

## Emergency and Disaster Preparedness in Nurses: A Concept Analysis

Seyede Negar Pourvakhshoori<sup>1</sup>, Hamid Reza Khankeh<sup>2\*</sup>, Farahnaz Mohammadi<sup>3</sup>

<sup>1</sup>Research Center in Emergency & Disaster Health, Department of Nursing, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran

<sup>2</sup>Research Center in Emergency & Disaster Health, Professor, Department of Nursing, University of Social Welfare and Sciences, Tehran, Iran

<sup>3</sup>Social Determinants of Health Research Center (SDHRC), Assistant Professor, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran

\*Corresponding author: Research Center in Emergency & Disaster Health, Professor, Department of Nursing, University of Social Welfare and Sciences, Tehran, Iran

E-mail: Hamid.khankeh@ki.se

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### Abstract

**Introduction:** Given the growing rate of accidents and disasters in the world, preparing nurses as the main group responding to these events is crucial; however, a review of literature suggests no comprehensive and theoretical or practical definitions for this concept in nursing, which has been often misunderstood and used as an alternative to other similar concepts.

**Objective:** The present study was conducted to analyze the concept and provide a practical definition for emergency and disaster preparedness in nurses.

**Materials and Methods:** The eight-step Walker and Avant's approach was used to clarify the concept of disaster preparedness in nurses. A total of 40 articles selected on the subject through an extensive review of literature up to 2013 were analyzed and the relevant definitions, applications, attributes, antecedents, consequences and empirical referents were extracted.

**Results:** According to the analysis conducted, the concept attributes include gaining the disaster knowledge and management capability, response planning strategies, response behavior exercises and the evaluation of the knowledge level and the response program content. Improved knowledge and skills, professional accountability, more comprehensive programs and more accurate response behaviors were found to be the outcomes of disaster preparedness in nurses.

**Conclusion:** According to the present study, disaster preparedness in nurses refers to the knowledge, skills, abilities and comprehensive functions required for responding to natural or man-made events and disasters. Nurses' preparedness in disasters refers to a process in which nurses involve to properly prepare and effectively respond to emergencies and disasters. Given the wide range of the concept, further studies are recommended.

**Keywords:** Disasters, Nurses, Qualitative Research

## Introduction

Given the growing number of incidents and disasters, health service providers play a key role before, during and after these events and their preparedness is crucial [1-3]. The professional preparedness of nurses is undoubtedly crucial [4] in providing health services for the injured, as they are often considered to be in the front line of healthcare provision [3-6, 7]. Given the negative impacts of disasters on public health and welfare, providing proper health services is the main factor contributing to the survival, reduced mortality and well-being in people affected by the events [8]. The World Health Organization emphasizes the activities that are essential for achieving preparedness [9] as part of the process of sustainable development in communities and the most effective method for responding to the emerging needs [10]. Research suggests no definition for nurses' preparedness despite the emphasis placed mainly on their problems and the nursing position upon the emergence of disasters [11-17].

The services and their effectiveness cannot be investigated as long as there is no definition for disaster preparedness in nurses. The first step in this regard is to conduct a concept analysis, specify the attributes and present a practical definition. The present study was therefore conducted to practically define and analyze the concept of disaster preparedness in nurses using the systematic approach proposed by Walker and Avant.

## Methods and Materials

The present study was conducted to specify and define the attributes of emergency and disaster preparedness in nurses using the eight-step Walker-Avant's approach to concept analysis. These eight steps include selecting a concept, determining the purpose of analysis, identifying all uses of the concept, determining all the defining attributes of the concept, identifying antecedents, identifying consequences, constructing

model cases, borderline cases, related cases and contrary cases as well as defining empirical referents [18] and ultimately presenting a practical definition for the concept of disaster preparedness in nurses. In order to obtain the articles and resources relevant to the concept, an extensive review was first conducted on databases including EBSCO, SCIEDIRECT, MEDLINE, CINAHL, IRANDOC, SID, IRANMEDEX, OVID and PROQUEST using keywords such as emergency and disaster preparedness in nurses, emergencies and disasters, preparedness, prepared and emergencies. All English and Persian articles published between 1980 and 2013 were searched and included in the study. A total of 34 papers were also obtained using Google search engine. The papers found to be irrelevant to nurses' preparedness were excluded. A total of 40 articles selected on the subject finally. All these articles were thoroughly reviewed and unanimously decided on their relevance to the subject by all the three members of the research team and the relevant papers were analyzed using the Walker and Avant method. A pre-developed checklist was used to resolve the possible conflicts among the team members. The concept applications were thus extracted and the defining attributes of the concept were determined. The antecedents and consequences were then identified, the model, borderline, related and contrary cases were constructed and empirical referents were ultimately specified. After conducting a literature review and following the steps cited, a practical definition was proposed for the concept of emergency and disaster preparedness in nurses.

