

# Current issues facing disaster nursing education in Saudi Arabia

**Duaa Brinjee**

Al Noor Hospital: Al Noor Specialist Hospital Makkah

**Abdullellah Al Thobaity** (✉ [a.thobaity@tu.edu.sa](mailto:a.thobaity@tu.edu.sa))

Taif University <https://orcid.org/0000-0002-2313-7355>

**Waleed Al Ahmari**

Taif University - Nursing Department - College of Applied Medical Sciences

**Mohammed Almalki**

Taif University Nursing Department- College of Applied Medical Sciences

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## Research article

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# Abstract

**Background:** : An important aspect of disaster preparedness for nurses is that they be ready to respond with a high level of competence. This scoping review aimed to identify current issues related to the education and training of disaster nurses in Saudi Arabia.

**Methods:** This scoping review was conducted using the Joanna Briggs Institute (JBI) methodology. The search involved several different databases in the Saudi Digital Library (SDL), including CINAHL, Science Direct, Scopus, Wiley, and the Education Resources Information Center (ERIC). The search keywords were “disaster,” “nursing,” “education,” “training,” “knowledge,” and “preparedness.” In addition, specific inclusion and exclusion criteria were applied to narrow down the search to only relevant articles.

**Results:** Several gaps in the education of disaster nurses were found in the review, which can be summarized in five different domains: insufficient simulations and drills, inadequate education programs, a lack of formal education, difficulty following guidelines, and difficulty accessing up-to-date educational resources.

**Conclusion:** It is imperative that the highlighted issues related to disaster nursing education in Saudi Arabia be addressed to further develop the educational system in this regard. Future research should aim to determine how to address these issues to enhance the performance of nurses during disaster situations.

## What Is Already Known About The Topic?

1. There is an acceptable level of disaster preparedness overall in many countries across the world but not in addressing certain disaster situations.
2. There is need for educational programs that prepare nurses to cope with disasters.
3. Some aspects of disaster nursing, such developing core competencies, have been addressed in Saudi Arabia, but more work needs to be done to develop this specialty, as it is new worldwide.

## What This Paper Adds

1. This paper integrates the most common challenges for nurses when facing disaster situations in Saudi Arabia.
2. Conducting simulation drills is an effective disaster education method; a lack of such drills is a barrier currently facing nurses in their disaster education in Saudi Arabia.
3. Insufficient educational resources and a difficulty in accessing up-to-date articles and books are also obstacles to providing high-quality disaster education.

## Background

Nurses must be ready to respond to disaster, but developing a high level of disaster preparedness takes time. One of the most important principles of disaster preparedness is education and training. When nurses have no awareness or knowledge of appropriate disaster response procedures, they deal with disasters with less confidence and are more likely to panic. Therefore, education and training are key to enhancing nurses' planning, preparedness, response, and recovery when disasters strike. Despite the fact that disaster nursing is a new specialty around the world, educational trends are visible in many countries, as there have been increasing efforts to develop core competencies related to disaster nursing, to develop the content of formal education curricula, and to identify additional education and training needs(1–5).

The relevant literature has shown that many core competencies can be enhanced through education and training. The effort to enhance the disaster education of nurses started in 2002, when the need to identify and nurture these core competencies became clear following the September 11 terrorist attacks in New York City. In response to this, scholars identified a list of core competencies which included critical thinking, understanding the difference between normal and disaster situations, triaging, and communicating with an incident command team (1, 6). Additional contributions have affirmed that nurses must complement their training with knowledge of epidemiology and infection control and must be able to deal with chemical, biological, nuclear, and radiation disasters, while adhering to the assigned safety principles(7–9).

More specifically, nurses should be able to define relevant terminology, understand the associated ethical and psychological issues, coordinate with one another, identify family needs, create a plan at the site of a disaster, and recover from a disaster (10–12). Additionally, the International Council of Nurses (ICN) has emphasized how vital it is that nurses be educated, prepared, and competent in dealing with disasters in order to assist individuals, communities, and families (2). Further, nurses must be competent in clinical work, managing surge capacity, following an activation plan, managing volunteers, decontaminating patients, and performing evacuations (4, 5). These competencies have been identified by scholars as gaps in the current knowledge and skill of nurses; as such, the related learning outcomes and curricula must be improved, with specific objectives for each of these core competencies added (4).

