



# Nurses' Roles in Nursing Disaster Model: A Systematic Scoping Review

**Mohammadreza Firouzkouhi<sup>1</sup>, Mayumi Kako<sup>2</sup>, \*Abdolghani Abdollahimohammad<sup>1</sup>, Abbas Balouchi<sup>3</sup>, Jebraeil Farzi<sup>4</sup>**

1. Department of Medical-Surgical, Faculty of Nursing and Midwifery, Zabol University of Medical Sciences, Zabol, Iran
2. School of Medicine Graduate, School of Medical, Hiroshima, Japan
3. Nursing Care Research Center, Iran University of Medical Sciences, Tehran, Iran
4. Department of Health Information Technology, School of Allied Medical Sciences, Zabol University of Medical Sciences, Zabol, Iran

**\*Corresponding Author:** Email: [abdalqani@gmail.com](mailto:abdalqani@gmail.com)

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## Abstract

**Background:** Nurses have a continuous presence and crucial role in response to disasters. During disasters, nurses apply specific knowledge and skills to minimize victims' health and life-threatening risks. Nurses' roles in crisis are not clearly stated in resources. Thus, this study aimed to explore nurses' role in the nursing disaster model.

**Methods:** A scoping review was conducted using Joanna Briggs Institute framework. The review considered primary research and reviewed literature from following databases, including Web of Science, Cumulative Index of Nursing and Allied Health Literature (CINAHL), PubMed, Scopus, and Google Scholar, as well as the reference lists of articles identified for full-text review. Eligibility criteria were outlined as a priori to guide the literature selection.

**Results:** Eight of 60 eligible articles met the inclusion criteria. The studies were conducted in different countries with no limit of time of published articles. The publications' design were three systematic reviews, one meta-synthesis, two qualitative types of research, one quasi-experimental, and one case study. The results showed nurses' roles in the three stages before, during, and after the crisis.

**Conclusion:** This review provided a comprehensive understanding of the concept of the nursing role in the crisis, and nurses could be useful to save victims through preparing and implementing effective care at different stages of a crisis.

**Keywords:** Disaster; Nursing; Crisis; Nursing models; Nurse's role; Nursing care; Scoping systematic review

## Introduction

Today's world is exposed to the natural and human-caused crises that have become a turning point for partial and significant human life changes and cause injury, disability, and death (1).

Regarding the specific geographical and political situation, Iran is exposed to different threats and crises (2). Thus, it is highly ranked for crises in the world and Asia (3). However, crises are sig-



nificant for the whole world due to the destruction that happens in societies. In response to crises and disasters, the nurses have a continuous presence and play a crucial role (4). During disasters, nurses apply specific knowledge and skills, and activities to minimize the health and life-threatening risks of disasters for victims (5). Having nursing skills is vital for disasters. The skills include identifying hierarchies, awareness of emergency response plans, regular practice exercises, proper use of emergency equipment such as personnel protection equipment, following communication routes and channels, participating in the evaluation of exercises, and modification of response plan if needed (6). Every member of the nursing community should be responsible for the crisis. Studies conducted worldwide have shown that a nurse's presence in crisis can reduce the death percentage from 50 to 70 percent (7). Nurses' clinical skills in crisis include technical efficiency, ability to use nursing techniques with specialized equipment, ability to perform physical examinations, clinical decision-making skills, triage and trauma skills, flexibility skills, and the ability to perform tasks in non-conventional roles (8,9).

Clinical skills are also an essential component of individual readiness to overcome crises. The clinical skills in crisis should be recorded more precisely than conventional treatment centers. These skills include autonomy, implementing care without a physician order, triage, rapid action, using five senses in a patient examination without high-tech equipment, and the care of patients with various diseases in adverse crisis environments (10). Nurses' knowledge and skills for dealing with the crisis are at a moderate level, and the level of nurses' skills and knowledge in field hospitals is higher than that of nurses working in ordinary hospitals. Most nurses have acquired this knowledge and skill from simulated exercises and quasi-crisis maneuvers (6, 11).

Nursing models can be a guide for nursing care under different conditions. The rate and variety of changes required a wide range of care in unconventional conditions. Communities require nurses to develop abilities and use conceptual

models to identify unique nursing practice. Using nursing models provides an organized framework and a common vocabulary for guiding practice, training, and research (4). The nursing models are recognized as essential and useful tools in nursing evolution (5).

