

Globally recognized disaster nurse training needs

A Literature Review

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<p>Abstract</p> <p>Disasters are a prevalent concern for global health. Nursing skills relating to disaster management and disaster response are paramount and extensive according to the international community.</p> <p>This study was conducted to analyze global data relating to the disaster preparedness of registered nurses by reviewing existing research concerning the recognized training needs required of registered nurses. The aim of this literature review is to assess literature relating to disaster nursing training needs. The purpose of this literature review is to report information which can be used for further disaster nursing research and development.</p> <p>This study utilized Cinahl, PubMed and Medline for data collection purposes. Collected data was analyzed as a literature review, resulting in the inclusion of twelve research studies which fulfilled the objective criteria.</p> <p>Coding of the found literature led to the development of three main concepts or categories consisting of at least one subcategory: professional development (formal training and clinical competence), psychosocial support (emotion/stress management) and interdisciplinary cooperation (management competency).</p> <p>The key findings of this literature review were determined via nurses' responses and are most related to education, psychosocial support and management of disaster response. A need for further studies and an implementation of further training and education is suggested as being useful.</p>		
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1 Introduction

According to a report from the International Council of Nursing (ICN) regarding disaster nurse competencies, edited by both the ICN and World Health Organization (hereafter WHO), there is a great need for an international guide or standard for nurses to gain disaster-readiness skills (World Health Organization 2009). While this report was conducted in 2009, the report has not been updated and is therefore, still relevant as a comprehensive guide to nurses. A disaster statistical review of 2016 found that 342 disasters from just natural causes were reported and 564.4 million people were affected (Guha-Sapir, Wallemacq, Hoyois & Below 2017).

Furthermore, WHO reformed their management of health emergencies prioritizing supervision of infectious hazards management, country health emergency preparedness and emergency operations due to their importance in global health (World Health Assembly, 69 2016). As primary health care workers during disasters, nurses should feel adequately prepared and ready for such situations. Despite, a calling for more disaster-preparation nursing education, there is still a great lack of knowledge in the area of nurses' individual preparedness (Nash 2015). Additionally, it has been determined that nurses will often feel fear that the disaster will occur again, are unsure of what to prioritize as the healthcare services will continue for an unknown amount of time, and nurses must deal with conflicting emotions including worry over their families (Pourvakhshoori, Norouzi, Ahmadi, Hosseini & Khankeh 2017). The current global health pandemic that is Covid-19 has further illuminated the need for nurses to be adequately prepared for disaster situations resulting from infectious diseases and unprecedented situations.

The purpose of this literature review is to report information which can be used for further disaster nursing research and development. Using studies conducted around the world gives a wide view of nurses' professional competencies and thus, using the collected information guided the authors to make recommendations for Finland, on which academic research regarding this topic has not been conducted.

2. Disaster health care

2.1 International Health Care Organizations

Numerous organizations (domestic and international) and governmental entities focus on guidance for healthcare professionals in disaster management. In fact, the United Nations has created multiple organizations which deal with disaster management, preparedness and response. (Strategic Plan 2018).

The United Nations Office for the Coordination of Humanitarian Affairs (hereafter OCHA) focuses on humanitarian response, risk assessments and advocacy regarding disaster management (Strategic Plan 2018). While the office does not focus on medical or healthcare professional relief, its' research and publications confirm the need for well-structured disaster response. According to OCHA, some 140 million people by mid-2017 needed humanitarian assistance (ibid). Humanitarian assistance is defined as aid for populations affected by disasters which is intended to save lives and ease their suffering (Relief Web 2008). The scale at which the world requires humanitarian services is growing worldwide due to varying circumstances. Conflict, violence, persecution and a host of environmental crises due to climate change are some of the main culprits of overwhelming need for assistance (ibid). In terms of health allocations, OCHA has identified for 2018 the need for a coordinated response to Ebola, measles and Lassa Fever (Global Humanitarian Overview 2018). Thus, it can be surmised that health professionals are needed, at least in part, to implement this orchestrated response.

Furthermore, the idea of emergency risk management has emerged from this large-scale need for assistance. According to World Health Organization emergency risk management is researching possible emergencies and disasters, and then developing disaster response mechanisms (Emergency Risk Management for Health Overview 2013). According to WHO, emergency risk management should include not only a response to disasters, but also a preventative approach (Emergency Risk Management for Health Overview 2013). This overview further specifies that local healthcare facilities must be prepared as well (ibid). The thinking is that if community health is strong generally, then response to emergency situations will be stronger as well (ibid). Moreover, the

Overview addresses why emergency risk management is essential to health (ibid). Emergency risk management often identifies aims focused on health needs. For example, the International Federation for the Red Cross and Red Crescent Societies identifies priorities of the organization as ability to respond (on all scales) to public health emergencies, focus on HIV/AIDS and prioritizing the health needs of vulnerable communities (Contingency planning guide 2012.).

Disasters have been found to disproportionately effect the health of the poor, outbreaks of infectious diseases linked to biological hazards are on the rise, disasters caused by technology have emerged and multifaceted violent conflict remains a central cause of internationally displaced persons lacking health care (Emergency Risk Management for Health Overview 2013). Additionally, it is essential for health facilities to remain functioning during emergencies by enduring hazards (ibid). Hazards can be defined as, “A natural or man-made event that threatens to adversely affect human life, property or activity to the extent of causing a disaster” (Disasters & Emergencies 2002). Consequently, healthcare staff should know what to do when faced with hazards and disasters.

Achora and Kamanyire purport that healthcare workers are on the forefront of responding to disasters and as such, nurses must be a part of disaster response planning and capable in disaster competencies (2016). To better understand the discussion of the experiences of nurses in terms of disaster preparedness, it is important to first clarify what is meant by common terms which will be used throughout this analysis.

2.2 Disaster definitions

According to the definition of United Nations Office for Disaster Risk Reduction (UNISDR), disaster can be defined as a severe dysfunction of the affected society because of damaging events, causing casualties and infrastructural impairment (UNISDR 2017). The WHO defines disaster in their 2002 training package as, “... an occurrence disrupting the normal conditions of existence and causing a level of suffering that exceeds the capacity of adjustment of the affected community” (Disasters & Emergencies 2002). Disaster preparedness

as a general term refers to the ability to avoid and mitigate disasters, or to directly respond to disaster scenarios (Najafi et al. 2017).

According to WHO, disasters can be classified in two different categories: natural and technological (World Health Organization 2009). Natural disaster refers to damage caused by events such as earthquakes, droughts and widespread diseases. Technological disasters, also referred to as man-made disasters, are caused by a created mechanism, such as a logistical accident involving synthetic substances or acts of terrorism. Structural breakdown, a subcategory of technological disaster, can be caused by civil unrest or a state of war, which is an increasingly prominent form of disaster in the modern world (ibid).