Based on previous contributions, there are three primary goals when seeking to improve disaster nursing education. First, disaster nursing curricula are developed according to the needs and focused on the principles of disaster management in general; however, based on the evidence summarized by Jose and Dufrene (2014), there are no standardized learning outcomes applicable worldwide (13). In other words, there is larger variation in the content and methods of delivery used in the courses. For example, while some curricula include disaster simulations and relevant technologies, this is not always the case. Second, there is a need to emphasize the importance of continuing education and training for nurses in the field. Evidence of this can be found in an empirical study conducted in Taiwan, which concluded that it is imperative to develop innovative continuing education on work sites to promote better preparedness and disaster response (14).

Third, due to the challenges facing disaster nursing education and the importance of increasing nurses' knowledge and skills to ensure that there are competent and confident when dealing with disasters, efforts have been made to develop more standardized formal education programs. For example, the Adelphi University School of Nursing (Garden City, New York) designed a master's program called Emergency Nursing and Disaster Management, worth 39 credits; similarly, the University of Pittsburgh's School of Nursing (Pittsburgh, Pennsylvania) developed a master's program known as ACNP: Trauma and Emergency Preparedness, worth 46 credits (3). Outside the United States, an example of an effort to introduce formal disaster nursing education can be found at Monash University (Melbourne, Australia), which designed a master's program called Disaster Nursing; the program aims to prepare nurses to respond to disaster by studying the different interventions related to various disaster situations.

In Saudi Arabia, there have also recently been efforts to further develop the field of disaster nursing. For example, Taif University developed a master's program for emergency and disaster nursing, worth 47 credits (15). Moreover, the core competencies of nurses in Saudi Arabia during disasters were explored and validated by a single study that involved a review of their knowledge and skills during planning, preparedness, response, and recovery, and it was found that nurses' roles in this discipline are more pervasive now than they have been in the past (16). However, wide gaps in the nurses' core competencies, especially in terms of their knowledge and skills, indicated that the education needs of the nurses require more thorough identification to ensure nurses can deal with all types of disasters effectively and efficiently.

Due to the importance of nurse education, knowing the issues facing disaster nursing education and training in particular will enable stakeholders to fill any gaps and enable nurses to respond effectively, drawing on adequate knowledge and skills and thinking critically during a disaster. Thus, combining evidence from previous research in the Saudi context related to the education and training of nurses in disaster management is highly necessary and will contribute to the further development of disaster nursing as a specialty in Saudi Arabia, in terms of education, research, and practice.

## Methods

Scoping reviews, a type of knowledge synthesis conducted by an independent researcher, follow a systematic approach and identify main concepts, theories, sources, and knowledge gaps to map evidence within a topic area. The present scoping review was conducted based on the *Joanna Briggs Institute Reviewers' Manual 2015* (17). It includes the following review steps—specified in advance and documented in the protocol of the Joanna Briggs Institute (JBI)—which will be presented in the below sub-sections: the objectives of the scoping review, along with the research question to be addressed; the inclusion and exclusion criteria; the identification of strategies; and the extraction of the findings, along with a discussion of the results.

### ***Objective and research question***

This review focused on finding the current issues and gaps related to nurse education and training in disaster management in Saudi Arabia. The research question was as follows: What are the current issues related to education and training in disaster nursing in Saudi Arabia?

### ***Inclusion and exclusion criteria***

This scoping review sought to identify the gaps in disaster education and training in Saudi Arabia. To accomplish this, existing studies were included or excluded based on the following selection criteria: the participants, study type, study method, themes of interest, and outcomes. The included studies had to be conducted in Saudi Arabia and focus on nursing staff working in emergency departments, medical and surgical units, and intensive care units. This review focused on staff perceptions of knowledge, skills, awareness, and attitudes related to disaster management. It also looked at studies that included research related to core competencies in disaster nursing, disaster preparedness, and barriers to education. The inclusion and exclusion criteria are presented in Table 1.

