handle fire incidents, suggesting that preparations for solutions are essential.

[48]	Sofia Karlsson, 2020	Sweden	144 papers	To investigate the collective learning mechanism of rescue organizers, mining companies, emergency medical services, training firms, and academia	Retrospective Case study	The modelling of emerging tools was an integral part of the process to increase the capacity for collaboration. The devices were reviewed and tested, and implemented in full-scale exercises during collaborative meetings. This process led to organizational development and a better comprehension of the other organizations' perspectives. A tentative model has thus been developed for the development of the practice organizers' learning process.
[49]	M. J. Beltran, 2011	Australia	Unclear	To analyze the Commonwealth and the State's complicated policies in an emergency management sense, current and future fire risk management	Unclear	Given the problems of geographical isolation and resource constraints on the Island, the existence of the unique natural environment and the criticality of early fire detection and quick suppression, it is crucial to focus and robust fire plan initiatives and to ensure the potential for climate change is included in the risk analysis. Cooperation between governments, administrations and
				factors, and the problems faced by a small, isolated population with fresh, different, radical and contentious		agencies are critical in addressing emergency management challenges, fiscal and administrative insights, including information sharing and joint research arrangements and refinement of rapid response systems.

				concepts.		
[50]	Ebenezer Owusu-Sekyer, 2017	Ghana	20 individuals	To explore what caused the inferno that destroyed one of the most extensive medical storage facilities in West Africa – the Central Medical Store (CMS).	A Pilot Study	The findings highlighted the low systemic structures to prevent, plan and mitigate disasters perceived in disaster management as cross-cutting themes. The loss scale caused by this catastrophe illustrates how failure to minimize risk can lead a whole country to the mercy of disaster events.

3.1 Methodology

Several studies (n=3) were conducted in the United States of America (USA); [28], [29], [41], USA and Turkey; [36], studies (n=4) were conducted in China; [38], [42], [44], [46], (n=3) in South Africa; [32], [34], [40], (n=2) in Tanzania; [43], [47], the residue initiated from Australia; [49], Ghana; [50], Sweden; [48], Hong Kong; [45], South Korea; [39], Peru; [37], Malaysia; [35], Bangladesh; [33], Norway; [31], Sweden; [30]. One study is conducted in more than two countries including New Delhi, Cape town, Lebanon; [16].

All of the studies reviewed qualitative study, quantitative study, pilot study, retrospective case study, cross-sectional survey approach, observational study, quasi experimental study, case study. The study participants varied widely in standings of the country settings.

3.2 Fire preparedness planning

Fire preparedness planning refers to the combination of planning, training, and drilling to ensure optimum

response performance in emergencies at the social community level. Planning for community-based fire preparedness in emergencies plays a critical role in safety. The fire emergency preparedness plan begins with a written plan listing the descriptions of critical components and the protocols that should be followed when a fire occurs [51]. The emergency preparedness plan should address all anticipated future emergencies as well as recovery plans. Fire preparedness planning can be categorized into three significant sections [52], [53].

3.2.1 Information Dissemination

This includes convening meetings for the exchange of knowledge, the procurement, positioning, and management of material resources, and the thought and communication of information on potential dangers and fire risks [35], [53], [54].

3.2.2 Education

This section covers developing techniques for training, knowledge transfer and assessments; educating the public and others involved in the planning process; undertaking public educational activities [29], [44].

3.2.3 Practices

This segment involves holding disaster drills, rehearsals and simulations of fire hazards; establishing informal linkages between active groups; formulating memoranda of understanding and mutual aid agreements; drawing up organizational disaster plans and integrating them with overall community-mass-emergency plans [55].

Moreover, Emergency response education plays a vital role in saving people and reduce fire disaster damage. Each person should be trained to respond to the fire risk and fire safety mechanism instantaneously [34], [39]. Everyone must be involved in this activity voluntarily. The absence of understanding and plans improves the possibility of difficulties. More campaigns are required to inform people of the various consequences and fire safety issues inclusively.

3.3 Fire Disaster Management

This review paper collates actions and good practices within fire disaster management based on the reviewed material. The approaches used to arrive at the inputs i.e. starting from the reviewed material, secondary literature has been used to develop the content. Disaster management can be described as the coordination and management of resources and obligations for all humanitarian problems, including planning, response and reconstruction, to mitigate the effect of catastrophes [34], [55]. Comprehensive fire disaster management is based upon four distinct components:

