



# Preparedness, Awareness, and Performance of Iranian Health Workers Regarding Disasters Management: A Systematic Review

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## Abstract

**Background** Disasters are unpredictable events that exert devastating effects on people, properties, and the environment. Iran is a disaster-prone country where numerous deaths and injuries happen annually due to disastrous events. Preparedness, awareness, and performance of health workers are important factors for service providers in disasters.

**Objectives:** The present study aimed to assess the preparedness, awareness, and performance of Iranian nurses as a major part of the treatment team during disasters.

**Methods** This systematic study was carried out based on the articles published from 1989-2019 on preparedness, awareness, and performance of Iranian nurses during disasters. In total, 14 databases and 560 articles were reviewed. The databases included Web of Science, Cochrane Library, PubMed, CINAHL, Google Scholar, Ovid, Science Direct, WILEY, Scopus, Pro-Quest, Medline, Elsevier, Magiran, and SID.

**Results:** After analyzing the titles, abstracts, and manuscripts, 11 papers were selected for the final analysis. They included 5 interventional studies and 6 descriptive investigations. The results of this study pointed to the poor to moderate level of nurses' preparedness for disaster response in hospitals in Iran.

**Conclusion:** As evidenced by the obtained results, nurses had moderate to low levels of knowledge, preparedness, and competence in nursing practice concerning disasters management. Due to inappropriate levels of nurses' awareness and preparedness during disasters, health system managers should use appropriate programs and measures to improve them.

**Keywords:** Awareness, Disasters, Nurse, Preparedness

## 1. Background

Disasters, whether natural or man-made, disrupt people's routine life and processes; consequently, the existing resources cannot efficiently fulfill the population's needs and demands. They also decrease the capability of society in fulfilling the demands of health seekers (1). Natural disasters, such as floods, earthquakes, and hurricanes, negatively affect human societies (2, 3). Based on the reports released by World Health Organization in 2010, around 81 important disasters had occurred, leading to 160 thousand deaths, 170 thousand injuries, and 44 million cases with different sorts of problems (4).

Iran is one of the top ten countries with high vulnerability to natural disasters. Based on statistical figures, out of 43 natural disasters in the world, 34 have so far happened in Iran (5). Following disasters, mortality and health care demands increase suddenly and uncontrollably so that people rush to health centers and hospitals (6). According to the report by the Federation of Red Cross and Red Crescent International societies, disasters affected the life of 170 million people around the world and claimed the

lives of many individuals in 2002 (7). In Iran, the disasters have killed 2,689 people and imposed an economic burden of 737,058 dollars in the three recent decades (8).

Efficient preparation of health staff exerts significant effects on the reduction of the consequences caused by disasters and unexpected incidences (9). Therefore, it is of utmost importance to assess the preparation, awareness, and performance of health workers, especially nurses (10). Since Iran is one of the top ten countries in the world exposed to natural disasters (the fourth country in Asia and the sixth in the world), the level of preparation, awareness, and performance of nurses assumes vital importance. In addition, the collection of sufficient information obtained by the studies conducted in this field is necessary to identify the strengths and weaknesses of these studies. This can contribute to the provision of some suggestions to conduct more comprehensive and practical research. Consequently, due to the importance of this subject and since there are few systematic studies in this field, the researchers designed and carried out the current investigation.

## 2. Objectives

The present study aimed to assess the preparedness, awareness, and performance of Iranian nurses as a major part of the treatment team during disasters.

## 3. Methods

This study was conducted based on accessible literature. The search method was in accordance with Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) introduction as follows: the selection of subject, inclusion criteria, and search strategy, as well as the selection of studies, article assessment, data extraction, analysis, and conclusion (11). All quantitative and qualitative articles published from 1989-2019 on preparation, awareness, and performance of Iranian nurses during disasters were reviewed. The research sought to find out the level of Iranian nurses' preparation, awareness, and performance in the face of disasters.

### 3.1. Inclusion criteria

The selected articles had to be accessible in full texts and be written in English or Persian languages. The keywords of the research existed in title, abstract, and keywords. The articles had to be in line with the research question; therefore, the articles assessed by peer check were selected.

### 3.2. Exclusion Criteria

The articles with variables unrelated to the research question were excluded.

### 3.3. Search Strategy

A query was conducted on databases, including Web of Science, Cochrane Library, PubMed, CINAHL, Google Scholar, Ovid, Science Direct, WILEY, Scopus, ProQuest, Medline, Elsevier, Magiran, and SID. The keywords were combined using (AND) and (OR) operators. Moreover, the MeSH keywords in PubMed were used to find the words related to the research. The following keywords were utilized in combination and separately: Disasters, Preparedness, Disaster preparedness of health workers in Iran, Disaster Management, Health workers, Knowledge and Performance of health workers in Disasters, Disaster Nursing Education Program, Response to Probable Natural Disasters, Nurse, and Hospital Preparedness to Deal with Disasters.