### ***Search strategies***

When conducting the literature search, the aim was to identify all studies associated with education and training in disaster management. This was done by searching for specific words in the titles and abstracts of articles. A search was carried to identify relevant English studies in the Saudi Digital Library (SDL), published up to the time of the review (i.e., 2019). Within the SDL, the following databases were searched: CINAHL, Science Direct, Scopus, Wiley, and the Education Resource Information Center (ERIC). The keywords used to find the related articles were as follows: “disaster,” “nursing,” “education,” “training,” “knowledge,” and “preparedness.”

### ***Study selection***

The total number of articles found in the SDL was 1,803; of these, 217 were from CINAHL, 1,292 from Science Direct, 34 from Scopus, 84 from Wiley, and 176 from ERIC. After applying the inclusion and exclusion criteria and eliminating those for which only the abstract was available, the number of articles included in the study was reduced to six (Figure 1).

### **Extraction and results**

In Table 2, the data from the included articles are presented in terms of the studies’ author(s), year of publication, methodology, and education gaps in disaster training in Saudi Arabia.

As a result of this review, four themes were most commonly extracted in relation to disaster nursing education in Saudi Arabia: (A) There is an insufficient number of disaster simulations and drills for nurses related to disaster training, and this has a significant impact on the confidence of nurses in responding to a disaster (16, 18-20). (B) Disaster nursing is not yet fully incorporated into nursing programs’ curricula, as the reviewed studies indicated that there is a lack of formal disaster education and training in nursing curricula and that more effort is needed to provide innovative training (16, 19, 21).

(C) There is inadequate disaster knowledge and skills among nurses in Saudi Arabia (16, 18, 22). Finally, (D) the lack of educational and training resources for disaster nursing identified in the articles results in difficulty in finding guidelines related to disaster management in Saudi Arabia; guidelines and protocols are also not easily accessible by staff, and it is difficult to find and access articles and textbooks related to disaster management (16, 21, 22).

## Discussion

To be competent in disaster management, nurses must possess enough knowledge and skills at all stages and phases of disaster management; they must also know how to handle different types of disasters and be able to plan for, prepare for, respond to, and recover from each type. To achieve this, a strong education system and sound programs are strongly needed. In many countries, educating and training nurses to deal with disasters has been developing, and several measures and strategies have been implemented to enhance nurses' learning and competencies. However, in Saudi Arabia—as in many countries—the occurrence rate of disasters is increasing, and although some effort has been devoted to developing the disaster nursing specialty, there is a need to summarize the existing evidence related to such education and training in order to improve the education, research, and practice in this area. As such, this review aimed to evaluate the gaps in disaster education and training among nurses in Saudi Arabia. The findings showed there are a number of areas that require improvement in relation to disaster nursing education and training in Saudi Arabia.

Education in disaster preparedness can be provided in several ways, and the literature has proven that conducting simulation drills more frequently can help improve healthcare providers' confidence and effectiveness when facing disaster. In more detail, as a training approach, drills improved the disaster preparedness knowledge and skills of participants by enhancing their understanding and ability to appropriately respond to disaster situations (23). Furthermore, engaging in mock drills was found to be useful in promoting recognition and demonstrating the true nature of catastrophic events, thus increasing participants' understanding of their roles and building competency in disaster management (20, 24). Therefore, based on the evidence that nurses in Saudi Arabia are not confident in disaster preparedness due to a lack of sufficient training and drills, more education and training—and, in particular, more drills—are essential to enhancing nurses' knowledge and skills. It is highly recommended that such training be provided to all hospital staff by means of a combination of educational programs and involvement in simulation drills (25).

Educational demands in disaster response can be met through effective teaching methods and concentrating on specific areas of concern such as core competencies and roles of nurses during the response. Current trends in disaster nursing development include providing disaster education in universities to ensure graduating nurses are more qualified and readier to handle disaster events (26, 27). However, despite the fact that attention is starting to be given to the disaster nursing specialty in Saudi Arabia and that one university has begun to teach disaster nursing as a specialty within an emergency nursing master's program, more effort from universities is highly important.