Furthermore, disaster can also be categorized based on the type of occurrence. A disaster can be based on a single event or several different events prompting a disaster response (World Health Organization 2002). Disasters can also be assessed chronologically, which means that the disaster can either occur in a sudden manner, or a disaster can be the cause of gradual stress factors (ibid). Both the disaster mechanism as well as the elapsed time of onset in a crisis scenario determine the appropriate disaster response mechanism.

2.3 Registered Nurse Professional Competence

According to Medical Dictionary website, a registered nurse is...

“A nurse who has graduated from an accredited nursing program, has passed the state examination for licensure, and has been registered and licensed to practice by a state authority.”

(Farlex Partner Medical Dictionary 2012)

The foundation of a nurse's practice is based around providing holistic health care to those who suffer from chronic illnesses or acute injuries. In addition to this, the role of the nurse is also to provide health care education to their patients, and to act as a supporting professional in the area of their practice. (World Health Organization 2009).

The theoretical readiness of a nurse is included in the course content of the nursing curriculum from which the nurse earns their degree. Pragmatic skills and working life adaptations later fortify the competence of a nurse to provide health care in their scope of practice. Depending on the field of work that a nurse is working in, they can work as independent health care providers, or as a part of a multidisciplinary team. Differences also exist in the job description of nurses employed in public health care, and those who work in private health care companies.

Even though nursing practice is guided by evidence-based health care literature, most registered nurse degree programs do not contain theoretical or practical training directly relating to disaster health care (Seyedin et al., 2015). Due to the nursing degree programme lacking the disaster health care domain, many of the registered nurses may be lacking nursing skills, knowledge or qualities which could be beneficial in responding to disaster situations. According to studies relating to disaster preparedness, nurses were found to have difficulties in areas such as managing multiple casualties, and the information concerning epidemic and biological mechanisms was found to be scarce (ibid).

2.4 Phases of Disasters and Coordination of Relief Work in Disaster Situations

Cyclical disaster management theory describes the phases of a disaster as a compilation of phases preceding and following disaster events (Coetzee & Van Nieverk, 2012.) Using the cyclical disaster prevention and response model, the responding operators have a way to use the experiences gained from previous experiences constructively in the planning and implementing of disaster protocols, and the rebuilding and designing of the infrastructure and other assets vulnerable in a disaster situation. This can also be called The Disaster Management Continuum (World Health Organization 2009). It has been suggested that the disaster management cycle may have uses in the management of future disasters (Chan, 2020).

In order to streamline the planning, implementation and coordination of humanitarian aid, different relief work operators may divide certain relief work

amongst each other, which may be beneficial to the provision of disaster aid. Differences in the implementation of disaster readiness do exist, but most countries have separate operational plans for local, national and global levels of disaster management. The division of work can also be referred to as the health cluster approach (World Health Organization 2009).

The health cluster approach was invented as a mechanism when instances of humanitarian response were found to be lacking in a review made by the UN Emergency Relief Coordinator in 2005 (ibid). The health cluster approach can be utilized as an efficient tool for allocating resources and responsibility sectors in the onset of a disaster (World Health Organization 2009). The initial mechanism of a health cluster is to target the appropriate response to a disaster.

Because several different aid organizations can work together simultaneously, the potential for a timely response is greatly increased (World Health Organization 2015). This mechanism is called Surge Capacity, and it has been utilized successfully in humanitarian crisis areas such as Typhoon Ompong in the Philippines in 2013 (Update: Typhoon Ompong 2018). Surge Capacity was then used to assess the overall casualties and damages caused by the typhoon, and to initiate primary health care, until further disaster aid resources were available (ibid).

Even though different aid organizations can provide assistance in their own sector of disaster aid in foreign areas, in most situations the health cluster mechanism acts as a supporting system for the local authorities and operators of the affected area (World Health Organization 2009). The International Federation of the Red Cross and Crescent Societies has advocated for educating local persons in planning responses to different disasters (Contingency planning guide 2012.). This ensures that the stabilization and recovery from disasters is culturally appropriate, and that the affected community is able to be self-supporting in the process of recovering from disasters.

3 Aim, Purpose and Research Question

The aim of this literature review is to assess literature relating to disaster nursing training needs. The purpose of this literature review is to report information which can be used for further disaster nursing research and development.

Research question:

- What globally recognized disaster nurse training needs have been found in literature?

4 Methodology

4.1 Literature Review

The aim of the research process is to analyze the literature relating to the research subject, and to produce a consensus of the available information. Literature review may also be used to determine deficits in the data of interest, thus providing unstudied viewpoints for future literature (Baker 2016). For example, nursing science can build when quality literature reviews are conducted because they inform research, best practice and policy within the nursing field (Whittemore & Knaf1 2005). As such, literature reviews are a crucial aspect of professionalism in nursing.

Literature review is initiated by establishing a particular research question, which then outlines the data selecting process of the literature review. After the research question has been determined, study aim of the literature review is presented (Rew 2010). The data collection process of the literature review is to be described in such a way that the inclusion and exclusion patterns as well as the selection of key words and databases are replicable and understandable (Grewal, et al. 2016). The review process is then continued by detailing the results of the data search, and by evaluating the contents of each study after the selection of literature which is to be included in the literature review (Whittemore & Knaf1 2005, 550). Conclusion of the data is then to be charted, after which the collected information may be interpreted according to the aim of the study (Winchester & Salji 2016). Inclinations and restraints

which may have affected the literature review are to be recognized as a part of the discussion relating to the study phenomenon (ibid). The literature review process may be concluded by suggesting practical applications in accordance to the context of interest (Whittemore & Knafelz 2005, 552).

4.2 Literature search

This literature was created through the utilization of CINAHL, MedLine and PubMed. These databases were chosen because they provide respected and peer-reviewed research. Through these databases, suitable research articles were identified according to the aim of this thesis. Research which was based on literature reviews themselves or meta-analysis was not used in this thesis. It was thought that gathering research directly from studies themselves would increase the reliability and validity of this literature review. Inclusion and exclusion criteria were determined and agreed upon by the authors (Table 1).

Table 1. Inclusion and exclusion criteria

Inclusion Criteria		Exclusion Criteria
Population	Registered Nurses	No full-text availability for free for JAMK students
Phenomenon of Interest	Experiences and Perceptions	Number of nurses not stated in sample number if other healthcare professionals are included in research
Context	Disaster Preparedness	
Types of Studies	In English, 2010-2019, Peer-Reviewed Research with abstract	Articles focusing on nursing students
Databases	CINAHL, Pubmed, Medline	

To ensure that quality works were used, a protocol was adapted to determine which articles were most relevant to this literature review. This protocol followed the criteria in the table above (Table 1). Furthermore, only research articles which have been peer-reviewed and discuss possible bias have been chosen to be analyzed.

