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RESEARCH PAPER

A new scale for disaster nursing core competencies: Development and psychometric testing

Abdulellah Al Thobaity, RN, MN [a,b]
Brett Williams, PhD [c]
Virginia Plummer, RN, PhD [a,d,*]

[a] *School of Nursing & Midwifery, Monash University, Australia*
[b] *College of Applied Medical Science, Taif University, Saudi Arabia*
[c] *Department of Community Emergency Health and Paramedic Practice, Monash University, Australia*
[d] *Nursing Research, Monash University and Peninsula Health, Australia*

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Summary
Background: All nurses must have core competencies in preparing for, responding to and recovering from a disaster. In the Kingdom of Saudi Arabia (KSA), as in many other countries, disaster nursing core competencies are not fully understood and lack reliable, validated tools. Thus, it is imperative to develop a scale for exploring disaster nursing core competencies, roles and barriers in the KSA.
Objectives: This study's objective is to develop a valid, reliable scale that identifies and explores core competencies of disaster nursing, nurses' roles in disaster management and barriers to developing disaster nursing in the KSA.
Methods: This study developed a new scale testing its validity and reliability. A principal component analysis (PCA) was used to develop and test psychometric properties of the new scale. The PCA used a purposive sample of nurses from emergency departments in two hospitals in the KSA. Participants rated 93 paper-based, self-report questionnaire items from 1 to 10 on a Likert scale. PCA using Varimax rotation was conducted to explore factors emerging from responses.
Findings: The study's participants were 132 nurses (66% response rate). PCA of the 93 questionnaire items revealed 49 redundant items (which were deleted) and 3 factors with eigenvalues of >1. The remaining 44 items accounted for 77.3% of the total variance. The overall Cronbach's alpha was 0.96 for all factors: 0.98 for Factor 1, 0.92 for Factor 2 and 0.86 for Factor 3.

* Corresponding author at: School of Nursing & Midwifery, Monash University, McMahons Road, Frankston, Victoria 3199, Australia. Tel.: +61 3 9904 4064; fax: +61 3 9940 4655.
E-mail address: virginia.plummer@monash.edu (V. Plummer).

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Conclusions: This study provided a validated, reliable scale for exploring nurses' core competencies, nurses' roles and barriers to developing disaster nursing in the KSA. The new scale has many implications, such as for improving education, planning and curricula.
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What is known

- Core competencies in disaster nursing management have been developed but they are inconsistent and have not been empirically validated. Their structures and vocabularies differ considerably. It is difficult to build an educational framework for education and training on this platform.

What this paper adds?

- A new disaster competency instrument was developed, with strong psychometric properties. Preliminary evidence has been provided of its reliability and validity to assess nurses' roles and core competencies and identify the barriers to their development in Saudi Arabia. It is suggested that this could support an education program in disaster nursing education in Saudi Arabia.

Introduction

Disaster management is an ongoing, sophisticated process. Effective disaster management does not happen automatically; rather, it is a structured, disciplined approach that aligns people, strategy, processes, technology and knowledge to evaluate and manage uncertainty in the natural world.[1] Morton and Vu describe the disaster management process as comprising two aspects: minimising risk and maximising the benefits of disaster preparedness.[2] Effective disaster management is not restricted to avoiding danger; it also can facilitate opportunities.[3] In other words, disaster management focuses on preparation for, mitigation of and response to disasters as well as on restoring communities to pre-disaster status. Different principles govern each of these phases. Similarly, the concept of disaster nursing focuses on providing a high level of holistic care during all phases of disasters to populations affected by or at risk of disaster.[4] To achieve the goals of disaster nursing, all nurses must have core competencies in terms of skills, knowledge, leadership and ability to provide holistic care to affected populations.[4]

Although disaster nursing is a relatively new specialty in the early stages of development globally,[5,6] researchers and stakeholders in many countries recognise its importance.[7–14] In particular, Western and East Asian countries have made efforts to develop core competencies and prepare nurses to translate plans into practice via education and training. Despite these efforts, many issues can affect the development of core competencies in disaster nursing. For instance, disaster nursing is not fully incorporated into nursing curricula, and evidence-based practices lack key aspects, such as preparedness, education, training and nurses' roles.[5,9,11,15–19] Therefore, the core competencies of disaster nursing need to be developed and validated worldwide.

Hundreds of core competencies have been developed for nurses in disaster management.[20,21] However, they are inconsistent in structure, validity and terminology.[20] There are very few frameworks for core competencies. One example is the International Council of Nurses (ICN) Framework of Disaster Nursing Competencies (2009) which has 10 domains and 130 core competencies.[22] Recently, Schultz et al. developed a framework that identified 19 core competencies.[17] However, previous works have not psychometrically tested the elements in either framework. Despite these measurement limitations, there has been a gradual development of core competencies for healthcare providers, particularly nurses, during disasters. The most common core competencies identified as essential include knowledge related to (1) detection of and response to an event, (2) the role of a nurse in incident command centres, (3) triage, (4) epidemiology and surveillance, (5) isolation, quarantine and decontamination, (6) communication, (7) psychological issues and care of special populations, (8) accessing critical resources and (9) reportage and (10) ethics. Each competency is a key component of disaster preparedness and response.[17,22–25]

The disaster nursing literature reveals few validated, reliable tools in more specific areas of core competencies. Few tools that have been psychometrically tested, and most tools previously used have not been examined rigorously. As examples, two developed tools in disaster nursing include the following. The first is the disaster preparedness evaluation tool (DPET), developed by Bond and Tichy in 2007 for nurses in the United States.[26,27,16] Bond and Tichy aimed to evaluate the level of nurses' disaster preparedness relating to 45 items on a Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree). In 2010, their tool was tested psychometrically in Jordan using a principal components analysis (PCA) with Varimax. Three factors were extracted from the data: knowledge, skills and preparedness.[27] DPET also was used in 2012 to evaluate the knowledge of nurses in military and civilian hospitals.[5] The Cronbach's alpha of this tool in all previous studies has been excellent, with a minimum score of 0.88.[5]

The second established tool related to disaster nursing is the Emergency Preparedness Information Questionnaire (EPIQ), originally developed by Wisniewski et al. in 2004[28] in the United States. The primary purpose of this questionnaire was to evaluate nurses' competencies in terms of disaster preparedness with 45 on a Likert scale from 1 (not familiar) to 5 (very familiar). In 2008, EPIQ was tested psychometrically by Garbutt, Peltier and Fitzpatrick,[29] who conducted a PCA using Varimax. EPIQ was used again in 2012 in the United Kingdom to measure the familiarity of nurses with disaster

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