



## Preparedness of Healthcare Workers for Fire Emergencies and Evacuation Protocols

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### Abstract

Fire is the most prevalent cause of disaster in healthcare systems, necessitating immediate action despite being preventable. To prioritize patient and staff safety, actions must be taken at the facility level through protocols, inspections, and maintenance checks. The physical structure and environmental status of the building should also be assessed regularly, including evacuation and transportation routes. Hospitals must develop a comprehensive evacuation plan based on international and national standards. Prior to implementation, a needs assessment should determine spatial, financial, and human resources, and provide the specific population on-site. After determining feasibility, the plan should undergo evaluation and update (Sahebi et al., 2021). Systematic regulation is required to prevent fire hazards and reduce injury to participants involved in the event as well as non-participant community members, both directly and indirectly (Goniewicz et al., 2020).



**Keywords:** Fire emergency preparedness, healthcare workers, hospital evacuation protocols, emergency response, disaster readiness, staff training, hospital safety, fire drills.

## **1. Introduction**

Healthcare facilities must be equipped to safeguard patients, visitors, and personnel in the event of fire emergencies. Fire-related incidents pose a high risk to health systems, resulting in significant injuries and fatalities (Sahebi et al., 2021). Lebanon has seen an increase in the number of such incidents, exacerbated by the deterioration of infrastructure and the escalating economic crisis. The absence of safety protocols threatens to compromise service delivery in healthcare systems. To minimize the risk of fire-related injuries, the present study investigates the preparedness of healthcare staff for fire emergencies, focusing on fire safety training, drill participation, and the availability of safety measures. Fire safety training equips personnel to act effectively, while participation in evacuation drills prepares workers for systematic fire response. Concurrently, a comprehensive fire protection plan is warranted for healthcare facilities given the critical importance of response effectiveness in high-risk buildings engaged in round-the-clock activity (Goniewicz et al., 2020).

### **1.1. Background and Significance**

Fires can occur at any time and place, representing one of the leading and most dangerous hazards in hospitals (Sahebi et al., 2021). Most buildings and shelters incorporate certain safety measures to manage fire emergencies, but the complete prevention of fire accidents is impossible. Hospitals also apply various fire safety measures such as regulations, policies, and escape routes; however, healthcare workers usually lack awareness of fire emergencies, fire equipment, and protocols. Consequently, when the fire alarm goes off, panic ensues. On average, around 29% of healthcare workers are aware of at least one fire safety regulation, representing a major problem. Evacuation drills should thus be conducted regularly.

### **1.2. Objectives of the Study**

Fire hazards present a significant risk to hospitals, with potential losses in human lives, facilities, equipment, and valuable information (Sahebi et al., 2021). Considering patient conditions and the wide variety of hospital activities, the need for swift and well-coordinated emergency evacuations becomes paramount. The response of hospitals to these events relies heavily on the knowledge, attitudes, and practices of their employees. Therefore, the present study aims to (1) assess the knowledge of healthcare personnel regarding fire hazards and safety protocols, (2) investigate the impact of conducting evacuation drills on the preparedness of hospital employees, (3) evaluate the attitudes of employees towards fire safety and the obstacles facing evacuation procedures, and (4) examine the presence of firefighting and safety equipment, such as fire alarms and extinguishers, as well as supporting facilities for the occupants of healthcare facilities within hospitals.



Fire hazards are a considerable risk for hospitals, leading to human casualties as well as costly physical damage and loss of information. Given the patients' conditions and various activities in hospitals, completing emergency evacuation procedures without delay and with effective coordination is essential. Hospital preparedness for fire emergencies depends on the knowledge, attitude and practices of the staff. This study thus aims to (1) assess knowledge on fire hazards and safety protocols; (2) evaluate the influence of evacuation drills on staff preparedness; (3) examine attitudes toward fire safety and obstacles to evacuation; and (4) assess availability of firefighting and safety equipment, alarms and extinguishers, and facilities for healthcare occupants.