The search terms to obtain the research articles were combined into three groups using Boolean phrases when possible. The first was, “nurs*”; the second was, “preparedness”, “readiness”, “education”, “training” and the third was “disaster management”, “emergency management”, “disaster relief”. Duplicate search results were excluded from the total amount of articles (Table 2).

Table 2. Selection process

Database	Total results	With Inclusion and Exclusion Criteria Applied	Answers re-search question	Duplicates
Cinahl Plus full text	1162	30	4	
MEDLINE	1295	45	6	4
PubMed	14485	91	6	
Total			12	

4.3 Data Extraction and Synthesis/Content Analysis

Using the aforementioned search terms, twelve studies were found (Appendice 1) which answered the research question and were available in full text for JAMK students. These studies were analyzed using content analysis. Content analysis is a process used to evaluate research in an objective yet, organized and descriptive manner (Elo & Kyngäs, 2008). Content analysis was chosen for this literature review because the aim was to describe this topic in a concise while not limiting manner to provide new insights and/or recommendations to the nursing field (ibid). Main categories in data were determined through extracting from each article the key findings from a nurses' perspective. Each study was read through focusing on the key findings and results of each article. Data was extracted from primary sources and inductive reasoning used during the analysis. Inductive reasoning was used because the research for this literature review was not already categorized (ibid). Data was coded individually to increase reliability, limit bias and identify key themes throughout the literature.

Categories and subcategories were found through comparing data to better understand the results (Figure 1). The process of identifying categories and subcategories helped to better describe the phenomenon being studied and organize the data in a manageable and intuitive way (ibid). Coding the research findings occurred via extracting data from primary sources and coding the data to create a more manageable dataset according to processes described by Whitemore and Knafel (2005). The aim of the data comparison was to critically analyze the data so that precise patterns and/or themes emerged (ibid). Furthermore, when applicable, the categories included findings from multiple sources to increase the validity of the categories. However, this process of course included interpretation on the part of the author's in terms of deciding which findings pertained to certain categories rather than others (Elo & Kyngäs, 2008).

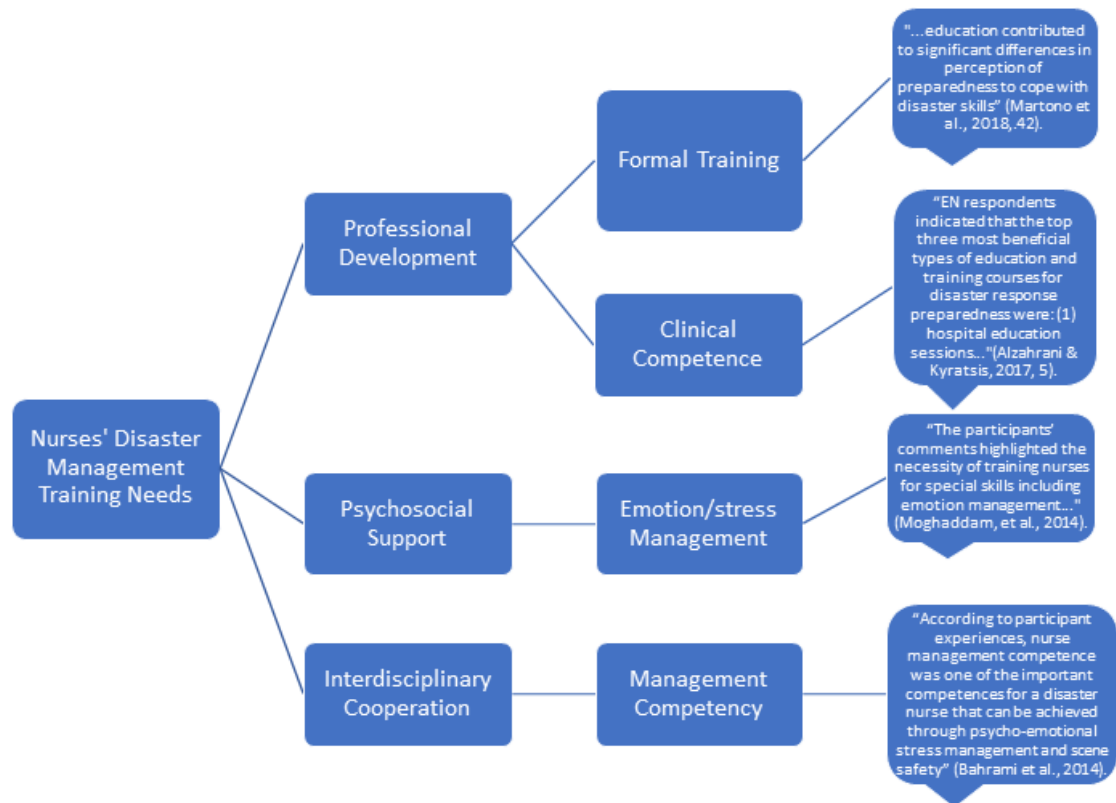


Figure 1 Data Analysis Process

5 Results

Through analysis of the articles three major key concepts were identified as key findings from the nurses studied. These three areas as outlined above are areas which were identified as possibly hindering their professional readiness in disaster response. The identified main areas are professional development, psychosocial support and interdisciplinary cooperation (Figure 2).

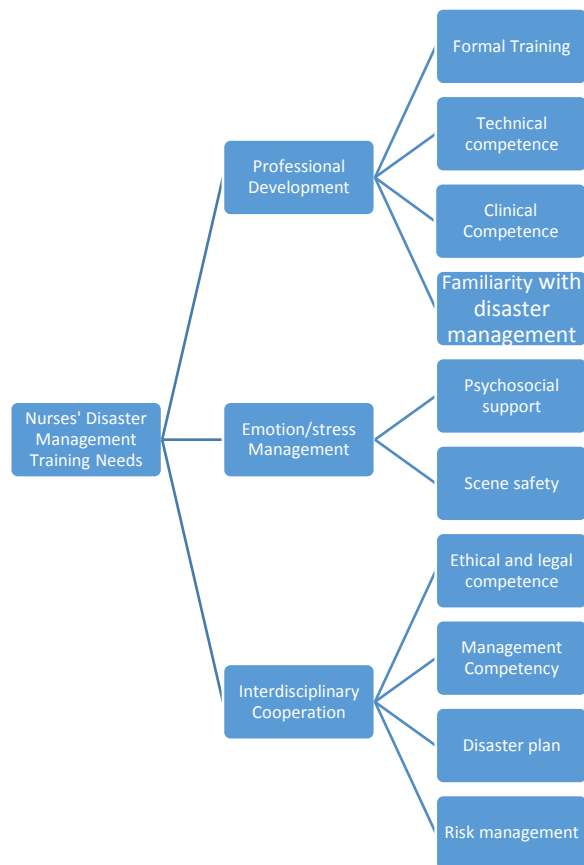


Figure 2 Themes and Subthemes

5.1 Professional development

Education, specifically including both **formal training** and **clinical competence**, it was found that nurses' education in theory and clinical skills were inadequate as well as a clear understanding of their role, affecting their professional readiness in disaster response (Alzahrani & Kyratsis, 2017; Martono et