## Results

### *Applications of the emergency and disaster concept*

Walker and Avant argue that illustrating an overall perspective of the applications of the study concept causes a more enriched understanding of the concept and

validation of the defined attributes [19]. The so-called health preparedness for emergencies and disasters was found to be used in literature as a foundation of individual, local and national preparedness programs for enabling responses to mass casualties through hospital capacity enhancement and for improving responses to terrorist attacks and other emergencies and disasters. This preparedness involves a process of planning, training and skill improvement through exercises and supply of proper equipment [11, 20]. The only definition proposed in literature with an emphasis on the role of mayors was found to be ‘A well-prepared political power for structurally responding to potential threats from the surroundings while minimizing the negative consequences of the incident for people’s health and security as well as for the integrity and function of physical structures and systems’[20].

The literature review suggested no theoretical or practical definitions of the term emergency and disaster preparedness based on developing its specific attributes. The US Federal Emergency Management Agency defined preparedness as ‘being aware of existing dangers and what to be done in emergencies as well as pre-emergency programs designed to save people’ life and help with the response and rescue operation’ [15]. Preparedness is therefore defined as readiness for immediate responses.

With the need for involvement in the process of emergency and disaster preparedness divided into two parts, the actual level of nurses’ involvement ranges from a minimum level of participating in a single training activity and practical exercise per year to a maximum level of enthusiastically participating in numerous training programs, tabletop trainings and different simulations every year. The greater involvement in the preparedness process can improve nurses’ knowledge and enrich the response programs [11, 15]. Research suggests that preparedness is a process in which more involvement

improves the knowledge and skills. In addition, there are different types of trainings and exercise programs [21].

A review of literature suggests the need for nurses to participate in disaster preparedness training programs and practical exercises at least once a year, irrespective of their level of education, expertise and work place. These programs should be multidisciplinary to enable the nurses to cooperate with a variety of responding experts during emergencies and disasters. Researchers identified that the lack of training programs as the most common obstacle to gaining knowledge about responding to emergencies and disasters [22-24].

Disaster and emergency preparedness is a continuous rather than a static process, in which nurses gain knowledge through training activities and response planning strategies. The response strategies and behaviors are practiced through emergency drills. The nurses’ knowledge and planning level is then evaluated and the shortcomings in the process of knowledge acquisition and planning are determined and addressed [11]. The present study emphasizes the process nature of the preparedness program and the need for gaining knowledge and presenting better skills and responses.

#### *The concept attributes*

A review and investigation of the applications of nurses’ preparedness in emergencies and disasters suggests some attributes commonly found in all the references, including gaining knowledge on emergency and disaster management, response planning strategies, response behavior exercises and evaluation of the level of knowledge and the response program content. Emergency and disaster preparedness was however found to be the most dominant attribute.

All studies conducted on emergency and disaster preparedness described ‘the focus on emergency and disaster management’

as the key to preparedness, i.e. it can be obtained through nursing management. 'Emergencies and disaster management knowledge' should be acquired by nurses primarily on triage, management of the injured and management of the victims' families. Although these features overlap with other health practices, the nursing-oriented view should prevail [25-27]. Emergency and disaster knowledge is gained through participating in multidisciplinary educational activities as well as emergency and disaster trainings and drills [28-33].