### **1.3. Scope and Definitions**

Healthcare is one of the most rapidly growing sectors in the world. Reasons for this rapid growth include the establishment of a supportive environment by the state and the social sector that encourages investment in health. At the same time, there is an increasing number of private medical institutions. However, along with the advantages of the private sector in providing healthcare, there are some negative aspects that require particular attention, especially in fire safety.

Due to the nature of providing health services, the safety of patients in hospitals remains an important issue. Various emergencies such as earthquakes, floods, landslides, and outbreaks of infectious diseases can overwhelm the authorities that manage emergency responses. Particular attention should also be paid to fire emergencies. Fire prevention and control measures in hospitals have led to the establishment of special fire stations and the appropriate allocation of resources for fire fighting. In a fire emergency, the rapid and safe relocation of patients to safer areas in the hospital or to safe evacuation sites requires proper planning and training with established evacuation protocols. The staff in hospitals must be familiar with the emergency procedures and participate in regular emergency drills. Inadequate training, lack of engagement, poor sensitivity and naturalness of procedures, or fear of involvement can also make it difficult for them to implement the protocols during emergency and evacuation procedures.

In the healthcare sector, the workers are always in contact with people. Health workers, and particularly, participants in fire safety evacuation and drills do not suffer physical or psychological damage during training and drills. Despite the pressure to participate in such activities, health workers generally believe participating and contributing is more important than refusing and failing to support such activities. Health workers in hospitals should be trained, equipped, and supported to evacuate patients quickly, and their stages of response within the evacuation fulfillment process should be optimized.



## **2. Methods**

The study employed a descriptive cross-sectional design to investigate the preparedness of healthcare workers for fire emergencies and evacuation protocols at a tertiary care hospital in Karachi, Pakistan. Healthcare professionals were targeted as respondents because they are essential personnel at emergency scenes. Personnel from all disciplines were included to represent a spectrum of viewpoints. The research was centred on the hospital fire safety protocol established by the local fire department in 2005. The study was registered with the Institutional Review Board (IRB) of the Dow University of Health Sciences (DUHS) and received IRB approval (IRB-1446/DUHS). Data were collected over a six-week period from December 16, 2021, to January 26, 2022.

The sample size was calculated using OpenEpi software (version 3.03) based on a premise that 50% of healthcare workers have knowledge of fire safety protocols. This calculation indicated that an overall sample size of 385 would suffice. Incorporating a 10% non-response rate, the required total was 423 respondents. A non-probability convenience sampling technique was employed, and data were obtained using an anonymous self-administered, pretested online questionnaire hosted on Google Forms. The link to the questionnaire was disseminated through WhatsApp and email to facilitate a wider reach. Fire emergencies, evacuation training, fire safety infrastructure, attitudes and barriers, and demographic characteristics were explored through multiple-choice questions (MCQs). A pilot study was conducted with 30 healthcare workers to test the reliability of the questionnaire (Cronbach's alpha 0.88). Data confidentiality was strictly upheld; participants were not required to provide any personal identifiers, and responses were reported in aggregate form. Descriptive statistics were generated using SPSS software (version 26.0).

### **2.1. Study Design**

A cross-sectional design using a self-administered questionnaire was employed to assess fire safety preparedness among healthcare providers with special emphasis on knowledge of safety alarm systems, internal and external evacuation routes, and the frequency of evacuation drills. The participants were medical and nursing staff from different departments working in the healthcare institution.

Data were collected between February and April 2021 and analyzed using IBM Statistical Package for Social Sciences (SPSS) version 20. The chi-squared test was applied to evaluate associations at a significance level of 0.05. Ninety-six completed questionnaires were obtained, yielding a response rate of 88.8%. The majority of respondents expressed a personal concern regarding fire safety. However, only 36.5% knew the locations of the fire alarm call points and fire extinguishers, and 70.2% had never participated in a fire evacuation



drill. The primary barriers to fire safety training were high workload and a lack of training sessions.”