al., 2018; May et al., 2015; Tavan, 2016). Furthermore, Martono et al., reported that amount of education impacted nurses' professional readiness to perform disaster nursing skills (2018). **Clinical training**, for example hospital staff training, was additionally cited by emergency nurses as one of the most crucial factors in being prepared for disaster response (Alzahrani & Kyratsis, 2017).

Nurses stated that there must be training across the field in various areas for nurses to better understand their role in disaster management (Alzahrani, et al., 2017; Martono et al., 2018). A recommendation, purported by nurses, of in-service training was a re-occurring theme in studies relating to the competencies of nurses in disaster context (Alzahrani & Kyratsis, 2017; Bahrami, et al., 2014., Georgino, et al, 2015., May, et al. 2015., Rebmann, et al., 2010).

More training was identified to be a training need to perform the necessary skills required of them in disaster response (Rebmann, et al., 2010; Ugalde, 2018). Performing drills or training within the work unit alongside coworkers was also thought to produce better outcomes (May, et al., 2015).

A complete lack of knowledge surrounded nurse's understanding of their role in bioterrorism response (Rebmann, et al. 2010). Other studies cited a lack of hands-on practice and exposure to different types of situations in nurse's readiness for emergent disaster situations or nurses feeling unprepared (Ugalde, et al., 2018). Bahrami et al. (2014), reported that nurses' clinical competencies necessary for crisis response in Iran were deficient.

Overall, nurses felt underprepared to respond to disaster situations due to a need for more knowledge and skills regarding both theory and hands-on learning (Alzahrani, et al., 2017; Martono, et al., 2018). Furthermore, many nurses reported a lack of knowledge regarding their role in responding to these situations (Alzahrani & Kyratsis, 2017; Martono et al., 2018; Nash, 2015; Rebmann, et al. 2010).

5.2 Psychosocial support

Relating to both emotion and stress management as a component includes the role of the nurse as a **provider of emotional support** in a disaster environment, as well as **the coping methods** and attributes which may benefit the wellbeing of the nurse when working in disaster health care. This need for greater emotional support and communication opportunities was recognized as a need for nurses themselves as well as for their patients during and post-disaster situations (Martono, et al., 2018; Moghaddam, et al., 2014). Nurses highlighted that emotion management was a special skill requiring training (Moghaddam, et al., 2014). Work group dynamics and previous education contributed to nurses' feelings of little confidence in responding to disaster scenarios (Martono, et al., 2018; Ugalde, et al., 2018). In an extreme case, according to Alzahrani et al. (2017), nurses were unaware of their role in disaster management to provide psychosocial support.

5.3 Interdisciplinary cooperation

A theme referring to **management competency** was also highlighted in the research. Nurses, as integral members of the larger network in disaster response, and as such must be prepared for disasters (Elgie et al., 2010). According to nurses' experiences, working in disaster situations requires competency in management for example in **psycho-emotional stress management** and in **disaster scene safety** (Bahrami et al., 2014). This affects teamwork ability in disaster response and is also influenced by knowledge of disaster scene management and organizational hierarchy (ibid). Tavan et al., additionally found that "educating others regarding disaster management," was integral to disaster preparedness (2016). In Moghaddam et al., all the nurses who participated in the study, reported that well trained management was imperative in disaster response (2014). Some emergency nurses stated that they believed their role in disaster response was to act as, "team leaders" (Alzahrani & Kyratsis, 2017).

Martono, et al. (2018), reported that a nurses' length of work experience did not affect perception of disaster preparedness, while Ugalde, et al., found that nurses with less than 5 years of experience were less confident than nurses that had been working for a longer period of time (2018).

The competence in response in nursing context refers to the study conducted with registered nursing graduate students by Nash (2015). Survey results implied that medical/surgical nurses were ill-prepared in their personal life for a disaster event. According to the study results, nurses could benefit from online courses relating to disaster preparedness (Nash, 2015). Moreover, study done by Elgie et al. identified a lack of correlation between increase in knowledge relating to disaster preparedness and personal confidence in ability to function in a disaster scenario (2010).

Nurses around the globe are often a part of disaster management work. As such, it is fair to say that nurses' skills and feelings of their preparedness for disaster situations should be adequate. Instead, the results of this analysis found that nurses were by and large need training in numerous areas to prepare for the skills necessary in responding to disasters (Martono et al., 2018).

The key findings reported that nurses felt that they not only were they unaware of their role in disaster response but, that there were training needs for responding to disaster situations (Alzahrani & Kyratsis, 2017; Bahrami, et al., 2014; Rebmann, et al., 2010). Moreover, the lack of clinical skill capabilities reported by emergency nurses in Iran could be indicative of not only a deficiency in disaster preparedness skill but, also a skillset which is in need of greater education and practical training for nurses in general (Bahrami, et al., 2014).

6 Discussion

6.1 Discussion of Results

Based on the results professional development needs can be identified as theoretical and clinical competence. Theoretical training needs means that information relating to disaster events was scarce. Clinical competencies were

also evaluated, and it was found that certain skills that nurses should know are not at an adequate level (Martono et al, 2018.) Professional competence could be improved by organizing disaster event drills in or outside of hospitals to increase the ability to perform in disaster scenarios (Martono et al, 2018). Rehearsals relating to accidents with multiple casualties, epidemiology and infection control campaigns and practice relating to uncommon injury mechanisms such as gunshot wounds or toxic chemical exposure could be helpful for the versatility of a registered nurse (Skryabina, Reedy, Amlôt, Jaye & Riley, 2017).

Psychosocial support and its training needs relate to both the professional and personal coping ability. Disaster events can cause a great amount of stress to the nurses, but they also must maintain some amount of emotional resilience in disaster events so that they can provide adequate nursing care. However, the long-term effects of disasters can cause chronic stress to those involved. Registered nurses in Iran also felt that mental resilience pertaining to emotion and stress management was a necessary skill for disaster nursing (Moghadam, et al., 2014). On the other hand, in Saudi Arabia, just 1% of those nurses completing the survey listed psychological care as included in their role as a nurse (Alzahrani & Kyratsis, 2017). It may be that the reason for a lack of nurses prioritizing mental health is due to a cultural difference in terms of providing mental health care. For example, the Pan American Health Organization has an initiative in the Caribbean to support healthcare professionals improving their mental health services in disaster situations due to the lack of education and mental health care providers in the area (Pan American Health Organization, 2012). As such, it is recommended here that specific disaster mental health training should be provided and utilized for nurses. This would require interprofessional cooperation.