The models' application ambiguities in real conditions and about nurses' roles in the crisis are weaknesses that should be considered. Therefore, there is a need for conducting reviewing various studies to clarify the gap. The systematic scoping review is considered the best approach for clarifying the nursing role in disasters. Therefore, this study aims to identify the role of nursing in crisis nursing models.

### ***Review Question***

What are the roles of nurses in crisis nursing models?

### **Methods**

Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Scoping Review (PRISMA-ScR) is an extended form of PRISMA used to conduct this study. PRISMA-ScR includes identifying the purpose of study, indicating inclusion and exclusion criteria, and formulating a study search strategy, followed by extracting and charting the study results. Joanna Briggs Institute developed PRISMA-ScR. Using PRISMA-ScR increases quality and reliability, which offers a rigorous and transparent method to conduct the study (12, 13). PRISMA guideline was also cross-checked for this study. PRISMA is an evidence-based minimum set of items to help authors report a wide array of scoping reviews that assess this study's benefits and harms. Unlike a systematic review, a scoping review is a systematic approach conducted to present an overview or map the available evidence underpinning the research area (14).

### ***Eligibility Criteria***

Inclusion criteria include peer-reviewed articles published in English related to crisis nursing

models. There was no time limit for study selection and no restrictions on the study approach. The reviews, qualitative, quantitative, and case study publications titled nursing disaster model were included in the current study. Preliminary studies published in languages other than English and had irrelevant titles were excluded.

### Search Strategies

Web of Science, CINAHL, PubMed, Scopus, and Google Scholar databases were searched to find relevant publications. Keywords were mainly selected from MeSH Headings, and they customized to suit the search strategies of different databases. The keywords included in the search were Disaster, Nursing, Crisis, Nursing Models, Nurse’s Role, and Nursing Care with free publication time. The words within a component were separated using “OR”, “AND” Boolean opera-

tor. MeSH search terms: #1: (disaster) and (nursing); #2: (disaster) and (nursing model) and (nurse roles); #3: (disaster) and (nursing care) or (nursing model), #1 & #2 & #3

### Literature Identification

From the search, 60 articles were retrieved from the databases. After initial screening, 26 publications were eliminated due to duplication (4 publications) and irrelevancy title and abstract (22 publications). Of 34 remaining articles, only 8 full-text were relevant for inclusion and analysis. The selection of articles was mainly based on the research question. Two reviewers independently assessed several articles. The disagreement between the reviewers was resolved by discussion or decision from a third reviewer. The search strategy outcome is presented in Fig. 1.