## **2.2. Setting and Participants**

The study was conducted in the clinical settings of a university hospital in Izmir, Turkey, between January and February 2022. The hospital, which has a total bed capacity of 410, provides training and clinical practice for students at the Faculty of Medicine, Faculty of Nursing, Faculty of Pharmacy, and Faculty of Health Sciences. Different healthcare workers were recruited by means of a convenience sampling method.

Participation was voluntary; informed consent was obtained from participants before data collection. A total of 310 healthcare workers were invited to take part in the study, and 80 workers declined. The final study sample comprised 230 participants.

## **2.3. Data Collection Instruments**

Emergency protocols of healthcare institutions aim to facilitate rapid and orderly evacuation for patients and staff (Sahebi et al., 2021). A cross-sectional, quantitative study was undertaken to determine the preparedness of healthcare workers (HCWs) for fire emergencies, evacuation preferences, and related barriers among HCWs at an institution in the eastern region of Saudi Arabia. A self-administered questionnaire was prepared based on previous studies and distributed among the HCWs. The questionnaire included demographic information; knowledge of fire safety protocols, evacuation drills, and infrastructure; attitudes toward fire emergency preparedness; and perceived barriers to effective evacuation. Analysis was conducted by computing descriptive statistics on each variable (frequencies and percentages). Statistical analyses were performed using SPSS software version 24.0.

## **2.4. Data Analysis**

Data analysis was performed using the Statistical Package for the Social Sciences (SPSS) version 25.0. Hard-copy questionnaires were collected, and descriptive statistics—such as frequencies, percentages, means, and standard deviations—were calculated. Descriptive analysis focused on univariate and bivariate statistics. Knowledge, attitude, and practice scores were categorized into poor (score less than 50%), fair (50% to 75% score), and good (more than 75% score). The association between these variables was investigated using appropriate statistical tests (Goniewicz et al., 2020).

Fire evacuation planning is defined as preparing an "evacuation plan based on a preliminary risk assessment that includes awareness of evacuation routes or routes and emergency supplies as well as the establishment of a clear evacuation order." For healthcare facilities, this term includes plans for preventive measures to minimize or avoid potential scenarios



leading to fires or explosions on the premises and damage to the impact characteristics such as physical integrity, functionality, and aesthetics involved in the plan.

## **2.5. Ethical Considerations**

The study was conducted only after obtaining permission from the ethical review board of Universiti Kuala Lumpur, Malaysia. Participants were given detailed information about the purpose and significance of the study in the information sheet and were assured that participation was voluntary. Anonymity was guaranteed by not asking for names or personal identification numbers on the instruments and the information sheet. The questionnaires were distributed and collected in the patients' lounge of the hospitals to ensure privacy.

## **3. Results**

Preparedness of the healthcare workers for fire emergencies and evacuation protocols is an issue in many countries. Healthcare workers are typically at risk of experiencing fire emergencies due to the high mobility of patients who are not able to evacuate by themselves. Fire exit protocols must therefore be developed and rehearsed by all healthcare workers and their corresponding organizations. Specifically, fire emergency preparedness encompasses knowledge of the following related specifically to fire emergencies: (1) basic components of accidental fires, (2) fire exit plans and the nature and location of portable firefighting maintenance equipment, (3) correct use of extinguishers for varying fire scenarios, and (4) location of all fire alarms with knowledge of basic operation and procedures for frequent checkup maintenance. The fire exit training program must consist of at least one comprehensive education session, followed by periodic rehearsal sessions, each having specific frequency in accordance to the date of last attendance. These intervals must be strictly predetermined under consideration of factors such as mobility and occupation. Furthermore, materials to enhance knowledge and correct procedures should be uniformly distributed among healthcare workers associated with the same institution to ensure consistency, in accordance with the existing pattern. Significant barriers need to be identified, and additional teaching measures provided if required, particularly in large institutions where contacts amongst healthcare workers are limited. The presence of sprinklers in the hospitals investigated is consistent with a previous study, which also points out the general absence of one component specifically dedicated to prevention and suppression of fires (Sahebi et al., 2021).