### 3.4. Data Extraction

Firstly, a list of titles and abstracts was provided by two independent researchers; subsequently, the articles with repeated titles were removed. The abstracts of articles were reviewed in order to select suitable articles. Unrelated articles were removed in this stage, and the complete manuscripts of the articles were assessed in detail. Finally, those articles related to the aim of the study were selected to be included in this systematic review. The PRISMA guideline was used to assess the articles.

The citing and publishing bias was considered, and those articles with high citation were reviewed cautiously. All the mentioned stages were performed twice. The necessary information was gathered based on summarization and collective forms. A summarization form was filled for every article, as displayed in Table 1. Two researchers analyzed the

**Table 1.** Results of the selected articles

N	Authors/ title	year	Study design	Sample size	City	Findings
1	Najafi Ghezeljeh T, et al. "Effect of education using the virtual social network on the knowledge and attitude of emergency nurses of disaster"	2019	Quasi-experiment	60 nurses	Tehran	In the intervention group, knowledge scores significantly increased in the post-test, compared to those in the pre-test.
2	Yousefi S, et al. "Effect of the Implementation of the National Program for Hospital Preparedness on the Readiness of Nurses Under Simulated Conditions of Incidents and Disasters"	2016	Quasi-experimental	50 nurses	Tehran	The average scores of knowledge, attitude, and performance in the intervention group were significantly higher than those obtained in the control group
3	Soltani T, et al. "Knowledge, Attitude, and Performance of Nurses' Crisis Management in Natural Disasters in Yazd"	2016	Cross-sectional	220 nurses	Yazd	The nurses' average level of knowledge, the mean grade scores, and their function in crisis management were not suitable.
4	Rostampour. MJ, et al. "Effect of triage education by pre-advance-organizer model on the knowledge of staff disaster team nurses"	2015	Quasi-experimental	50 nurses	Tehran	The independent T-test showed a difference between the two groups, which was statistically significant.
5	Zarea K, et al. "Disaster nursing in Iran: challenges and opportunities"	2014	Integrative narrative analysis	32articles	-	The most significant factors were the lack of identification of those who were educated nurses to serve in critical conditions, defects in the university's educational systems, and lack of in-service training for nurses with regard to disasters.

**Table 1.** Continued

6	Hoseini A, et al. "Awareness of radiological accidents and how to deal with It"	2014	Descriptive cross-sectional	124 nurses	Isfahan	Awareness of 60 percent of participants in this regard was low.
7	Tabatabaei Far S, et al. "Effect of education on nurses' awareness of disaster management"	2014	Quasi-experimental	All nurses were employed at the Oil Great Hospital of Ahwaz	Ahwaz	The level of nurses' awareness of disaster management and their approach to this issue significantly differed after the educational intervention.
8	Bahrami M, et al. "Investigation of competencies of nurses in disaster response by utilizing objective structured clinical examination"	2014	Descriptive study	40 emergency nurses	Isfahan	Competencies of nurses in performing triage, life support, and basic clinical skills were undesirable.
9	Imani E, et al. Nurses' knowledge about crisis management and its related factors	2011	Descriptive cross-sectional	250 nurses	Bandar Abbas	The awareness levels of 16.6%, 52.3%, and 27.9% of participants were high, moderate, and low, respectively.
10	Ghanbari V. et al. "Effect of a disaster nursing education program on nurses' preparedness for responding to probable natural disasters"	2011	quasi-experimental,	113 nurses	Tehran	The mean scores of knowledge, attitude, performance, and total preparedness improved in the pre-test and follow up measurements, which indicated a statistically significant difference.
11	Joukar F. et al. "Nurses educational situation related to facing the disasters"	2007	Descriptive-analytical	50 nurses	Bandar Anzali	Equipment, education, pre-disaster management, and post-disaster management were the most important factors for the management of disasters.

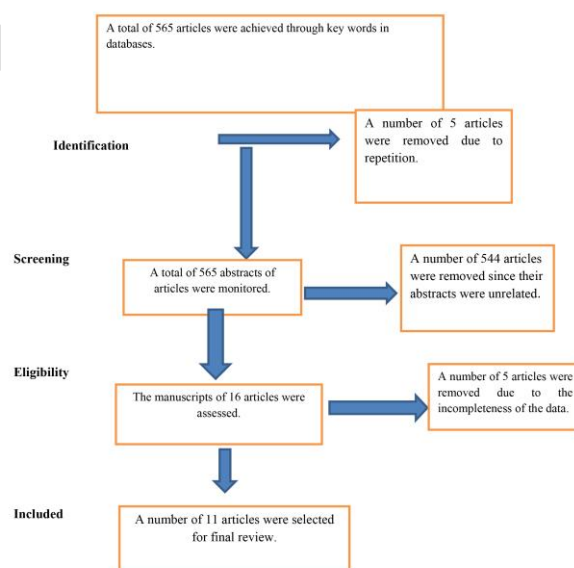
obtained forms after reviewing the articles. Nonetheless, the researchers of the present study presented their viewpoints regarding the contradictory points in order to reach a common goal. These forms are presented in Words software (version 2016).

