



## A Survey of Staff Preparedness in Tehran Universities of Medical Sciences Libraries Towards Fire

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### ABSTRACT

**Background:** Staff awareness of fire safety immensely minimize the damage of the disaster. The purpose of this study was to determine the level of awareness and preparedness of fire emergency among the libraries staff of Tehran Universities of Medical Sciences in 2019.

**Methods:** In this survey study, the statistical population of the study consisted of 138 staff working in the libraries of Tehran Universities of Medical Sciences. A researcher-made questionnaire with closed questions was used to collect the required data. Using Cronbach's alpha formula, the reliability of the questionnaire was estimated to be 0.88. The validity of the questionnaire was also confirmed by the statistical experts. SPSS (version 23) was used to analyze the collected data.

**Results:** Results obtained from the analyses of the questionnaire showed that majority of the respondents were moderately aware of fire safety rules in libraries (3.1). In addition, the analysis of variance ( $P = 0.41$ ) revealed no statistically significant difference among the libraries staff in terms of awareness and preparedness level towards fire.

**Conclusion:** Lack of library staff training in fire safety rules, make them ill-prepared during the disaster. Therefore, in order to make the staff alert, disaster preparedness planning is highly needed which requires more attention of the relevant officials.

## 1. Introduction

Fire incidents are unpredictable and often involve heavy financial losses and casualties. The International Association of Firefighters and Rescue Services (CTIF) in its 21st report,

which is published by the Fire Statistics Data Center in 2016, stated that 10 countries including Iran, Japan, Canada, the Netherlands, Indonesia, Turkey, South Africa, Malaysia, Ukraine, and Spain experienced nearly 20000-100000 fires per year in the period 2010- 2014 [1].



Academic libraries are the center of scientific and cultural activities in a society; therefore, they are considered as the beating heart of a university [2].

Libraries are the credit to a university and support education and research programs in the community. Furthermore, students can access to a wide variety of resources and the, numerous works of researchers, professors, and specialists [3]. It is crucial for libraries to follow safety rules as well as become prepared to prevent accidents and irreparable damages. Therefore, staff awareness level about disasters and fire safety rules plays a vital role in the disaster prevention. Basically, fire is considered a major threat to libraries. Throughout the history, several libraries including the Library of Alexandria, the Library of Bukhara, the Great Library of Rome, the Great Library of Sahib Ibn Abad, the Library of Baghdad, Library of Moscow, Library of Congress, Library of the University of Strasbourg, Central Library of Novich in the United Kingdom, National Library of Iraq, and the University Library of Russia, the Central Library of Tehran University, the Central Library of Baluchistan University, the Library of Loghman hospital, the Library of the Faculty of Law of Tehran University, and the Library of the Faculty of Literature and Humanities of Isfahan University have suffered irreparable damages due to negligence in fire safety rules [4, 5, 6]. Moreover, the fire ravaged 2,000 square meters of Russia's largest university library with one million copies of history books in 2015. According to the investigation, the cause of the accident was the connection of the power wires [5].

Considering all the standards and safety rules in a building alongside the appropriate safety equipment, the occurrence of fire is not impossible. In this regard, human factors are crucial and preparation for fires will minimize the impact of damages. Awareness and preparedness towards fire is provided by adequate training and any shortcomings in this regard would be put the libraries in danger. The World Health Organization (WHO) has stated that one of the most important goals of any organization is to educate and empower people towards various disasters [7]. Therefore, if people are not trained on how to use fire-fighting equipment, despite the fact that the building contains efficient firefighting equipment, it will not help to extinguish the fire. Generally, the importance and necessity of emergency preparedness is emphasized after a difficult experience, while a comprehensive disaster preparedness program can prevent, eliminate or decrease the hazards. The purpose of this study was to investigate the level of library staff awareness and preparedness of Tehran Universities of Medical Sciences towards fire in 2019.