Interdisciplinary cooperation concerns the ability to lead and follow as a part of a disaster response team. As a large percentage of disaster response teams, nurses must be able to coordinate and cooperate in interdisciplinary teams not only in the hospital or traditional healthcare setting but in disaster response as well (Li, Li, Yang & Xu, 2016). Ability to function independently seems to be important, but ability to delegate tasks to even the workload and the ability to

co-ordinate patient care with other medical professionals as well as laypeople could be helpful in a disaster event (Bahrami et al. 2014). Although interdisciplinary cooperation relates to the professional development of a registered nurse, it also includes the ability for the registered nurse to take initiative in disasters when needed.

As it was found in this literature review, nurses felt unprepared for or unaware of disaster response requirements. The international community expects nurses to have a broad skillset which nurses do not feel they have been adequately prepared for.

Recommendations for moving forward, taking into consideration this research, are three-fold. Implementation of further education, professional training, leadership training and mental health management could be implemented at the university level, within hospitals or using a combination of the two fostering partnership and cooperation with public and private entities. NGOs and crisis management entities working in disaster areas could be consulted on how to introduce disaster nursing as a substantial educational component to the registered nurse curriculum. For example, the American Red Cross already addresses both the practical/clinical and educational components of disaster nursing within their organization by teaching courses in disaster preparedness while having the expertise in the field as well as in supervisory roles (Nursing and Health, 2020). This type of training could be beneficial for all nurses including their country of origin, as well as for other countries in need of aid.

The authors suggest that there could be introductory disaster preparedness training in health care degree programmes. In addition to this there could be disaster drills organized by the hospital.

Domain 1	Preparation and planning (actions taken apart from any specific emergency to increase readiness and confidence in actions to be taken during an event)
Domain 2	Communication (approaches to conveying essential information within one's place of work or emergency assignment and documenting decisions made)
Domain 3	Incident management systems (the structure of disaster/emergency response required by countries/organisations/institutions and actions to make them effective)
Domain 4	Safety and Security (assuring that nurses, their colleagues and patients do not add to the burden of response by unsafe practices)
Domain 5	Assessment (gathering data about assigned patients/families/communities on which to base subsequent nursing actions)
Domain 6	Intervention (clinical or other actions taken in response to assessment of patients/families/communities within the incident management of the disaster event)
Domain 7	Recovery (any steps taken to facilitate resumption of pre-event individual/family/community/organisation functioning or moving it to a higher level)
Domain 8	Law and Ethics (the legal and ethical framework for disaster/emergency nursing)

Figure 3. ICN Disaster nursing competence domains

Eight domains listed in figure 3 outline the amount of expertise which are expected of nursing drawing from disciplines including social work, law and project management (WHO and International Council of Nurses, 2009). While these duties are often considered the role of the nurse in traditional nursing settings, these expected competencies combined with an international setting, an active crisis and a lack of resources makes these expectations unique. Therefore, special consideration must be paid to training nurses for disaster situations (Martono et al, 2018.) In 2019, the International Council of Nurses revised guidance for nurses on how to respond in a disaster yet upheld these aforementioned eight domains (Al-Maaitah, et al., 2019). Furthermore, the council recommends furthering research into nurses' disaster response competencies with emphasis on how the findings can be applied in practice (ibid).

To develop a knowledgeable nursing disaster response work force which for example, consists of nurses adept in competencies as outlined by international organizations, it is suggested here that a disaster response nursing roster or pool could be beneficial. There could be issues in creating a registered nurse disaster response pool if health care personnel currently working in hospitals were the ones provided with all the education and practice, as their resources would be needed at the hospital during a disaster event regardless. However, according to THL Tilastoraportti there were 115 998 registered nurses with a practicing license in 2018 (THL Tilastoraportti, 2020). Out of

this total number 72 208 were in working life. A substantial number of registered nurses are not currently in working life. These nurses might be interested in participating in disaster nurse training, which could potentially create an on-call roster of disaster trained health care personnel, who are not actively needed at a hospital. Further studies could investigate the need or interest of this kind of training program, which could then be utilized in the event of a public health care crisis. If this development idea would be fruitful, there could be further considerations for global recommendations.

6.2 Critical Appraisal

Triphasic format literature review was utilized in the making of this study. First phase of the literature review was to critically evaluate the research question and if it would be conducive to further studies (Snyder, 2019). After determining the research question, the authors agreed upon the viability of a literature review as the chosen research method. As this study aimed to provide a pervasive overview of global disaster preparedness training needs among registered nurses, specific keywords and selection criteria were utilized in order to have credible data. Adapting this particular research method may have had an impact on the data which was discovered using the chosen databases (Grewal, et al. 2016.).

Second phase of the literature review was to compile the data and utilize a universal rating system in order to validate the reliability and relevance of the data (Snyder, 2019). Each study was reviewed independently by the authors to assess the quality of each paper found. Where there were differences in scoring for each section, a discussion was had, and consensus made. These studies were analyzed using content analysis and each article was given a quality score based on a systematic review of the content and data (Hawker, Payne, Kerr, Hardey, Powell, 2002).

According to this literature review, nine categories were used to evaluate each study and the highest number of points possible is 36 while the lowest score possible is 9 (ibid). Score of 1 (Very poor) using the Hawker grading scale (ibid) means that the assessed article has failed to provide information on a

given criteria. Score of 2 (Poor) is given when an article has mentioned a criteria component, but the data is lackluster. Score of 3 (Fair) can be given when an article has included a criteria component with sufficient information, but some deficits can be acknowledged. Score of 4 (Good) is the highest possible grade, which can be given to a criteria component when the provided information is eminently substantial, and there are no flaws in the produced material. Using this grading system, the lowest score with nine criteria components is 9, and the highest obtainable score is 36 (ibid). Each article used for this literature review was appraised individually and considered before use. The articles used for this literature review scored from 25 to 35 (ibid). See Appendix 2 for detailed information regarding the evaluation of the research.

Articles chosen with the selection criteria as detailed above were then analysed within the context of the research question. Information obtained from the articles was documented and assorted into categories for the sake of summarising pertinent knowledge (Snyder, 2019). The information relating to the research question was then relayed and discussed for the purpose of providing recommendations for further studies (Snyder, 2019).