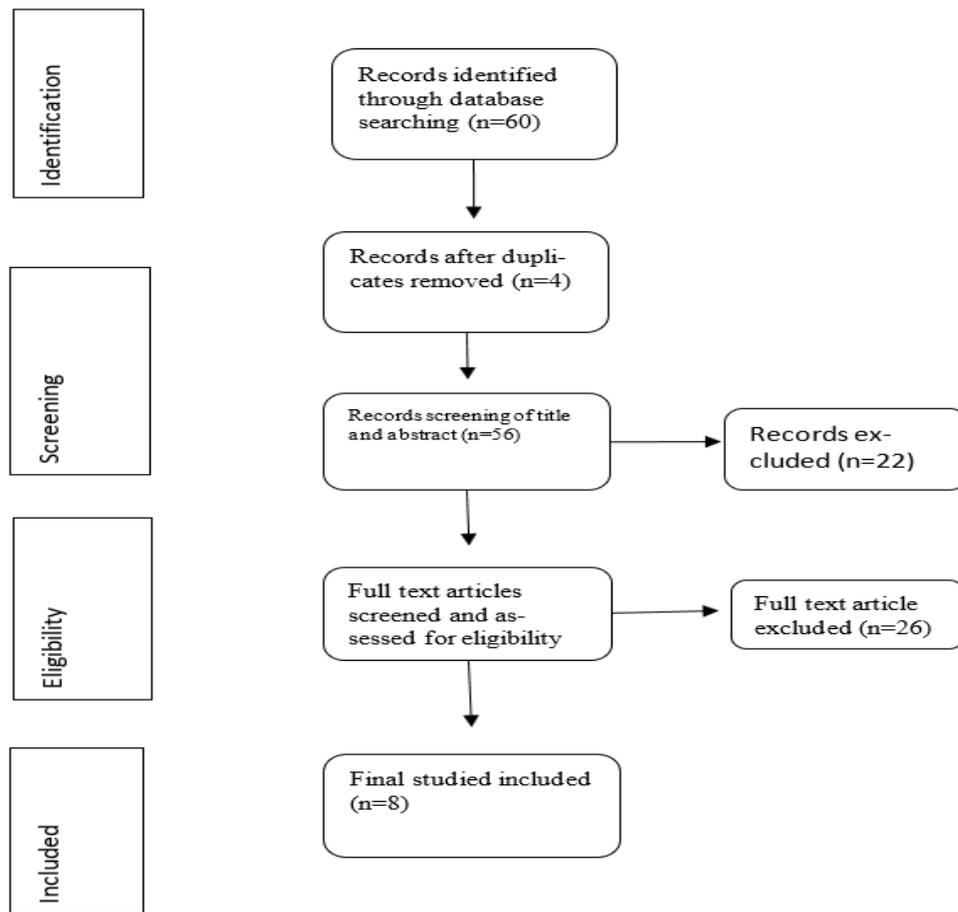


Fig.1: The process of selecting articles

**Data collection and analysis**

Two researchers (MF, JF) gathered data based on inclusion criteria, titles and abstracts of publications and irrelevant articles were discarded. The full text of relevant publications was obtained, and further information was sought from study authors if required. Three authors (MF, AA, AB) assessed the methodological quality of papers using Critical Appraisal Skills Programme Centre (CASP) checklist for qualitative research, PRISMA-ScR, and PRISMA checklist for systematic review studies, and final critical and technical review conducted by (MK). All studies were assigned a high, acceptable, or low evidence level due to checklists' criteria. There was a difference in opinion; authors (MF, AA) discussed the study using the checklist until an agreement was reached. We used a table to synthesize the findings of all included studies.

**Risk of Bias Assessment**

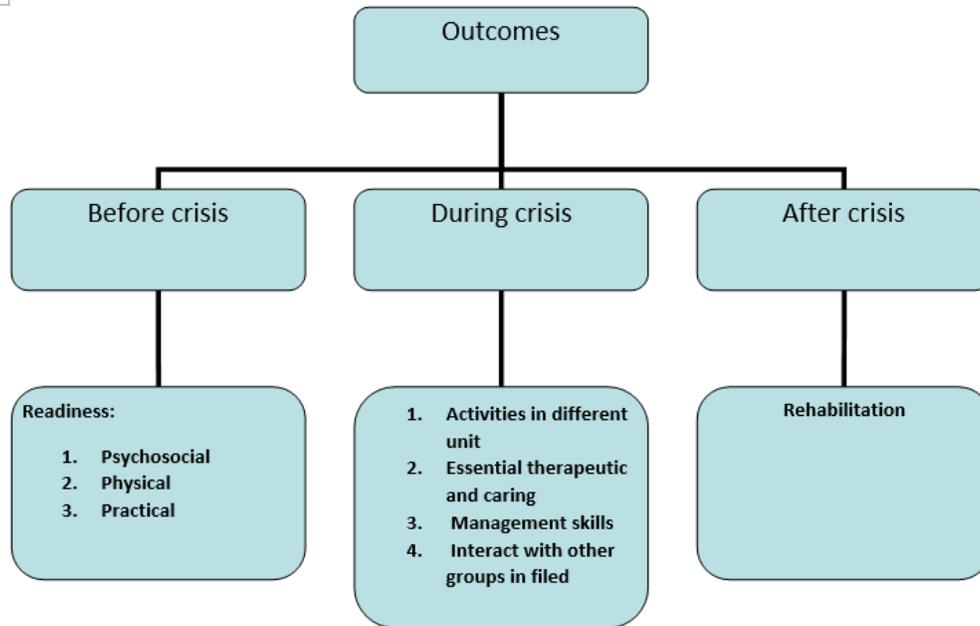
The Scottish Intercollegiate Guidelines Network (SIGN) (15) methodology checklist for systematic reviews and meta-analyses was used to assess the publications' risk of bias. This checklist's

items were adapted to our topic and summarized in a total estimation of bias risk. Of eight articles, three had at least one 'high risk' of bias (16-18), and five had 'low risk' in all five domains (19-23). Two researchers independently performed the quality assessment, and if necessary, disagreements were resolved through discussion with a third reviewer.