#### 4. Results

In the first step, 565 articles were found in databases. After screening the titles, 5 repeated articles were removed. The rest of the articles were reviewed, and 544 papers were removed since they were unrelated to the main subject based on their abstracts. Thereafter, 16 articles were assessed again, and 5 more were removed due to the incompleteness of the manuscripts. Finally, 11 articles were selected for the final review. They included 5 interventional and 6 descriptive investigations performed in Tehran, Isfahan, Ahwaz, Yazd, Bandarabbas, and Bandaranzali. These regions are among the high-risk areas and their local officials and managers have been inclined to hold programs for nurses' preparation and awareness in disasters. The results of the present study demonstrated that nurses had moderate to low levels of knowledge, preparedness, and competence in nursing practice concerning disasters management. Due to inappropriate levels of nurses' awareness and preparedness during disasters, health system managers should use appropriate programs and measures to improve them.

Diagram 1 includes the flow chart of this systematic review; moreover, the results of the

selected articles are presented in Table 1.

**Diagram 1.** PRISMA process for screening the articles

#### 5. Discussion

This systematic study aimed to assess the preparedness and awareness of Iranian nurses during disasters. After screening all the selected articles, 11 studies from Tehran, Isfahan, Ahwaz, Yazd, Bandarabbas, and Bandaranzali, were reviewed. These regions are among the high-risk areas and their local officials and managers have been inclined

to hold programs for nurses' preparation and awareness in disasters. Nonetheless, nurses' preparation in the noted cities was not appropriate. It is noteworthy that the majority of studies were carried out in Tehran. Most studies focused on conducting educational, quantitative, as well as pre-test and post-test interventions; however, the methodologies and assessment methods were different. This is mostly due to the relative easiness of conducting quantitative studies rather than qualitative ones. Different investigations have indicated that nurses are the main healthcare staff in response to disasters. Nevertheless, these studies revealed that nurses were not prepared efficiently. An alternative for the improvement of health workers' knowledge and awareness is the implementation of effective educational interventions through virtual networks (12-15).

The studies conducted in Iran have pointed out that holding educational interventions and involving the health workers in programs related to disasters contributed to their preparation (16). The results of a study by Seyedin et al. suggested that the nurses working in Tehran hospitals did not have adequate knowledge of disasters, and Ghanbari et al. acknowledged this result (17, 18). Iranian nurses are required to increase their preparation for disasters since they perform a critical role in health promotion during disasters (17,19). In the same context, Borhannejad et al. reported that the implementation of education-based interventions can promote nurses' scores during preparation (20). Qureshi et al. also revealed that holding educational interventions could significantly improve nurses' knowledge and attitudes (21).

Iranian nurses should be trained in all four disasters management stages, including mitigation, preparation, response, and recovery since they have to be effective in every stage. They also need to be informed about the hospital crisis management programs, including instant alarm system, accident operating system, risk management, and the protocols of patient treatment produced by chemical, biological, radiological, nuclear (CBRN) protocols, different types of disasters and practices, method of putting on personal protection gears, risk communications, different sorts of triages, decontamination, and mental support in disasters.

They should acquire sufficient knowledge about critical thinking and decision-making in disasters so that they can apply them in some measures, such as triage, management, and treatment of casualties. These principles of nursing practice in disasters can increase nurses' thoughtfulness and responses during disasters. Meanwhile, Iranian nurses should have adequate knowledge about common disasters happening in Iran, such as earthquakes, flooding, forest fire, drought, and biological diseases.

The findings of the present systematic study

pointed out that the preparation, awareness, and performance of Iranian nurses in disasters were insufficient and unacceptable. This insufficiency can be ascribed to the lack of practical programs related to disaster management in hospitals, lack of comprehensive and continuous educational programs, nurses' low motivation in critical conditions, and limited consideration about the role of nurses in this domain. Since Iran is a disaster-prone country, health policymakers and managers should promote the health workers' knowledge and awareness to reach the final goal of disasters management which is the reduction of mortality and injury.

Here are some suggestions for the improvement of health workers' awareness and knowledge:

1. Obligating them to participate in educational rounds
2. Holding exercises and operational maneuvers to increase the participation of nurses and physicians
3. Identifying health workers' viewpoints about management programs during disasters in hospitals and health centers
4. Holding virtual classes for nurses
5. Proving programs and educational instructions for nurses with regard to disasters
6. Increasing nurse's motivation in disasters conditions
7. As the largest health provider group, nurses play a vital role in disaster response. To empower nurses and other hospital staff to face disasters, it is recommended to standardize preparation programs using educational packages, establish hospital incident command systems, develop accreditation instructions, and exercise these standards in hospital settings.

## 6. Conclusion

Iranian nurses' awareness and knowledge of disasters are not at a desirable level, and due to the critical role they perform during disasters, there is a need to hold qualified programs to improve their awareness and knowledge, which in turn promote their disaster response and management. Health system policymakers should design regular educational programs for nurses to improve their professional qualifications in response to disasters. Interactions between nurses and health system policymakers increase nurses' accountability and attention to implement educational instructions. This can lead to nurses' efficient performance in different stages of disasters management.

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## Footnotes

**Conflicts of Interest:** The authors declare that they have no competing interests.

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