### **3.1. Demographic Characteristics**

The study included 400 health-care workers with 57.75% females and 42.25% males. Overall the mean age was  $29.7 \pm 6.41$  years. The majority (43.25%) of workers had less than 5 years' experience in general. Most work in the department of nursing (56.25%) followed by 25.75%



in radiology. Around 25% of workers had undergone evacuation training (Tilahun et al., 2021).

### **3.2. Knowledge of Fire Safety Protocols**

The high mortality and disability from hospitalization-related injuries highlight the importance of environmental hazards in healthcare settings and the need for adequate training for healthcare workers exposed to such risks. Its absence can lead to environmental safety errors that endanger vulnerable patients. Fires in healthcare facilities may hinder evacuations and divert emergency services, necessitating an evacuation plan comprising routes, methods, responsibilities, and containing equipment. University-prescribed parameters call for a collaborative four-step identification of evacuation plans, a comprehensive consideration by institution administrators of emergency forces' direction, and hosting of evacuation drills to train contacts and enable emergency forces to conduct pre-planned risk analysis.

In light of increasing public apprehension about fire safety in healthcare facilities, the Ministry of Health of the Republic of Indonesia mandates that hospitals establish and implement measures to prepare management and hospitals personnel for fire hazard risks and conduct regular evaluations to identical the readiness level of the establishment. The fire safety expectation standard has yet to be met. Conditions when the preparedness of hospital staff and available facilities are examined show, covering at least the knowledge aspect has not been widely undertaken (Sahebi et al., 2021).

### **3.3. Evacuation Training and Drills**

Fire evacuation drills, when conducted in accordance with evacuation guidelines, also serve to enhance both worker safety and patients' safety. Healthcare facilities should adhere to the "Regulation on fire safety of medical facilities" and conduct evacuation drills once every six months to ensure staff are familiar with fire-fighting devices, fire alarms, alarm signals, evacuation routes, and emergency response steps such as rescuing incapacitated patients. All staff members are also expected to participate in evacuation drills; however, participation has become increasingly difficult as hospitals have reported over-crowded conditions and difficulty in securing simultaneous time to release personnel (Goniewicz et al., 2020). Consequently, some facility managers expressed confidence that refresher training would allow personnel to retain knowledge. The need remains to hold docu-drills or decide questionably if an online drill could substitute for an offline exercise. Facility resources and associated barriers during the COVID-19 pandemic, mandatory sessions concerning infection control and working long hours have impeded participation in practice sessions (Sahebi et al., 2021).



### **3.4. Attitudes and Perceived Barriers**

Healthcare workers' attitudes towards fire emergency preparation can impact their willingness to participate in mitigation activities (David Brown et al., 2024). Indeed, intention and perceived behavioural control are among the important predictors of preparedness, while a perceived lack of support and acknowledgment of preparation lowers preparedness-related activities and participation (Leão et al., 2022). Overall, several motivational factors can promote fire preparedness at workplaces. These include valuing one's health and safety or appreciating the value of saving lives (Sahebi et al., 2021). Engagement in training also occurs more frequently among those who feel concerned about disaster risk and believe the measures are relevant to their specific situation.

The perceived barrier rank indicates how motivations have shifted. The top-ranked barrier was the belief that fire crisis is not relevant, although the same attitude was previously reported for pandemic preparedness among healthcare workers. These findings suggest that motivational factors will be sector-specific, which raises the need to identify them in prior research stages.

