



**Arab American University**  
**Faculty of Graduate Studies**

**The Effect of Disaster Management Training Program on  
Emergency Nurses' Knowledge, Skills, and Personal  
Preparedness in Palestine**

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**This thesis was submitted in partial fulfillment of the  
requirements for the Doctoral degree in**

**Nursing**

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**Thesis Approval**

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## **Declaration**

I declare that this thesis was composed by myself and that the work contained herein is my own, except where it states otherwise by references or acknowledgment, the work presented is entirely my own.

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## Dedication

I dedicate my dissertation work to my loved husband *Dr. Muhannad ALSajadieh*, who is always with me and supported me through the journey of struggles and moments of success. To my children (*Rudeen, Areen, and Ahmad*), when I look into their eyes, all my life difficulties are diminished. A special feeling of gratitude to my loving parents *Issa* and *Wafa*, whose prayers always surrounded me until I became what I am now. Finally to my *brothers, sisters*, and all who are proud of my achievements.

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## ABSTRACT

**Background:** Emergency nurses are the majority of healthcare professionals who need to prepare well to cope with severe crises and work with catastrophe victims. There is a lack of disaster preparedness training programs in Palestine. Thus, this study aimed to assess the effect of a training program for disaster management on knowledge, skills, and personal preparedness among emergency nurses in Palestine.

**Methods:** A one-group pretest-post-test design was used. A total of 64 emergency nurses from governmental and non-governmental hospitals in Palestine were recruited in intervention program. The intervention consisted of 15 hours distributed over three days. The data were collected using Disaster Preparedness Evaluation Tool and Nursing Triage Observation Checklist (NTOC) that was used to assess the nurses' skills.

**Results:** Emergency nurses' knowledge, skills, and personal preparedness levels for disaster preparedness before the training program were moderate. While nurses' knowledge, skills, and personal preparedness levels were strong after a training program. There were significant differences in nurses' knowledge, skills, and personal preparedness before and after the disaster training program ( $t = -13.326$ ;  $p < 0.001$ ;  $t = -12.539$ ;  $p < 0.001$ ,  $t = -12.256$ ;  $p < 0.001$ , respectively). The observation of nurses' skills pre-intervention indicated that 51 (79.6%) nurses of the participants had good skills in triage and observation of nurses' skills one-month post-intervention program indicated that all nurses (100%) showed good skills in triage.

**Conclusions:** The results proved the effectiveness of a disaster training program in improving emergency nurses' knowledge, skills, and personal preparedness for disaster management. Therefore, policymakers and healthcare professionals should encourage updating continuous education programs for disaster preparedness among emergency nurses.

**Keywords:** Disaster; Disaster management; Disaster training program; Emergency nurses; Knowledge; Personal preparedness; Skills.

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## LIST OF ABBREVIATIONS

<b>Abbreviation</b>	<b>Meaning</b>
ANOVA	One-Way Analysis of Variance
AVH	Augusta Victoria Hospital
ADPC	Asian Disaster Preparedness Center
BLS	Basic Life Support
CBRNE	Chemical Biological Radiological Nuclear and high-yield explosive
CPR	Cardiac Pulmonary Resuscitation
ER	Emergency
DPET	Disaster Preparedness Evaluation Tool
DRR	Disaster Risk Reduction
ICN	International Council of Nursing
IFRC	International Federation of Red Cross
IRCS	International Rescue Committee Strategy
ISDR	International Strategy for Disaster Reduction
LWF	Lutheran World Federation
MOH	Ministry of Health
NTOC	Nursing Triage Observation Checklist
Opt	Occupied Palestinian Territories
PaIDRM	Palestinian Center for Disaster Risk Management
PFA	Psychological First Aid
PPE	Personnel Protective Equipment
PRCS	Palestinian Red Crescent Society
PTSS	Post-Traumatic Stress Syndrome
PTSD	Post-Traumatic Stress Disease
RN	Registered nurse
SBCC	Social and Behavior Change Communication
SCT	Social cognitive theory
SPSS	Statistic Package for Social Sciences
START	Simple Triage and Rapid Treatment
UN	United Nations
UNRWA	United Nations Relief and Works Agency
WHO	World Health Organization

# CHAPTER ONE

## INTRODUCTION

### **Background of the Study**

Disaster is a severe disturbance that affects the entire community and results from natural or human-made risks (Veenema, 2018). It causes tremendous casualties, changes in public health, economic losses, and diminished quality of life (Veenema, 2018). Disaster leads to a situation where disaster management exceeds the country's ability and capacities and forces the country to seek external assistance to fulfill its needs (Veenema, 2018).