The articles in this study fell under multiple subcategories of disaster preparedness. Due to the differences in registered nurse education and competence requirements globally and the differences in the study phenomenon, this literature review's results transferability may have great variance. Although this limits the specificity of the study, it also allows for a wide assessment of the similarities or differences in registered nurse disaster preparedness found through the studies. Thus, transferability of these study results varies. At the time of conducting this literature review widespread pandemic Covid-19 may influence national guidelines pertaining to disaster management and infection control, which can also affect the transferability of this literature review's results.

Study results were also limited to the content available for free using the search engines mentioned in the research process. As the literature review utilized various research articles conducted in countries around the world with varying linguistic backgrounds, language barrier may have an influence in the way the research data was interpreted. As articles were selected based on

which articles were available as a free full text article, this may have affected the research data.

6.3 Ethical considerations

Literature review analysis aims to provide neutral and reliable data extraction results. Critical assessment and documentation of the research process phases may enforce transparency and replicability, maintaining the integrity of the literature review results (Vergnes, et al. 2010). Naming the authors of the literature review as well as acknowledging the referred authors of citations emphasises accountability and establishes the contributors of the written work during the research process (Roberts, 2009). Falsification of research implies biased interpretation of the research data, which could be caused by the authors intentionally manipulating study results. Original data extraction was conducted and then re-done due to change in database results over time. In the second research round, a greater number of articles were found. From the initial research results, it is possible that the knowledge from the first research was still in mind when conducting the data analysis of the research used in this literature review. To mitigate this, coding of the data from the initial results was scraped and new analysis was conducted.

Impartial data processing and a methodical approach to the research have been utilized in order to minimize the risk of fabricated data. Moreover, risk of bias in the analysis may be reduced by peer review process of the produced material and exercising of self-critical data processing. However, possibility of partiality may not be completely diminished (ibid). For example, bias unintended by the authors may have been created using inductive reasoning in content analysis. This is due to the nature of inductive reasoning which required the authors to create categories based on groupings of key findings. These findings are categorized of course based on the interpretation of the authors (Elo & Kyngäs, 2008).

The literature review is authored in compliance with the ethical policy of JAMK University of Applied Sciences. Data collection, disclosing of study results and citing references adhere to the regulations of good conduct in objective re-

search. This literature review was also processed using an antiplagiarism program Urkund (Ethical Principles for JAMK University of Applied Sciences, 2018).

6.4 Conclusion and study suggestions

This study attempted to summarize general professional competencies that a registered nurse may need in a disaster event. As there are several different categories of disasters, and the general professional requirements vary greatly on a global scale study results indicate that disaster preparedness may be a development need in the future (Bahrami, et al. 2014).

Importance for the need of disaster training for registered nurses can be determined by assessing events causing unusual demand to hospitals and emergency health care mechanisms. Conflicts, traffic accidents, contagion risks caused by absence of vaccinations, natural disasters and weather phenomenon, refugee influx and chemical accidents can all effect the need for health care resources.

The global pandemic has shown that nurses are on the frontlines in disaster situations. In many countries around the globe nurses are facing shortages in equipment and staffing while trying to care for sicker patients under more difficult conditions. For these reasons, these authors hope that nurses will be given more opportunities to train for disaster situations.

References

- Achora, S., Kamanyire, J. 2016. *Disaster Preparedness: Need for inclusion in undergraduate nursing education*. Sultan Qaboos University Medical Journal, 16(1).
- Al-Maaitah, R., Conlan, L., Gebbie, K., Hutton, A., Langan, J., Loke, A., McClelland, A., Oweis, A., Qureshi, K., Stewart, D., Teinilä, V., Veenema, T., Vlasich, C., Yamamoto, A. 2019. *Core Competencies in Nursing Version 2.0*. International Council of Nurses. Accessed on 29 September 2020. Retrieved from https://www.icn.ch/sites/default/files/inline-files/ICN_Disaster-Comp-Report_WEB.pdf.
- Alzahrani, F., Kyratsis, Y. 2017. *Emergency nurse disaster preparedness during mass gatherings: a cross-sectional survey of emergency nurses' perceptions in hospitals in Mecca, Saudi Arabia*. BMJ Open, (7)4.
- Bahrani, M., Aliakbari, F. & Aein, F. 2014. *Iranian nurses' perception of essential competences in disaster response: A qualitative study*. International Journal of Health Promotion and Education, 3(81).
- Baker, J. 2016. *The Purpose, Process and Methods of writing a literature review*. AORN Journal Volume 103(3), 265-269.
- Chan, D. 2020. *A reflection on the anti-epidemic response of COVID-19 from the perspective of disaster management*. International Journal of Nursing Sciences, 7(3), 382-385.
- Coetzee, C. & van Niekerk, D. 2012. *Tracking the evolution of the disaster management cycle: A general system theory approach*. Jambá: Journal of Disaster Risk Studies, 4(1).
- Elgie R, Sapien R, Fullerton L, Moore B. 2010. *School Nurse Online Emergency Preparedness Training: An Analysis of Knowledge, Skills, and Confidence*. The Journal of School Nursing. 2010;26(5):368-376.
- Elo, S., Kyngäs, H. 2008. *The qualitative analysis process*. JAN. 62(1), 107-115.
- Emergency Risk Management for Health OVERVIEW. 2013. *World Health Organization*. Accessed on 25 November 2018. Retrieved from https://www.who.int/hac/techguidance/preparedness/risk_management_overview_17may2013.pdf?ua=1.
- Hermann, M. & Page, C. 2016. *Leadership and Behavior in Humanitarian and Development Transnational Non-Governmental Organizations*.
- Georgino, M., Kress, T., Alexander, S., Beach, M. *Emergency Preparedness Education for Nurses*. Journal of Trauma Nursing, (22)5, 240-248.
- Global Humanitarian Overview. 2018. *UNOCHA*. Accessed on 21 November 2018. Retrieved from <https://www.unocha.org/sites/unocha/files/GHO-StatusReport2018.pdf>

Grewal, A., Kataria, H. & Dhawan, I. 2016. *Literature search for research planning and identification of research problem*. Indian Journal of Anaesthesia, 60(9), 635-639.

Guha-Sapir, D., Hoyois, P., Wallemacq, P., Below, R. 2017. *Annual Disaster Statistical Review 2016: The numbers and trends*. Centre for Research on the Epidemiology of Disasters (CERD).

Hawker, S., Payne, S., Kerr, C., Hardey, M., Powell, J. 2002. *Appraising the Evidence: reviewing disparate data systematically*. Quality Health Research, 12(9), 1284-99.