The second attribute is 'response planning strategies'. Planning is made before and along with gaining knowledge [16, 34-37]. The analysis of the results obtained from the relevant studies stress the importance of response planning strategies and plans. In all countries, nurses are required to develop emergency and disaster response programs to meet their needs and be aware of their emergency role and responsibilities [36, 38]. After developing the response program by nurses and making the plan, the program strategies should be implemented and applied through drills [36]. The third attribute is 'response behavior exercises' [33, 37-42]. The multidisciplinary emergency and disaster programs comprise tabletop drills and simulations [33]. Tabletop exercises are drills based on discussions among the participants on how to respond to a particular situation without resorting to any practical behaviors or actual responses to emergencies and disasters; however, maquettes of victims or paper-based descriptions of patients' clinical status are used in simulation exercises and participants are required to perform definite behavioral responses [24]. The discussion and performance of the simulated response behaviors reveals the gaps in the programs and detects the parts requiring modification and development [36, 40, 43 – 44].

The involvement of nurses in the emergency and disaster preparedness

process should enhance their knowledge and develop more comprehensive programs for responding to emergencies and disasters. The nurses' knowledge level and the content of the response programs should also be measured. Nurses update their knowledge and the response strategy upon the identification of the weaknesses, which completes the first cycle of the preparedness process. Nurses' preparedness in emergencies and disasters is a permanent process with no end point, as disasters are always possible to occur. This process is ongoing until accidents occur and nurses are forced to respond. Emergency and disaster preparedness unlimitedly continues unless the nurses withdraw from the process [11, 35].

#### *Antecedents*

Antecedents are events that exist or occur before the emergence of the concept [19]. The antecedents associated with emergency and disaster preparedness are as follows:

1- Acceptance: Acceptance is the first antecedent of emergency and disaster preparedness in nurses, who should accept emergencies and disasters as potential threats or hazards. Nurses, who deny the possibility of emergencies, disasters, terrorist attacks and the effects of these events on their life and actually fail to accept them, will fail to implement the process of emergency and disaster preparedness, unless they are ordered to [36].

2- Readiness for changes: Nurses should be ready for changes before they involve in preparedness activities. Readiness for changes associated with emergencies and disasters is not clearly defined in literature. Not only can readiness for changes be considered a process, it can also refer to the state of being prepared for changes. As a process, it includes three steps; perceiving what requires changes, measuring the cost effectiveness and planning for action [45]. Readiness for

changes refers to variations in clients' willingness or unwillingness for changes.

### *Consequences*

Consequences are generally defined as events following the emergence or occurrence of the concept [19] and particularly as the activities in which nurses involve to prepare for emergencies and disasters. Highly-knowledgeable nurses tend to involve more in the preparedness process [15, 36], are professionally more accountable, possess more comprehensive response plans and present more accurate response behaviors. The higher the nurses' level of knowledge and skills, the swifter the measures taken [14, 36, 46, 47].

### *Construction of the model case*

Model cases involve all the defining attributes of the concept [19]. For example, nurses working in a clinic in an earthquake-prone city such as Bam, Iran, identify emergencies and disasters as potential threats to themselves, their family and their community, and consider preparation as important (the antecedent of acceptance). These nurses identify emergency and disaster preparedness as a priority that requires action (the antecedent of readiness for changes as a state and a process), and tend to participate in emergency and disaster workshops and local emergency and disaster exercises, gain knowledge about emergency and disaster management and develop individual-group response programs (attributes of gaining knowledge, planning and exercise). After simulating an earthquake, these nurses evaluate their ability to respond to this event and determine the areas in which they are short of knowledge (the attribute of evaluation). In addition, they schedule and plan the future emergency and disaster exercises to reevaluate their capabilities while improving and updating their knowledge and designing new emergency response

programs. They continue with this process over time to solve new challenges, as well. They immediately follow the activated response program upon the actual occurrence of earthquakes (the consequence of preparedness: improved response).

### *Related cases*

Related cases represent the ideas that are generally similar to the study concept, but different in details [21].

Several seemingly similar but different concepts associated with emergency and disaster preparedness are used interchangeably, including all-hazards preparedness [48], bioterrorism preparedness [48-50], citizen preparedness [51], national disaster preparedness [20, 52], emergency preparedness [11, 20, 53], disaster response [54], family preparedness [52], hospital preparedness [55], individual preparedness [52], national bio defense preparedness [49], nurses' preparedness [56], public preparedness [49], preparedness for public health events [57], public health preparedness [58] and terrorism preparedness [59]. All-hazards preparedness, hospital (medical facility) and public health preparedness, public preparedness and preparedness in other specialties are the most commonly used concepts.