Disaster victims may experience a variety of physical and psychological health issues, including wounds, bleeding, amputations, and fractures (Visser et al., 2021). Nurses especially emergency (ER) nurses have an essential role in reducing the effects of these crises as they are the frontline staff of healthcare professionals who have direct exposure to the victims. Therefore, those nurses must enhance their practices in addition to their knowledge and abilities by engaging in disaster management training or continuous disaster educational programs (Labrague et al., 2016).

Many international disasters have negative consequences, for example, the earthquake with a magnitude of 7.5 degrees rocked southern Turkey near Syria's northern border on February 2023. It killed approximately 45000 people and destroyed many houses and infrastructures. Such disasters can affect the demand for and capacity to offer humanitarian relief. Buildings that have been damaged are more vulnerable to collapse, and survivors may remain afraid while also dealing with long-term stress (Center for Disaster Philanthropy [CDP], 2023).

It is impossible to anticipate with absolute certainty when technological, natural, hydro-meteorological geological, or biological threats may occur. Following several disasters including explosions, fires, and wars, all of which put human lives in danger, the world has recently

been experiencing an unstable state (Thomas & López, 2015). Technical or man-made disasters, such as terrorism, road accidents, and fires, occur in addition to natural disasters and are more frequent in developing nations (Zarea et al., 2014).

Hospitals and primary care centers have a significant impact on the crisis management process, because of their responsibilities in accepting and treating victims, as well as the availability of techniques for dealing with mass tragedies. Consequently, healthcare professionals including registered nurses (RNs) are the first lines of defense in disaster response (Karnjus et al., 2021). Helping nurses better prepare for disasters is one of the ethical and pressing challenges of the twenty-first century (Turale, 2014). Thus, there is a need to create a disaster program and nursing education based on knowledge of nurse clinical preparation and disaster management training (Jang et al., 2020).

A prior study implemented in the United States found that 44.6% of nurses had a lower level of familiarity with disaster preparedness (Hodge et al., 2017). The disparities observed in the findings of prior research can be attributed to variations in the instruments employed in the studies. Specifically, studies that utilized the Disaster Preparedness Evaluation Tool (DPET) indicated moderate disaster knowledge and preparedness levels. Conversely, studies employing alternative tools revealed insufficient levels of disaster preparedness and knowledge (Almukhlifi et al., 2021).

Nursing training and educational programs have an important correlation with enhancing knowledge and increasing skills in nurses which can lead to positive consequences such as improving the quality of nursing care and lowering mortality rate and death cases (Audit et al., 2018; Rosseter, 2014). An earlier study showed that a disaster training program and drills improved nurses' skills and attitudes toward disasters (Alim et al., 2015). Other studies conducted in Jordan and Iran suggested that disaster management education adopting social platforms such

as virtual social networks and Zoom applications resulted in improving knowledge and attitude toward disaster preparedness (Al-qbelat et al., 2022; Najafi Ghezeljeh et al., 2019). Moreover, the study conducted by Koca and Arkan (2020) revealed that training courses were successful in enhancing the nurses' knowledge and understanding of disasters.

### **Statement of the Problem**

There is an increase in the frequency of disasters worldwide, these disasters lead to negative consequences for humans and economics (Botzen et al., 2019). This increase highlights the necessity of developing policies and programs that could minimize and manage the burdens of these disasters on individuals and communities (Botzen et al., 2019). Disaster management strives to minimize a disaster's total effects. It necessitates complete organizational readiness, coordination, and communication among all parties, as well as resource availability and professional engagement (World Health Organization [WHO], 2019).