International Federation of the Red Cross and Red Crescent Societies. 2012. *Contingency Planning Guide*. Retrieved from <https://www.ifrc.org/Page-Files/40825/1220900-CPG%202012-EN-LR.pdf>

JAMK University of Applied Sciences. 2018. Accessed on 18 March 2019. Retrieved from <https://studyguide.jamk.fi/globalassets/opinto-opas-amk/opiskelu/pedagogiset-ja-eettiset-periaatteet/eettiset-periaatteet-11122018-en.pdf>.

Lam, N., Huong, H. & Tuan, C. 2018. *Nurse knowledge of emergency management for burn and mass burn injuries*. Annuals of Burns and Fire Disasters, Ann Burns Fire Disaster. 31(3), 246-250.

Li, S., Li, X., Yang, D., Xu, N. 2016. *Research progress in disaster nursing competency framework of nurses in China*. Chinese Nursing Research. 3(4), 154-157.

Liberati, A., Altman, D., Tetzlaff, J., Mulrow, C., Gotzsche, P., Ioannidis, J., Clark, M., Devereaux, P., Kleijnen, J., Moher, D. 2009. *The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate healthcare interventions: explanation and elaboration*. BMJ, 339: b2700.

Martono M., Satino S., Nursalam, N., Efendi, F., Bushy, A. 2018. *Indonesian nurses' perception of disaster management preparedness*. Chinese Journal of Traumatology, (22)1, 41-46.

May, J., Colbert, D., Rea, S., Wood, F. & Nara-Venkata, R. 2015. *Preparedness and training in staff responding to a burns disaster*. British Journal of Nursing, 24(18), 918-923.

Moghaddam, M., Saeed, S., Khanjani, N., Arab, M. 2014. *Nurses' requirements for relief and casualty support in disasters: a qualitative study*. Nursing and Midwifery studies, 3(1).

Najafi, M., Ardalan, A., Akbarisari, A. & Noorbala, A. 2017. *The Theory of Planned Behavior and Disaster Preparedness*. PLoS Currents, 6(9).

Nash, T. 2015. *Unveiling the Truth about Nurses' Personal Preparedness for Disaster Response: A Pilot Study*. MEDSURG Nursing, 24 (6), 425-431.

Nursing and Health. 2020. *Past, Present, and Future, Nurses and Other Health Professionals are Vital to the Work of the Red Cross*. American Red Cross. Accessed on 29 September 2020. Retrieved from <https://www.red-cross.org/about-us/who-we-are/nursing-health.html>.

Pan American Health Organization. 2012. *Mental Health and Psychosocial Support in Disaster Situations in the Caribbean- Core Knowledge for Emergency Preparedness and Response*. Accessed on 24 September 2020. Retrieved from https://www.paho.org/disasters/index.php?option=com_docman&view=download&category_slug=books&alias=1968-mental-health-and-psychosocial-support-in-disaster-situations-in-the-caribbean&Itemid=1179&lang=en.

Pourvakhshoori, N., Norouzi, K., Ahmadi, F., Hosseini, M., Khankeh, H. 2017. Nurse in Limbo: A qualitative study of nursing in disasters in Iranian context. PLoS ONE, 12(7).

Rebmann, T. & Mohr, LB. 2010. *Bioterrorism knowledge and educational participation of nurses in Missouri*, 41(2), 67-76.

ReliefWeb Glossary of Humanitarian Terms. 2008. *ReliefWeb Project*. Accessed on 19 August 2020.

Registered nurse. (n.d.) *Farlex Partner Medical Dictionary*. (2012). Accessed on 25 November 2018. Retrieved from <https://medical-dictionary.thefreedictionary.com/registered+nurse>.

Rew, L. 2010. *The systematic review of literature: Synthesizing evidence for practice*. Journal for Specialists in Pediatric Nursing, 16(11), 64–69.

Roberts, J. 2009. *An Author's Guide to Publication Ethics: A Review of Emerging Standards in Biomedical Journals*. Journal compilation American Headache Society, 49(4), 578-589.

Seyedin, H., Dolatabadi, Z. & Rajabifard, F. 2015. *Emergency Nurses' Requirements for Disaster Preparedness*. Journal of Trauma and Emergency Medicine, 20(4):e29033.

Seningvati, C., Bennet, A. & Mariano, S. 2017. *Utilizing a systematic literature review to develop an integrated framework for information and knowledge management systems*. VINE Journal of Information and Knowledge Management Systems, 47(2), 250-264.

Skryabina, E., Reedy, G., Amlôt, R., Jaye, P. & Riley, P. 2017. *What is the value of health emergency preparedness exercises? A scoping review study*. International Journal of Disaster Risk Reduction, 21, 274-283.

Snyder, H. 2019. *Literature review as a research methodology: An overview and guidelines*. Journal of Business Research, 104, 333-339.

Strategic Plan. 2018. *OCHA*. Accessed on 21 November 2018. Retrieved from <https://www.unocha.org/sites/unocha/files/GHO-StatusReport2018.pdf>.

Tavan, H., Menati, W., Azadi, A., Sayehmiri, K., Saheb, A. 2016. *Development and Validation of a Questionnaire to Measure Iranian Nurses' Knowledge, Attitude and Practice Regarding Disaster Preparedness*. Journal of Clinical and Diagnostic Research, (10)8.

THL Tilastoraportti. 2020. Sosiaali- ja terveydenhuollon ammattioikeudet 2010-2018. Finnish Institute for Health And Welfare. Retrieved from https://www.julkari.fi/bitstream/handle/10024/139099/Tr02_20.pdf?sequence=5&isAllowed=y

Ugalde, M., Giardino, A., Angelo, P., Guffey, D., Minard, C. & Johnson, G. 2018. *A survey of School Nurse Emergency Preparedness 2014-2015*. Journal of School Nursing, 34(5), 398-408.

United Nations Office for Disaster Risk Reduction. 2017. Terminology website, author unknown. Accessed on 24 November 2018. Retrieved from <https://www.unisdr.org/we/inform/terminology>.

Update: Typhoon Ompong (Mangkhut). 2018. *World Health Organization*. Accessed on 25 November 2018. Retrieved from http://www.who.int/docs/default-source/wpro---documents/emergency/situation-update/typhoon-ompong-update-sept-18.pdf?sfvrsn=aa13cd61_2&ua=1.

Vergnes, JN., Marchal-Sixou, C., Nabet, C., Maret, D. & Hamel, O. Ethics in systematic reviews. 2010. *Journal of Medical Ethics* 2010;36:771-774.

Whittemore, R. & Knafl, K. 2005. *The integrative review: updated methodology*. *Journal of Advanced Nursing*, 52(5), p.546–553.

Winchester, C. & Salji, M. 2016. *Writing a literature review*. *Journal of Clinical Urology*, 9(5), 308–312.