Furthermore, including mass casualty education in undergraduate programs would guarantee that all nurses have a basic level of knowledge related to mass casualties and disasters (28, 29). One study in Saudi Arabia indicated that less than 5% of survey respondents had received disaster training through formal education courses (19). This means that most newly graduated nurses are still incapable of handling disaster situations. This deficiency should be taken seriously to ensure the competence of new graduates before they start their career, and this requires increasing the prevalence of disaster preparedness training in nursing institutes (21). It is expected that this will help in preparing nurses to manage the required tasks in disaster situations. Similarly, it is clear that including mock disaster drills in nursing faculty programs would increase nursing readiness when disasters occur (30, 31). In sum, there is a huge gap in disaster nursing education and training in Saudi Arabia, and effort is required to ensure necessary curricula—both at the undergraduate and postgraduate levels of nursing education—are implemented throughout the country, along with more effort by researchers to identify educational needs for specific types of disasters.

This scoping review highlighted that the lack of knowledge and skills and the lack of confidence and competence in disaster management are significant issues among nurses in Saudi Arabia, which require the intervention of both educators and researchers. To close these gaps—which were evident throughout the selected studies in this scoping review—multiple strategies must be undertaken, including identifying why there is a lack of competency among nurses in relation to disaster preparedness, understanding how effective and intensive nursing education and training programs have been in the past, determining whether there are any ongoing continuing education programs and disaster management courses available to nurses at their workplace, and, if so, determining how frequently nurses receive such training (20).

In Australia, it was found that the reason for inadequate disaster management knowledge and skills among nurses was related to a lack of experience in responding to disaster, either real or as a drill (32). Similarly, in China, it has been recommended that in order to improve nurses' level of experience and competency—including their confidence and self-assurance when facing unexpected disasters—systematic education is essential (33). Based on this evidence, decision makers in Saudi Arabia must put in place a national strategy for developing nurses' ability to respond to all types of disasters that may occur in the country, including natural disasters, such as earthquakes and flooding; man-made disasters, such as terrorism; chemical or nuclear disasters; and other types of disasters, such as pandemics.

In addition to a national strategy, healthcare institutions themselves need to work on improving healthcare providers' access to up-to-date educational resources. This will give them healthcare providers, including nurses, the opportunity to read and benefit from the latest information and guidance about disaster management. This is a necessary step because nurses currently lack access to educational resources, including research articles, guidelines, and books, related to disasters. Although this lack of access is a problem faced in many countries, providing and maintaining such resources will help nurses enhance their competency in managing disasters (34, 35). In China, they addressed this problem by developing new guidelines for providing health care following an earthquake, as an example (35).

However, a barrier to providing access to up-to-date research is that disaster nursing is a new specialty and lacks researchers, educators, and, accordingly, relevant literature; this must be taken into consideration when conducting the strategic planning that will be necessary as a result of Saudi Vision 2030 being focused more on emergency and disaster-related health care (36–39). Thus, it is essential to establish clear guidelines to be followed by nurses in Saudi Arabia before, during, and after a disaster, in order to ensure that they can deal with disaster situations. Disaster plans, guidelines, and policies should always be clear and easily accessible for nursing staff.

## **Conclusion**

Saudi Arabia, like other countries, is not immune to disasters, and the education and training of nurses is a key aspect of disaster preparedness. The current literature related to disaster nursing was lacking a summary of the issues facing disaster nursing education and training in Saudi Arabia. Therefore, this scoping review was conducted and indicated that disaster nursing in Saudi Arabia currently lacks disaster simulations, formal education related to disaster management, and educational resources providing up-to-date research about disaster nursing. These factors have a great impact on nurses' knowledge and skills, and their absence indicates that nurses are not fully competent in dealing with disaster situations. Therefore, constructing standardized simulation and disaster drills, based various scenarios that may occur, at all phases of the disaster management process (i.e., planning, preparedness, response, and recovery) is highly recommended.