**Results**

Of 60 articles, 8 achieved inclusion eligibility; they were qualitative, quantitative, systematic reviews, and case studies (Table 1). The information included in Table 1 was the title, names of the authors, year of publication, country, type of study, objective, and the main results. The studies were published from 2004 to 2019. The publications were from four countries, including The US (n = 4), Japan (n = 2), Sweden (n=1) and Indonesia (n=1).

Nurses' role in crisis could be categorized into three stages before, during, and after the crisis (Fig. 2).



**Fig. 2:** Map of outcomes extracted from the studies

Table 1: Summary of the data

<i>Military nursing model</i>	<i>Wynd C 2006 United States (16)</i>	<i>Review</i>	<i>Nursing military crisis</i>	<i>The role of the nurse in three stages before, during and after the crisis</i>
Teaching disaster nursing by utilizing the Jennings Disaster Nursing Management Model	Jennings-Sanders 2004 United States (17)	Review	Disaster Nursing Management	Nurse roles, in four phases, exist in this model: Phase I)Pre-disaster), Phase II (Disaster), Phase III (Post disaster), and Phase IV (Positive Client/Population Outcomes).
Evolution of a Nursing Model for Identifying Client Needs in a Disaster Shelter: A Case Study with the American Red Cross	Springer and Casey-Lockyer 2016 United States (18)	Case study	Client needs in disaster	Nursing role related: identify persons with disabilities, persons with caregivers, and others in the population who may need assistance to maintain their independence within the shelter environment
San Diego's Area Coordinator System: A Disaster Preparedness Model for US Nursing Homes	Black SC et al 2012 United States (19)	Qualitative research	Disaster preparedness	Pre-crisis preparedness and timely discharge in major crises
The HOPE model for disaster nursing – A systematic literature review	Hugelius K and Adolfs-son A 2019 Sweden (20)	Systematic literature review	Disaster management	Nursing role: Organization and management of immediate response; Professional adaptation; Endurance and recovery.
Meaning in Life: A conceptual model for disaster nursing practice	Noviana et al 2016 Japan (21)	Meta-synthesis of selected qualitative studies	Understanding meaning in life	Interventional programs for patients, disaster survivors and displaced populations.
Proposal of a Model of Disaster Medical Education for Practical Risk Management and Disaster Nursing: The SINCHI Education Model	Shinchi et al 2019 Japan (22)	Qualitative	Disaster risk management	Managing staff, equipment, and risks; Disaster education
Disaster Nursing Model: An Approach to Reduce Post-Traumatic Stress Syndrome Prevalence in Nurses	Mustikasari et al 2017 Indonesia (23)	Quasi-experimental research	Reduce PTSD in nursing cooperate in disaster	Nurse role areas in disaster including: analysis of self-awareness, communication or interaction, coping mechanisms, and intrinsic motivation after undertaking the PTSD intervention

Before crisis roles of nurses were as individual readiness which is necessary for managing a cri-

sis. The readiness and skills were including training of physical readiness, mental readiness, and

familiarity with how to respond to a crisis; clinical skills training including trauma, triage, and evacuation, familiarity with procedures for managing injuries, clinical evaluation, and work with equipment and unit; group training, operational competence, mission type knowledge, leadership and management skills, interacting with units, and area identification (16,17,19-22).

During crisis roles included providing emergency communication (using field phones and personal portable radios), creating an area for triage and acceptance of injured, providing good stretcher, designing and linking different stages from injury admission to evacuation, creating areas for triage, organizing mortality and evacuation priority and determining roles and job descriptions of active personnel in the area (18,22,23).

After crisis roles of nurses were a provision of care for individuals to evacuation in specialized hospitals, reconstruction, and repair of damaged facilities and equipment, evaluation and redevelopment of disaster injury and death plan, psychological support for survivors and dealing with valuation, restructuring and rehabilitation measures along with other staffs (16,17,19-22).

## **Discussion**

The present study aimed to identify the role of nursing in crisis nursing model publications. The significant results obtained from review articles showed nurses' roles in the crisis, including personal and professional readiness for the crisis, the ability to provide critical care and assistance to the injured, the organization and evacuation of wounded, crisis management and leadership skills, evaluation, reconstruction, and survivors' rehabilitation.