All-hazards preparedness is a special approach taken by hospitals and communities to prepare for the common aspects of all types of disasters, which cause great damage or large numbers of deaths as accidents or natural disasters including natural and human hazards [60]. Preparedness for specific hazards is more limited compared to all-hazards preparedness because every disaster requires its own measures and preparedness.

The preparedness of the community of hospitals and healthcare facilities are concepts that are defined as organizational preparedness efforts including a large

range of responsibilities in multidisciplinary teams [50, 55, 61] and involving nurses in planning committees [28, 36]. Disaster preparedness in different experts is another related concept. To prepare for bioterrorism, for instance, nurses are required to involve in activities such as infection control, triage, health training and mental health training; physicians need to engage in epidemiology of pathogenic agents and clinical diagnosis while planners should establish monitoring systems, and coordinate local, regional and national emergency and disaster agencies with incident management command systems [22].

#### *Borderline cases*

Borderline cases possess not all but some of the defining attributes of the concept [19]. Although some emergency nurses identify storm as a possible threat to themselves and their community, they believe the risk is negligible. There is an antecedent, i.e. acceptance, and an attribute, i.e. knowledge, but the other attributes, i.e. planning, exercises and evaluation, and the antecedent, i.e. readiness for changes, are lacking. Despite nurses' tendency for a better preparedness, the obstacles prevent them from fully involving in the nursing disaster preparedness process.

#### *The contrary cases*

The contrary cases lack any of the defining attributes [19]. Nurses living in small towns with no rivers and sea borders cannot believe flood might threaten their community. They therefore fail to participate in disaster training programs and response behavior programs and avoid evaluating their own knowledge, as they do not feel the priority and the need for performing these activities.

#### *Empirical referents*

According to Walker and Avant, defining empirical referents for the main attributes

is the final step in the concept analysis. In fact, there are some categories of phenomena that measure the concept or confirm its existence in the real world [19]. The empirical referents associated with the concept of disaster preparedness in nurses include the investigation of the attributes extracted from empirical evidence, the evaluation of nurses' preparedness, the development of concepts and tools in universities and the evaluation of nurses' preparedness across the country by the Department of Nursing in Iran's Ministry of Health and Medical Education.

#### *The definition proposed for emergency and disaster preparedness*

Emergency and disaster preparedness refers to the knowledge, skills, abilities and comprehensive functions required for preparedness and response to natural or man-made emergencies and disasters. In fact, preparedness is nothing but a rapid response capability and mobilization of resources against life-threatening events. This preparedness process involves gaining nursing-specific knowledge on disaster management, response planning strategies, response behavior exercises as well as evaluating knowledge and the content of the response program, which distinguishes different levels of knowledge and different elements of the response program.

#### *Nursing-associated cases*

According to Walker and Avant, developing a concept analysis can be quite useful particularly in defining ambiguous terms with theoretical, clinical, education and research applications, presenting practical theory-based definitions, understanding the inherent characteristics of a concept as well as helping with developing and designing research tools and result evaluation instruments [20]. The definition of disaster preparedness in nurses proposed in the present study can help determine the main components of

emergency and disaster preparedness. It can also be used as a basis for developing tools for assessing this concept and as a method for evaluating and improving disaster preparedness in nurses.

### Discussion

Emergency and disaster preparedness causes improved knowledge and skills and therefore better professional responsibility, more comprehensive programs and more accurate response behaviors in nurses. This preparedness is accomplished through a process in which nurses' preparedness for responding to emergencies and disasters is improved.

The profession of nursing always involves challenges from the better preparedness for disasters. Given the key role of nurses in responding to emergencies and disasters, preparedness for these situations provides nurses with the capabilities and skills necessary for protecting victims, their families and themselves. The preparedness gained by nurses through involvement in the preparedness process should however be empirically assessed and validated. Given the lack of training programs as an obstacle to preparedness, these programs are recommended to be held frequently using more effective multidisciplinary methods and simulations.

Although disasters are impossible to be accurately predicted and prevented, having emergency and disaster preparedness systems in place offering activities for preparation and response to future events can minimize the negative consequences of the incidents. Further studies are also recommended to be conducted using a wide range of literature in other languages because the present study was limited to reviewing only Persian and English references.

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