## 2. Materials and Methods

Survey research method was applied for the study to measure the staff level of preparedness against disaster management. The statistical population of the study includes

138 employees (excluding service personnel) of the libraries of the medical universities in Tehran, including TUMS, Iran University of medical science, Shahid Beheshti University of Medical Sciences AJA University of Medical Sciences, University of Social Welfare and Rehabilitation Sciences, Baqiyatallah University of Medical Sciences, and Shahed University. Research center libraries, research institutes, and hospital libraries were not part of the research. Due to security issues, the library of the Schools of Dentistry, nursing, aerospace, and subaquatic medicine of AJA University of Medical Sciences were removed from the study. Moreover, Tarbiat Modares University, Iran University of Medical Sciences School of Advanced Technologies in Medicine, Shahid Beheshti University of Medical Sciences School of health and environmental safety, Medical Sciences and Central Library of Tehran University of Medical Sciences were also excluded from the study due to the lack of independent library.

Since the limited target population of the study, all the members of the study were examined and sampling was not performed. The data collection instrument used in the study was a 26-item researcher-made questionnaire with closed questions using a five-point Likert scale. The validity of the questionnaire was confirmed by experts in the field of safety, firefighting and librarianship; the reliability of the questionnaire was estimated 0.88 using Cronbach's alpha formula, which indicates the high reliability. The scale was rated on a five-point Likert type scale ranging from 5 (high) to 1 (low). The questionnaires were distributed to 138 employees of the studied libraries and those who were absent were asked to complete the online questionnaire. Data analysis was performed in SPSS (version 23), and the obtained results were presented in statistical tables and graphs. Due to qualitative variables, descriptive statistical indicators such as mean and standard deviation were used to analyze the data.

According to the findings of Table 1, the studied universities are not at the same level in terms of number of studied libraries and staff. Iran University of Medical Sciences with % 32.6 and Army University of Medical Sciences (AJA) with % 1.4 include the highest and the lowest population statistics respectively. In order to compare the target population more accurately and considering the heterogeneous frequency distribution of libraries in the studied universities, the data related to the staff of Baqiyatallah University of Medical Sciences, University of Social Welfare and Rehabilitation Sciences, Shahed, and AJA University of Medical Sciences are in a group called "Other Group" and are compared with Tehran Universities of Medical Sciences in, Iran University of Medical Sciences, and Shahid Beheshti University of Medical Sciences. Table 2 shows the frequency distribution of the statistical population of the research and the rate of completing the questionnaires in the studied libraries. Furthermore, out of the 138 staff members, 121 ones (87.7%) completed the questionnaire.

**Table 1:** Frequency distribution of statistical population in the studied libraries by university and in order of frequency

University	Libraries of the studied universities	Number of employees of the studied universities
Iran University of Medical Sciences	Public Health, Nursing and Midwifery, Medical Sciences, Iranian Traditional Medicine, Paramedical, Rehabilitation Sciences, Behavioral Sciences and Mental Health, Behavioral Sciences and Mental Health, central Library.	(%32.6) 45
Tehran University of Medical Sciences	Public Health, Nursing and Midwifery, Medical Sciences, Paramedical, Rehabilitation Sciences, Pharmacy, Dentistry, Iranian Traditional Medicine, Nutrition and dietetics, New medical technologies, virtual.	(%30.4)42
Shahid Beheshti University of Medical Sciences	Public Health, Nursing and Midwifery, Paramedical, Pharmacy, Dentistry, Iranian Traditional Medicine, Nutrition sciences and food industry, Rehabilitation Sciences, central Library.	(%25.4)35
Baqiyatallah University of Medical Sciences	Medical Sciences, central Library	(%4.3)6
Social Welfare and Rehabilitation Sciences	central Library	(%3.6)5
Shahed University	Nursing and Midwifery, Medical Sciences, Dentistry	(2/2%)3
Army University of the Islamic Republic of Iran (AJA)	Public Health, Nursing and Midwifery, Medical Sciences, Iranian Traditional Medicine, Paramedical, Rehabilitation Sciences, Behavioral Sciences and Mental Health, Behavioral Sciences and Mental Health, central Library.	(%1.4)2
<b>Total</b>	<b>(100%)138</b>	