World Health Assembly, 69. 2016. Reform of WHO's Work in Health Emergency Management: WHO Health Emergencies Programme: report by the Director-General. *World Health Organization*. Accessed on 05 November 2018. Retrieved from <http://www.who.int/iris/handle/10665/252688>.

World Health Organization. Disasters & Emergencies. 2002. Accessed on 25 November 2018. Retrieved from <http://apps.who.int/disasters/repo/7656.pdf>.

World Health Organization. 2002. Disasters & Emergencies definitions. Accessed on 24 November 2018. Retrieved from <http://apps.who.int/disasters/repo/7656.pdf>.

World Health Organization. 2009. *Health Cluster Guide*. Accessed on 25 November 2018. Retrieved from http://www.who.int/hac/net-work/global_health_cluster/chapter1.pdf.

World Health Organization and International Council of Nurses. 2009. ICN Framework of Disaster Nursing Competencies. *World Health Organization, Western Pacific Region*. Accessed on 5 November 2018. Retrieved from http://www.wpro.who.int/hrh/documents/icn_framework.pdf.

World Health Organization. 2015. *Report on WHO's work in Emergency Risk and Crisis Management 2013-2014*. Accessed on 25 November 2018. Retrieved from <http://www.who.int/hac/donorinfo/emergency-risk-and-crisis-management/en/>.

Xu, Y. & Zeng, X. 2016. *Necessity for disaster-related nursing competency training of emergency nurses in China*. *International Journal of Nursing Sciences*, 3(2), 198-201.

Appendix

Appendix 1. Article summary in alphabetical order

Author, year, country	Purpose of Study	Participants and sample (n)	Methods/Instruments	Key Findings	Rating Level	Database
Alzahrani & Kyratsis. 2017. Saudi Arabia	To assess hospital emergency nurses' self-reported knowledge, role awareness and skills in disaster response	n= 106 nurses	Cross-sectional online survey	nurses reported limited knowledge and awareness of the wider emergency and disaster preparedness plans	35	MedLine
Bahrami et al. 2014. Iran	The main goal of this mixed methods study was to design a tool for evaluation of nurse competences for disaster response	n= 35 nurses	qualitative study- interviews	identification of five main themes included 1- management competences, 2- ethical and legal competences, 3- team working, 4- personal competences, and specific technical competences that presented in this report	31	PubMed
Elgie et al. 2010. United States	The objective of this study was to evaluate the effectiveness of a computer-assisted emergency preparedness course	n= 52 school nurses	intervention or control groups in an experimental after-only posttest design	The online training modules are a valuable resource for improving school nurse emergency preparedness knowledge and skills	33	Medline

Georgino et al. 2015. United States	The purpose of this project was to measure trauma nurse improvement in familiarity with emergency preparedness and disaster response core competencies	n= 63 nurses	pre- and postsurvey descriptive design and integrated education sessions	This project demonstrated a statistically significant improvement in mean familiarity scores between pre- and post-test analyses.	26	Medline
Lam et al. 2018. Vietnam	This study attempts to evaluate nurses' knowledge of emergency burn management using a simple knowledge-based questionnaire	n= 353 registered nurses	questionnaire	Our study indicates insufficiencies in nurses' knowledge of emergency burn management and mass burn injury response	25	PubMed
Martono et al.2018. Indonesia	to explain nurses' perception of their knowledge, skills, and preparedness in coping with disasters	(n=1341)	Quantitative research	Defining nurses' roles both in disaster preparedness and post-disaster preparedness must be taken into account with continuous training at various levels, including professional organization, governmental agencies, private organization, and the community.	32	PubMed

May et al. 2015. Australia	Assessment of disaster training in Royal Perth Hospital in Australia	(n=144); 79 nurses	Survey	The occupation, and also the clinical area in which the respondent worked, influenced the level of training they received.	29	Cinahl, Medline
Moghadam et al. 2014. Iran	investigated the needs of nurses for proper casualty support in disasters, to facilitate better planning for disaster management	n= 23 nurses with minimum 5 years working experience and experience in assisting with earthquake aftermath	qualitative content analysis study- interviews	Four major themes emerged from the data; 1) psychological support, 2) appropriate clinical skills education, 3) appropriate disaster management, supervision and programming, and 4) the establishment of ready for action groups and emergency sites.	35	PubMed
Nash. 2015. United States	to examine the effects of an online personal preparedness education intervention on nurses' readiness to respond to disasters	350 Registered and graduate nursing students (n=66)	Repeated measures design	Findings confirmed many nurse participants were not prepared personally for disaster response	31	Cinahl, Medline
Rebmann & Mohr. 2010. United States	No aim is listed	(n=474)	Cross-sectional design survey	Missouri nurses report many barriers to receiving bioterror-	28	Cinahl, Medline

				ism education, with a lack of knowledge about where to get training being the primary barrier.		
Tavan et al. 2016. Iran	to develop and analyse the reliability and validity of a questionnaire on the nurses' knowledge, attitude and practice of disaster preparedness	n= 112 nurses	questionnaire	seven main factors associated with the nurses' knowledge, attitude and practice regarding disaster preparedness.	27	PubMed
Ugalde et al. 2018. United States	to identify areas for improvement in the emergency preparedness of local school nurses for the purpose of targeting instructional strategies	275 nurses (n=201)	Observational study design, questionnaire.	Findings from this research study indicated that lack of practice was a modifying factor in nurses' confidence level in emergency management.	29	Cinahl, Medline

Appendice 2. Critical Analysis of Articles (Hawker, S. et al.2002)

Articles	Abstract & Title	Intro. & Aims	Method and data	Sampling	Data analysis	Ethics & Bias	Results	Transferability	Implications	Total score	Comments
May et al. 2015	4	3	4	3	4	2	3	3	3	29	
Nash. 2015	1	4	4	4	4	4	4	3	3	31	
Rebmann et al. 2010	4	3	4	4	3	2	2	3	3	28	new insight
Georgino et al. 2015.	4	3	3	3	3	2	2	3	3	26	new insight
Ugalde et al. 2018.	4	4	3	3	4	2	3	3	3	29	
Elgie et al. 2010.	3	3	4	4	4	3	4	4	4	33	
Bahrami et al. 2014.	4	3	3	3	4	4	4	3	3	31	
Moghadam etl al.2014.	4	4	3	4	4	4	4	4	4	35	
Tavan et al.2016.	4	4	3	3	3	3	3	2	2	27	
Martono et al. 2018.	4	4	4	4	4	3	3	3	3	32	
Lam et al.2018.	2	3	3	3	2	2	4	3	3	25	new insight
Alzah-rani & Kyrat-sis. 2017	4	4	4	4	4	4	4	3	4	35	