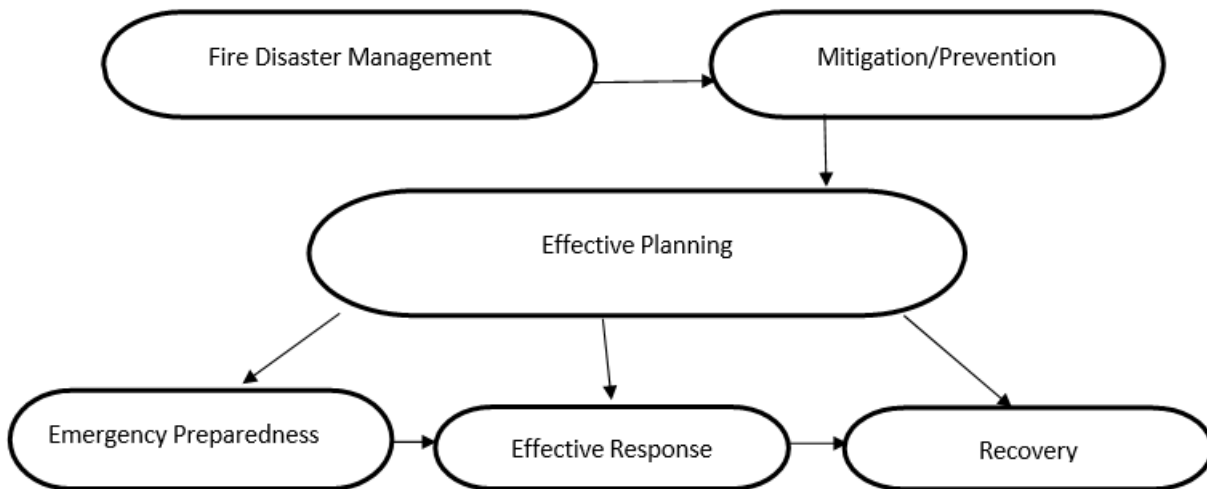


Figure 2. Proposed conceptual model for fire disaster management

3.3.1 Mitigation/ Prevention

Most significant, but so frequently ignored, is mitigation and prevention. The proactive measures possibly will reduce the chance of a fire threat to nearly zero [56]. These are: Avoid deactivating alarms of smoke or Carbon-monoxide detectors. These are life-saving gadgets that alert early of an incident that risks human life. It can reduce the impact of a fire systems which are in place to deal with it for mitigation. Carbon monoxide, CO, is the most plentiful lethal byproduct of combustion, odorless, colorless and tasteless gas called the Silent Killer. Also, tampering, sealing, removing fire alarm equipment is a criminal offence; Do not let the cooking go unattended. The number one reason for fire incidents is cooking. Unattended cooking can raise the likelihood of a full fire flame. Never overheats cooking oils. In a pot, glide the cover carefully over the pot to smother the fire when a flash fire is present. Never move it into the sink or use water. Otherwise, this will lead to a blaze of oil splashing and a fire spread to nearby areas.; In critical places, where inflammable material is highly present, smoking should be prohibited. Do not permit propane tank into the building. The vapors are heavier than air, and any gas leak can pass into a fire source, such as the pilot light or electric arc, to cause a fatal explosion inside the building. Maintaining these preventive measures may act pro-actively for mitigation to handle the fire risk & hazardous situation [11], [28], [50], [57].

3.3.2 Preparedness

Installation and understanding of how fire alarms and extinguishers are worked. There are appropriate technologies for different occupancies e.g. fire alarms that work well in the UK domestic situations are not appropriate for how people use their homes (or the sizes of homes) in the informal settlements of cape town. Prepare an emergency fire escape plan with the most necessary resources; Fire Safety Experts agree that evacuation of 2 minutes' exercise should be practiced regularly for all participants and make sure that the fire compartments are much larger. Use of the worst cases to be extra secure and prepared; and Training is aimed at developing and verifying the ability to avoid fires and respond effectively to fire events. The following training considerations must include: fire action, portable fire extinguishers, experience, equipment operation and repair, alarms, handling flammable fluids; as a minimum, everyone should undergo fire protection and first aid training in the following areas. After that, they should assist or participate in the retained fire and rescue department in the neighborhood [38], [46].

3.3.3 Response

Get everybody out as soon as possible, do not panic, do not gather goods or belongings, and take the

emergency kit bag quickly instead; Close the fireplace door, close behind all the doors as going, if possible; Use the back of the hand to touch it before opening a closed door – if it feels hot, do not open it – on the other side could be the flames. Smoke rises, so stay low, which helps in easier breathing; If there is no way to get outside through the entrance, open the window to get attention and for air to breathe. Stay by the window to be seen and rescued; Drop blankets or bedding onto the ground in imminent danger at the first-floor level and to break the fall from the window. Get the feet out before falling, and lower the body to the entire length of arms. Using first aid immediately and request assistance and also to request assistance, call emergency lines and clearly state the fire address [14], [50], [53].

3.3.4 Recovery

Identify community risks, vulnerabilities and effects of disasters. Identify ways of mitigating community risks and vulnerabilities to minimize the effects of future disasters.