**Table 2:** Frequency distribution of the statistical population and the rate of completing the questionnaires in the studied libraries in Tehran universities

University name	Number of library staff (person and percentage)	Number of completed questionnaires (number and percentage)
Iran university of medical sciences	45 (%32/6)	39 (%28/3)
Tehran University of Medical Sciences	42 (%30/4)	36 (%26/1)
Shahid Beheshti university of Medical Sciences	35 (%25/5)	33 (%24)
Other group	16 (%11/5)	13 (%9/4)
<b>Total</b>	<b>138 (%100)</b>	<b>121 (%87/7)</b>

### 3. Results and Discussion

Due to the importance of staff awareness of fire safety rules in the workplace, the level of their preparedness towards fire was investigated in the library of Tehran University of Medical Sciences. According to the findings of this study, out of the 138 staff members, 121 ones (87.7%) answered the questionnaire. Figure 1 indicates that majority of the respondents report the necessity of worn wiring in the library to the relevant official (4.6) which implies the awareness of the staff towards fire. Moreover, the findings also showed that other respondents (4.5) report any damage and wear and tear on places, equipment, facilities, conditions and dangerous practices. In addition, respondents with an average of 4.4 always report malfunction of gas appliances to the relevant authorities. The lowest average was related to experiencing fire in real conditions (1.3).

Familiarity with the structure of the building makes the staff more aware of fire safety issues, and lack of it reduces

the safety factor of a library. The level of staff awareness about the library building structure with an average of 4.3 was in good condition. Furthermore, majority of respondents were aware of the danger of using elevators during a fire (4.3).

Based on the findings of this study, the respondents were moderately aware of the locations of manual extinguishers and how to use them (3.7) and (2.7). However, majority of staff were slightly aware of the importance of training given to them to deal with fire (2.7).



**Figure 1:** Library staff awareness level about fire

**Table 3:** Awareness comparison of the library staff of the studied universities

Library	Average	Standard deviation	Result of analysis of variance
Tehran Medical Sciences	73.6	14.4	
Shahid Beheshti Medical Sciences	74.5	17.2	$P=0.41$
Iranian Medical Sciences	70.5	15.3	$F=0.97$
Other	78.5	17.6	

In addition, their level of training dealing with fire, with an average of 2.2 was low which indicates that the relevant authorities should pay more attention to this issue. Furthermore, a small number of staff were aware of the location of fire extinguishers (2.4) and manual extinguishers (3.7) in the libraries. Therefore, it indicates that the staff pay less attention to fire safety which leads to spreading to other areas in the workplace.

The findings also showed lack of familiarity with the existence of emergency exits among the staff (2.8). Additionally, minority of library staff believed that the security situation of the library building against fire was good (2.8). Moreover, the average of fire-fighting maneuvers in the libraries was also estimated 2.2. Overall, the findings of the present study indicated that majority of the library staff are not well-prepared towards fire incidents (3.1).

Moreover, as indicated in Table 3, according to the results of analysis of variance ( $P=0.41$ ), no statistically significant difference was observed regarding the awareness and preparedness of library staff towards fire among different universities. Thus the staff of the libraries of the studied universities are in almost the same situation in terms of awareness and readiness.

The research findings indicated low level of training of library staff in fire which is consistent with the results of 8. Kiyani Khozestani and Keikha (2015). Their findings showed that 90% of library staff did not receive adequate training on firefighting [8]. Similarly, the findings of Senyah and Lamprey (2011), research on safety and security conditions of individuals in the library of Ghavam Nekromeh University of Science and Technology in Kumasi, Ghana, are also consistent with the present study. Their research findings showed that 88% of the respondents believe that the amount of fire safety training of employees is insufficient [9]. Furthermore, our findings are consistent with a similar research by Makanjuola *et al.* (2009) the about investigating the safety level of public buildings in western Nigeria and the level of fire safety awareness of their residents. Their findings indicated that residents are unaware of the availability, operation, use of safety equipment. The findings also revealed that the building occupants' training in safety and first aid during fire and evacuation procedures is low [10]. In the same way, the findings of Choji's (2014) study on crisis management in Plateau university libraries, are in line with this study. His findings show that library staff did not have necessary education in disaster management [11]. Also, the findings of the present study are in contradiction with the findings of Eskandarian and Eftekhari Jaliseh (2015) about the security of the central library of Rahyar Educational