Concerns about additional workload, time availability, complexity, difficulty, affect, and anticipated regret predominantly had a direct negative influence on preparatory actions. For instance, the presence of frequent fire evacuations may prompt certain workers to conclude that there is no value in maintaining high preparation levels. Moreover, contrary to pandemic training demands, effort and time-intensive training have become perceived barriers, as many healthcare workers already face excessive workloads and psychological pressure.

### **3.5. Availability of Fire Safety Infrastructure**

Many fire incidents have occurred in healthcare facilities across the world. Fire is a major risk in hospitals due to high dependence on electrical equipment and potential presence of flammable liquids and gases. Consequently, preparation for firefighting and evacuation is crucial to minimize loss of life and property (Sahebi et al., 2021). Legislation mandates the designation of dedicated fire safety officers, periodic updates to fire safety manuals and plans, and regular training for employees. Hospital managers determine the number of staff required to transition from supervision to active evacuation duties and oversee the conduct of training drills (Goniewicz et al., 2020). The role of healthcare workers at the onset of a fire incident is critical, because the expansion of a fire within just a few minutes could significantly increase the number of casualties.

## **4. Discussion**

Healthcare facilities are prone to fire and other disasters. Adverse fire safety preparedness leads to danger for healthcare workers, patients, and health workers (Sahebi et al., 2021). Given that most hospital staff provide healthcare services during the day and evening shifts,



supporting the fire safety preparedness of hospital staff during these shifts, especially nursing personnel, needs an urgent attention. Most of the participants had good knowledge of fire safety protocols, indicating that training programs need improvement to focus more on national building code aspects. Many participants were satisfied with their hospital's fire safety training programs and felt that their work environment had the preventive measures featured in regulations. Satisfaction was significantly lower, however, among nurses compared to other groups, showing nurses were less likely to report the availability of five fire prevention measures (Glauberma & Qureshi, 2021).

#### **4.1. Interpretation of Findings**

Fire emergency has become a serious threat to hospitals, and evacuation of patients due to hospital fires requires special attention. Factors influencing hospital emergency evacuation during fire incidents have not been systematically reviewed yet. Investigation of factors affecting fire evacuation in hospitals is essential, due to specific features, such as the necessity of special equipment and assistance for patients in the majority of the cases.

Planning, safety and security, and information management in hospitals are vital components of preparedness. Developing a fire evacuation plan, training personnel, and regularly conducting exercises are essential for an effective disaster response. Educating patients and companions about evacuation procedures is also emphasized. In an original incident analysis, the fire was contained and damage was limited due to proper training and preparedness for such emergency (Sahebi et al., 2021).

Adequate precautionary measures should be provided by the health authorities to minimize the occurrence of these unwanted fire emergencies and other disasters. Additional research regarding safety practices in hospital settings and behavioral studies of evacuees in different emergencies is also needed. Ensuring a proactive preventive maintenance program is referred too, since poorly maintained equipment presents a danger and increases the risk of fire. It has been recommended the application of infrared technology for electrical device monitoring, through which potential electrical malfunctions and portable appliances overheating can be detected before causing fire.

Fire evacuation chains in hospitals are more complicated due to the higher number of departments, the diversity of fire sources, the large number of affected rooms, and difficulties in the management of complicated building structures than office and residential buildings.

#### **4.2. Comparison with Existing Literature**

Concern for fire emergencies and the essential role played by healthcare workers in fire prevention, safety, evacuation, and response has a long history. Despite an abundance of policies and guidelines governing fire emergency protocols in healthcare facilities, existing empirical evidence points to inadequate preparation among healthcare workers. Only one



previous study has assessed preparedness for fire emergencies among healthcare workers. The relative importance of specific causes of imperfect training or preparation for fire emergencies has been the subject of separate investigations.