The reviewed articles' common aspect is their common context, conducted in crisis-prone regions of the world, and their extracted results can be used in other regions. The results can be argued at three stages of before, during, and after the crisis. The results were consistent with most studies on proposed nursing models for crisis and highlighted nurses' critical role, helping civilian victims in crisis (16-23).

One stage of the crisis is a readiness that shows part of the results that illustrate nurses' roles such as personal and professional readiness for crisis and the necessary actions of health care. Crisis readiness is an important step which considers success at later stages of the crisis. Crisis readiness is defined as measures that ensure that the resources needed to perform an effective response before a crisis (24).

Although health care providers involve in disasters, nurses play an essential role in providing care in crises. Since many disasters occur with no warning, crisis management's readiness and capacity should be increased before a crisis. Crisis management readiness can provide a successful response to disasters (25).

Another study has also emphasized nurses' readiness for crisis and proposed duties such as personal readiness, clinical skill training, and unit/group training that nurses need to have physical and mental readiness, and they should be trained in the field of trauma, triage, and evacuation. Moreover, they should be aware of the type of mission, leadership, management skills, interaction with the units and the area (26).

Readiness is vital before crises because, during a disaster, the health care providers can assist wounded faster and can save the victims' lives in a short period after crisis (27). As the first responders to crises, the nurses should be prepared to care for the crisis victims to take effective action. The role of readiness in crisis is crucial (28). This is consistent with the theoretical stage results and crisis readiness and where nurses play diverse and vital roles.

During the crisis, nurses are providing critical care and assistance to the injured, organizing the wounded and evacuation, interacting with other groups to provide better health care, and providing health services. Nurses perform various duties and roles during the crisis, some of which are vital assistance to the injured. Another part of the role is to triage and prioritize the wounded, provide health care services in crisis areas to save the lives of victims, and evacuate the injured and their referral to more specialized hospitals (29, 30).

The after crisis role of nurses included preventing infectious diseases, providing psychological support to the injured, managing shelters, transferring victims, rehabilitation, and evaluating disaster response at the field. Brown et al. identified recovery as the final stage of the crisis, which lasts from several days to many years. The demand for rehabilitation services increases during a significant period. This stage continues for existing patients, and new services launch for new victims. The role of nurses at this stage is crucial (31). Besides, recovery and rehabilitation are considered professional services that nurses do during and after the crisis and cooperate with other healthcare providers (32). Rehabilitation is a nursing competency covering all aspects of human beings such as physical and psychological care for the vulnerable populations, individuals, families, and communities (33). The rehabilitation is a stage for standing up and starting a new life. Therefore, readiness, response, and recovery complement each other in crises.

Nurses should consider crisis activities as an essential duty for themselves, and always be prepared to provide health care services and keep up to date with the latest scientific results in nursing. They can also play more effective roles to keep the conditions necessary for victims' benefit and the health care system. On the other hand, the nurses' roles in crisis at three stages of readiness, response, and recovery are influential for providing effective care to victims under critical conditions to help save their lives.

### ***Limitations***

No major problem was found while conducting the study. However, studies related to nursing models in crisis were few. Therefore, we had to introduce methodologically heterogeneous studies. We included used four categories of quantitative, qualitative, systematic review, and case study publications.

### **Conclusion**

This study began with a scoping review approach, including related articles for searching and mapping evidence of nurse roles in the crisis. After analyzing the eligible publications on the nurse's roles, the results were designed in three phases: pre-crisis, during-crisis, and post-crisis. Nurses should be aware of their roles, given their impact on crises. This study's findings provide a clear picture of nurses' roles in different stages of the crisis. Understanding the roles to reduce and resolve existing problems and proper planning to provide better essential services and timely care to victims in reducing disabilities and deaths is essential. It is recommended that crisis managers and policymakers consider these issues and help provide better services. The studies included and presented under the heading of crisis nursing models were mostly theorizing, and no field research was conducted. Furthermore, to better understand nurses' roles in the crisis, more studies are needed to discover the best models and patterns of nurses' intervention in crises.

### **Ethical consideration**

As this study was not original, it was not presented to the ethics committee. The article's authors dedicated observing plagiarism, misconduct, data fabrication, double publication or submission, redundancy, and the study's design and implementation.

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None.

### **Conflict of interest**

The authors declare that there is no conflict of interest.

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