- i. Regulations on zoning reform;
- ii. plan inspections of infrastructure and urban spaces are enforced;
- iii. equipment and supplies for the planning and prevention of future disasters.

Creation and execution of the plan under local rules by:

- i. Reinforcement relationships between organizations;
- ii. support for legislative attempts to carry out the initiative;
- iii. lace together sources of financing to meet the goals of the strategy.

Track the activities and performance of the plan and review them. Apart from these, measures which should be taken to ensure successful management of fire disasters are [43], [57], [58]

- i. Strong links to the rescue authorities concerning the presence, the ideal route, and open area assessment at the most vulnerable areas are coordinated and established;
- ii. different agencies, organizations and individuals should be assigned appropriate tasks to provide an efficient response;
- iii. coordination of all firefighting teams should be created;
- iv. fireplaces in appropriate areas with a view over traffic and dangerous areas in the city should be placed;
- v. urbanizations should be handled at all levels in a significant problem and;
- vi. develop a more proactive strategy for preventing panic and chaos in the event of an emergency.

All of these actions are long term and will be more or less able to be delivered due to the impacts of short-term immediate recovery needs. So, in case of an informal settlement fire, people will rapidly rebuild and start reacquiring assets within 1-2 days. Thus, this will inhibit and change any longer-term recovery plans.

This review was conducted from developed and developing countries and that developing countries are now progressively understanding the importance of effective fire disaster emergency planning and management, a safe and well approach to lessen the fire disaster risk [59]. Public involvement has now been acknowledged as one of the main factors in reducing fire disaster risk.

4. Policy analysis in context of Bangladesh

Our developing country related study reviewed that emergency fire risk management, response to fire and mitigation is the only way to save our people from unexpected deaths. Community involvement is vital to ensure that any potential intervention is appropriate, achievable, and sustainable within the local context of fire services and roles in both risk management and response to fires, and their active engagement in

developing new strategies and working methods for urban fires, if we are to reduce fire risks. Effective evidenced-based fire engineering strategies implemented post-fire will help increase communities' resilience to urban fire risk, and ultimately help to create sustainable cities [16]. In Bangladesh where lack-of-development-led problems are persistent, there is a fundamental requirement to improve context-responsive policies and action plans that should report the reasons and dynamic processes of fire disaster susceptibility and lack-of-development issues in an integrated manner. National Plan for Disaster Management (NPDm) 2016-2020 is prearranged to support the government of Bangladesh's objective to become a middle-income country by 2021 and a developed country in 2041. But to diminish vulnerability, poverty, natural, environmental and human-made disasters to a controllable and tolerable humanitarian level by: (a) Getting a paradigm shift in disaster management from probable reaction and aid training to a more comprehensive risk reduction culture; and (b) Strengthening the capability of the Bangladesh disaster management system in refining the response and recovery management at all levels. So, the target is to build resilience through improved disaster risk reduction policies and practices, and similarly maintain and improve capacity fire services. The plan has three basic objectives: Saving lives, Protecting investments, Current recovery and reconstruction [60], [61]. The challenges posed by urban fires got to be addressed under Sustainable Development Goal (SDG) 11.

4.1 Barriers and challenges in Bangladesh

Lack of awareness and insufficiency of training are of an even greater magnitude in the developing world particularly in Bangladesh. The large gap between available data and practical information that could be improved to reduce the uncontrolled fire disaster situation in Bangladesh. Further research is needed to mitigate the challenged in context of Bangladesh.

4.2 Strength of the study

Our research shows the understanding of risk, knowledge of citizens, rescue service, and first aid training when the fire happens unexpectedly in any field. This review will enable us to clearly understand the danger of fire and provide us with a solution to cut occupancy and enforce policies and then recognize a planning void. In order to concentrate more on fire preparedness program at large Government and non-Government Organizations steps are needed properly.

4.3 Limitations

In literature review, only English papers are included. Data related to fire disaster in Bangladesh are often insufficient, suffer from statistical flaws, and are not readily available. Many articles were published in local, non-indexed journals, not available online, and difficult to gather.

5. Conclusions

As fire disaster is one of the biggest problems of our densely populated country Bangladesh, integrated action based on comprehensive policy and stepwise implementation should be adopted taking into consideration of local affected zones. Fire disaster management should focus on awareness build up, multidisciplinary and multilevel approach by the Government, NGOs and civil societies can create greater awareness for a technical training program to prevent the hazardous events. Fire disaster management from probable reaction, comprehensive risk reduction culture, and the capability of disaster management system in refining the response and recovery management can help to mitigate the challenges in Bangladesh. Further studies are needed to analyze the conditional cash transfer interventions to prevent fire disaster in Bangladesh and other developing countries would provide better evidence.

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7. Conflict of interest

All authors declare no conflicts of interest in this paper.

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