Also, developing disaster nursing curricula at both the undergraduate and postgraduate level is highly recommended to ensure that nurses are able to deal with difficult situations from the very beginning of their career. This review further confirmed that without easy access to educational resources, it is very hard for nurses to increase their preparedness; thus, it is recommended that healthcare institutions ensure the availability of the necessary educational resources to healthcare professionals. Finally, more research should be carried out in Saudi Arabia to evaluate the effectiveness of education in enhancing nurses' core competencies and to evaluate the development of the disaster nursing specialty as a whole.

## **Abbreviations**

JBI : Joanna Briggs Institute; SDL: Saudi Digital Library; CINAHL: Cumulative Index to Nursing and Allied Health Literature; ERIC: Education Resources Information Center; PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses; ICN: International Council of Nurses

## **Declarations**

### **Ethics approval and consent to participate**

Not applicable

### **Consent for publication**

Not applicable.

## **Availability of data and materials**

Ethics approval and consent to participate

## **Competing interests**

The authors declare that they have no competing interests"

## **Authors' contributions**

DB, AA, WA, MA participated in conceptualization, searching the literature, selecting and extracting the information, writing-original draft, and editing the manuscript. All authors have contributed significantly to the content and have approved the manuscript.

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## Tables

**Table 1.** Inclusion and exclusion criterion used in the literature search.

Criteria	Inclusion	Exclusion
Place of study	Saudi Arabia	All international studies
Time period	2015 to the time of the review (March of 2020)	All studies published prior to 2015
Setting	Hospitals and healthcare organizations	Nursing schools
Population and sampling	Nurses working in hospitals	Students, physicians, paramedics, and other healthcare providers
Language	English	Non-English
Study focus	Education and preparedness in disaster management	All studies not related to the study focus

**Table 2.** Extracted issues facing disaster education and training in Saudi Arabia.

Author & Date	Methods & Tools	Education Gaps
(Al Thobaity, Plummer, Innes, & Copnell, 2015)	Quantitative, non-experimental, descriptive research design; data were collected using the Disaster Preparedness Evaluation Tool (DPET)	<ul style="list-style-type: none"> <li>· Insufficient courses and drills</li> <li>· Lack of disaster education in nursing schools' curricula</li> <li>· Difficult to find guidelines and protocols</li> <li>· Difficult to access articles and textbooks related to disaster education</li> <li>· Lack of educational resources</li> </ul>
(Al Thobaity, Williams, & Plummer, 2016)	Developed a new scale and tested its validity and reliability; conducted a principal component analysis (PCA)	<ul style="list-style-type: none"> <li>· Lack of disaster education and training in nursing curricula</li> <li>· Lack of educational resources</li> <li>· Insufficient training and drills</li> <li>· Inadequate knowledge and skills in disaster management</li> <li>· Ineffective education programs for core competencies</li> <li>· Lack of guidelines for nurses' roles before, during, and after a disaster</li> </ul>
(Alshehri, 2017)	Descriptive study design; data were collected using a survey	<ul style="list-style-type: none"> <li>· Ineffective hospital-based training</li> <li>· Inadequate knowledge for disaster preparedness</li> <li>· Lack of knowledge and training for chemical, radiological, and biological disasters</li> <li>· Lack of first aid, advanced cardiac life support, infection control, and trauma care in disaster training</li> </ul>