Complex against earthquakes and fires. Their findings showed that in order to minimize the potential damage caused by accidents, fire-fighting training should be provided to the librarians under the study [12]. It also contradicts with the findings of Shokri's and Bozorgi's (2012) study, that examined the problems of preservation, maintenance restoration of paper materials in Iranian deposit libraries. Their findings also showed that 60% of libraries (3 libraries) have received the necessary fire-fighting training [13]. Similarly the findings of Grace Iyabo *et al.* (2017) about assessing the staff preparedness of the University of Joss Library towards fire, also contradict with the present study. Their findings showed that 65% (73 people) of the respondents were aware of using fire-fighting equipment [14].

In addition, the findings of the present study showed that library staff are moderately aware of the location of manual extinguishers. In addition, they barely know how to use manual extinguishers. The findings are in line with the results of Mirhoseini and Mirakbari (2009), who studied the fire safety situation in the libraries of 8th district of Islamic Azad University of Iran. Their findings showed that 65% of library users are not aware of the location of manual extinguisher capsules and knowing how to use manual extinguishers (75%) which indicates a lack of training in this regard [15]. Olanrewaju *et al.* (2012) also investigated the causes of disaster and how to prevent it, and determine the preparedness of the staff at the Ilorin State Public Library. Their findings showed that staff did not receive adequate training on how to use fire extinguishers in emergencies, which is consistent with the results of the present study [16]. On the other hand, the results of Grace Iyabo *et al.* (2017) study showed that 65% of the respondents were aware about using fire-fighting equipment and 66% of the respondents had a relative awareness of the location of fire-fighting equipment in the library which is in contrast to the findings of the present study [14].

The findings of the present study indicate that low level of familiarity of staff with the existence of emergency exit in the library which supports the findings of a work by Mirhoseini and Mirakbari (2009). They found that almost 72% of library users are not fully aware with how to exit from fire [15]. The results of this study showed that the rate of fire-fighting maneuvers and drills in libraries is low (2.2). This is in line with the findings of a related work by Olanrewaju *et al.* (2012) which revealed that emergency preparedness maneuvers have not been held in the library so far [16].

Moreover, based on the findings of this study, it was found that only a small number of library staff in the study believed

That the safety of their library building is appropriate during fire. This findings support the findings of Grace Iyabo *et al.* (2017) [14]. Senyah and Lamptey (2011) [9]. Library staff believed that the amount of training they received to deal with fires was low, which was in line with the findings of Senyah and Lamptey (2011). Their findings also showed that 88% of respondents believed that security issues in this university have not been taken into consideration and the amount of staff training in this field is insufficient [9]. One of the limitations of this study is that the questionnaire was not completed by a part of the study population for security reasons.

#### 4. Conclusion

The results of this study indicate that in general, majority of library staff under the study appear to be unaware towards fire and they have not been given sufficient training to deal with fire. Therefore, there is need for the library staff to become fully aware of safety rules and equipment through proper training courses in order to improve safety rules against fire. It is hoped that based on the findings, senior managers, relevant experts, and more importantly, technical experts of the studied libraries, take preventive measures against fires to save libraries, human lives, and a wide variety of resources, ranging from books to the works of researchers and professors.

#### Authors' Contributions

F.D.N., and S.J.GH.M., created the concept and design of the work; S.J.Gh.M., and N.R.Gh., supervised the project; F.D.N., and S.E., collected the data. Both F.D.N., and M.H.A.R., contributed to the final version of the manuscript. All the authors approved the final version of the manuscript.

#### Conflicts of Interest

The Authors declare that there is no conflict of interests.

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