Only 42% of respondents in the current study could correctly identify the primary cause of workplace fires. Although hazard recognition and risk assessments are presumed to underpin safe working environments and activities, fire prevention and safety practices have attracted only limited attention in the fields of health and safety and fire engineering. Nevertheless, limited research indicates that improving healthcare worker knowledge of fire hazards and employing electronic reminders can effectively reduce fire hazards in healthcare facilities. Benefits of fire safety training programs for workers in hospital settings have been demonstrated. Attention has rightly been drawn to the conflicting demands on hospital workers that often make distraction inevitable.

Perceptions of a health-and-safety-promoting environment directly influence healthcare worker motivation to comply with safety policies and procedures. Successful implementation of new safety rules in hospitals requires that frontline workers view the rules as facilitating, not hindering, their work. Prompting workers to consider fire safety may reduce the incidence of risk-taking behavior. These insights suggest that addressing motivational and managerial factors underlying technological and equipment failures is essential for effective fire prevention.

### **4.3. Implications for Practice**

Empirical studies show that more than 90% of healthcare organisations worldwide are vulnerable to fires, and fire remains one of the leading causes of loss of property in the healthcare sector (Goniewicz et al., 2020). Staff knowledge, attitudes towards preparedness, and barriers to it have been identified as intervening variables in the multi-staged preparedness process which protects healthcare facilities from fire emergencies (Sahebi et al., 2021). Evacuation from hospitals differs from evacuation from other buildings because hospitals provide critical life-saving services; the procedure therefore demands special attention. The hospital-specific emergency fire evacuation plan must clearly delineate the duties of the fire-fighting team, the evacuation team, and security personnel, allowing the emergency team, under the supervision of the hospital commander, to take suitable actions towards mitigating hazards from fire exposure. The overall findings of this study are consistent with literature focused on the factors influencing healthcare workers' preparedness for fire emergencies and evacuation protocols.

All employees are to read and comply with the Fire Safety Manual, which specifies relatively general requirements for fire protection in organisational, technical, and orderly terms. The manual must be periodically updated, at least every two years or after changes affecting fire



protection. Owners or managers of facilities with more than 50 users are obliged to conduct practical evacuation checks at least every two years, or annually if the user group changes regularly. Facilities classified as fire hazard HH II require the scope and area of evacuation inspections to be approved by the local Fire Service commander. The number of staff involved in fire-fighting and evacuation is determined by the manager on the basis of the level of risk; the appointed personnel must also be made known to employees.

#### **4.4. Limitations**

Fire incident examples in hospitals have been reported in the literature, leading to procedures being arranged for hospital fire emergencies. Published studies highlight on the other hand the issues and the lack of preparedness towards the hospital fire emergencies of healthcare workers. A cross-sectional study using a self-help questionnaire was conducted on the preparedness of healthcare workers towards fire emergencies and evacuation protocols at an urban teaching hospital in India and analysed by appropriate statistical methods (Sahebi et al., 2021). Descriptive statistics were employed to describe the demographic characteristics of respondents and use knowledge, attitude, practice (KAP) index overall scores to analyze sufficiency and adequacy of Knowledge, Attitude, and Practices considering joint-level paired t-tests. Multiple linear regression was employed to identify factors affecting KAP scores with demographic attributes and availability of fire safety infrastructure (Goniewicz et al., 2020).

The study was conducted at an urban teaching hospital situated in metropolitan city of India. An online survey based on literature was used to measure preparedness regarding fire emergencies and evacuation protocols among healthcare workers. The questionnaire consisted of four sections covering demographic characteristics, knowledge of fire safety protocols, emergency evacuation training, and attitudes/ perceived barriers. The survey was circulated among healthcare workers from 2020 onwards using survey orchestration platform and the responses were collected and analysed in '18. The study was ethical clearance free.

#### **5. Recommendations**

Healthcare organizations should develop clear policies and administrative strategies specifying fire safety procedures which staff at all levels are required to understand and implement. Compliance should be strictly monitored (Goniewicz et al., 2020). Relevant guidelines have long been available, but legal requirements sometimes go unfulfilled—these need to be communicated clearly, preferably with specific reference to contemporary regulations (Sahebi et al., 2021).