		<ul style="list-style-type: none"> <li>· Lack of confidence in nurses due to a lack of training and insufficient drills</li> <li>· Inadequate disaster training and drills</li> <li>· Unclear formal education</li> </ul>
(Alzahrani & Kyratsis, 2017)	Cross-sectional online survey with primary data collection and non-probabilistic purposive sample; self-administered questionnaire completed by eligible participants, including a combination of structured and open-ended questions	<ul style="list-style-type: none"> <li>· Deficit in knowledge and awareness related to disaster situations</li> <li>· Insufficient disaster training courses</li> <li>· Lack of awareness of hospital disaster plan</li> <li>· Deficient knowledge related to major incidents</li> <li>· Need for clinical practice for disaster response</li> </ul>
(Nofal, Alfayyad, Khan, Alaseri, & Abo-Shaheen, 2018)	Cross-sectional study using self-administered survey	<ul style="list-style-type: none"> <li>· Need more education and training regarding disaster emergency preparedness</li> <li>· Need for disaster training for all healthcare providers</li> <li>· Need for focus on knowledge, attitude, and skills in disaster management</li> <li>· Lack of disaster simulation drills</li> <li>· Need to develop educational program for disaster preparedness</li> <li>· Need for more educational courses to be included in staff curricula</li> </ul>
(Baker, Alamri, & Aboshayqah, 2019)	Quantitative descriptive design using self-administered survey	<ul style="list-style-type: none"> <li>· Ineffective preparedness for disaster situations</li> <li>· Lack of knowledge in disaster management</li> <li>· Need for more learning sessions to increase nurses' commitment to disaster preparedness</li> </ul>

- Need for disaster curricula focusing on the promotion of preparedness, including a management plan and nurses' roles during disasters
- Need for clear hospital plan for nurses to be prepared in disaster events
- Need to develop formal consensus between nursing institutions and emergency and disaster planners

## Figures

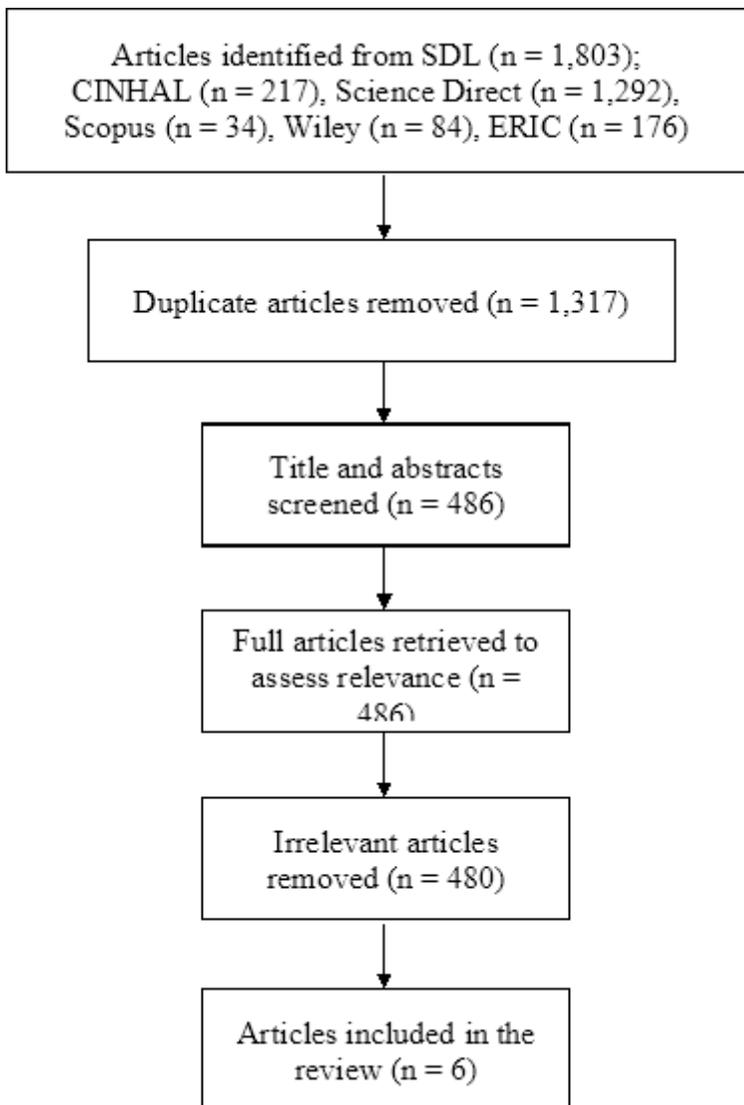


Figure 1

Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flowchart.

## Supplementary Files

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- [PRISMA ScR Fillable Checklist 10 Sept 2019.docx](#)