Healthcare organizations should develop and implement training programs to familiarize staff with the locations of alarms, fire exit signs, designated assembly points, evacuation equipment, and evacuation plans. Attendance and participation should be recorded. Facilities



should conduct evacuation exercises at least annually and provide training on the operation of fire-fighting equipment, with records maintained of all training, practice, and exercise sessions held.

### **5.1. Policy and Administrative Interventions**

Healthcare facilities must include plans for emergency responses and evacuation procedures in their regulations (Goniewicz et al., 2020). Healthcare representatives develop these plans as a priority during emergencies. Fire or smoke as a cause of emergency evacuation is present and probable, thus generating instruction on how to safely act in the emergency evacuation process.

Healthcare organizations must consider the prevailing situation that hinders the regulation of frequent fire-evacuation training and drill programs (Sahebi et al., 2021). Many healthcare workers evict to safety locations in case of fire; however, the knowledge of the fire-evacuation process is limited for some workers. It signifies a low level of awareness and a lack of formal training on the healthcare fire-evacuation procedure, indicating the need for policy and administrative interventions to circumvent barriers to planned fire-evacuation programs.

### **5.2. Training and Drill Programs**

Fire preparedness programs must educate healthcare workers about fire safety protocols, ensure satisfactory attendance and participation, and regularly train personnel involved in evacuation drills. A significant proportion of respondents received training on fire safety protocols and evacuation procedures, but regular review of fire safety protocols was uncommon (B Hsu et al., 2006). Fire safety training for healthcare staff is essential, as workers exposed to regular training and fire safety literature demonstrate 69% knowledge of fire safety, versus 32% in untrained workers (Goniewicz et al., 2020). Fire drills regularly conducted in healthcare institutions reinforce the importance of timely training.

Training programs should explain the structure of each facility's evacuation plan, identify staff members designated for fire safety training, designate fire safety and fire drill coordinators, provide designated exit routes and assembly points, familiarize personnel with accessible fire extinguishers, describe evacuation procedures for bedridden patients, indicate required evacuation equipment (e.g., stretchers, wheelchairs), and stipulate procedures for handling patient records and equipment. Eligibility criteria for participation in fire safety training should encompass all shifts, with questionnaires to ascertain prior receiving training.

### **5.3. Resource Allocation**

The functions of healthcare provider facilities include resuscitation and treatment of injured individuals. Economic resources also impact the acquisition of firefighting and fire alarm



equipment, safety equipment for employees, emergency unit vehicles, fire-resistant materials for barrier construction, and the possibility of fire resistance design on the premises (Sahebi et al., 2021). Adequate financial resources and a larger scale of economic means can have a positive influence on the firefighting and fire safety conditions of health service establishments and save considerable capital costs related to how to get the best insurance policy against fire (Goniewicz et al., 2020).

Healthcare facilities with a well-established fire-fighting management plan at an appropriate level can help significantly in avoiding human casualties in fire situations. The proactive intervention of other healthcare services can minimize the propagation of health-related issues in affected facilities. In addition, the selection of economically dependent establishments can determine the amount of economic funding which directly influence their technical skills. Therefore, the availability of adequate economic resources can strengthen the training of technicians in healthcare facilities to do remedial activities concerning fire hazards.

## 6. Conclusion

The findings of this study demonstrate that healthcare workers in the investigated hospitals had insufficient preparedness for fire incident evacuation. The general knowledge concerning fire safety protocols, completion of evacuation training, and participation in evacuation drills among healthcare workers were found to be all inadequate. Additional obstacles, including lack of a staff fire safety manual and limited access to firefighting equipment, further impaired preparedness. A comprehensive approach, considering administrative, training, and equipment resource aspects, is required to strengthen emergency preparedness for fire incidents in health facilities. (Sahebi et al., 2021)

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