Nurses play a vital role in mitigating the effects of extreme crises. Emergency nurses, in particular, constitute the majority of healthcare professionals who assist individuals affected by disasters (Labrague et al., 2018; Veenema, 2018). Thus, they should be prepared well to cope with such situations and they need to have appropriate knowledge, skills, and competencies to help during disasters (Said & Chiang, 2020; Veenema et al., 2016). Unfortunately, previous studies have found that nurses had inadequate preparation and competencies in disaster management and endorsed poor confidence in responding to disasters (Gowing et al., 2017; Küçük et al., 2023; Labrague et al., 2018; Songwathana & Timalsina, 2021; Tzeng et al., 2016). Other studies showed that nurses endorsed low-to-moderate knowledge, skills, and personal preparedness levels (Al Ali & Abu Ibaid, 2015; Al Khalaileh et al., 2012; Naser & Saleem, 2018). Under-preparedness psychologically or educationally of nurses for disasters might be related to a shortage of ongoing

training programs and preparedness plans for emergencies and disasters and improper implementation of disaster management plans in healthcare settings (Sabola et al., 2023). Also, it could be related to the lack of such topics in the curriculum of the nursing programs (Mabrouk & Attallah, 2020).

Concerning this matter, nurses must augment their knowledge, skills, and practices alongside their existing state of readiness for disaster management. Therefore, it is necessary to establish and execute ongoing educational and training initiatives for emergency nurses specializing in disaster management (Flaubert et al., 2021; Kalanlar, 2018) and encourage them to attend these programs. Previous evidence showed the effectiveness of educational programs and workshops for disaster management in enhancing nurses' knowledge, skills, and competencies in disaster response (Alim et al., 2015; Al-qbelat et al., 2021; Diab & Mabrouk, 2015; Ghanbari et al., 2011; Mabrouk & Attallah, 2020; Mirzaei et al., 2019).

In Palestine (the occupied Palestinian territories), the Palestinian Center for Disaster Risk Management (PaDRM) was established in 2017 by a decision of the Council of Ministers, which formed a national disaster risk management committee chaired by the Prime Minister (PaDRM, 2018). Additionally, the 2019-2023 Strategy for the Palestinian Red Crescent Society (PRCS) was developed (PRCS, 2019). One of the initiatives of the PRCS strategy is to enhance crisis and disaster preparedness and response capacities to mitigate the impact of the Israeli military occupation and its practices, as well as to support vulnerable communities to cope with natural disasters, climate change, and other emergencies and to reduce their risks. Palestinian people continue to suffer enormously as a result of Israel's continuous military occupation, which denies them fundamental freedoms and the right to self-determination. The last few years have seen an increase in the escalation of violence, frequent Israeli military incursions into Palestinian cities

and towns, increased settler violence protected by Israeli occupation forces, and continued grave violations of International Humanitarian and Human Rights laws with total impunity and international community paralysis (PRCS, 2023). Despite that, PRCS continues to build its capacity to respond to emergencies and crises, while focusing on initiatives that help the most vulnerable communities enhance their resilience. The PRCS focuses on improving the knowledge and skills of ambulance professionals and volunteers to respond to expanding emergency requirements (PRCS, 2023).

Disaster risk reduction (DRR) in Palestine faces several challenges, particularly when it comes to natural disasters like earthquakes, floods, deserts, and droughts. A seismological study showed that there is a very high probability of damaging earthquakes in the area. Engineering investigations also suggested that the infrastructure and common structures in the Occupied Palestinian Territories (Opt) are highly seismically susceptible to events caused by earthquakes and climate change that may transcend national boundaries (United Nations [UN], 2015). Furthermore, the war between Israelis and Palestinians is one of the world's longest-running and most explosive. Its origins can be traced back to the historic claim to the territory between the eastern beaches of the Mediterranean Sea and the Jordan River (UN, 2015).

Furthermore, a dearth of research exists about the impact of disaster training workshops and programs on the knowledge, abilities, and personal preparedness of ER nurses in Arab nations, such as Palestine. Limited research has been conducted on the subject of disaster perceptions among nurses in Palestine. For instance, Saidam and Eljedi (2020) proposed that emergency nurses in Palestine reported satisfactory levels of knowledge and role perception during disasters. Nevertheless, these nurses must improve their knowledge, skills, and preparedness by actively participating in disaster management training sessions. According to Said et al. (2022), it is

recommended that nurses possess psychological preparedness to effectively address and minimize the consequences of conflicts and disasters. Psychological first aid (PFA) training can enhance nurses' psychological readiness to handle various emergencies and disasters, hence improving their ability to address psychological concerns during and after such events. Hence, the development and execution of training programs in disaster management hold considerable importance for policymakers, hospital managers, and ER nurses. These initiatives aim to enhance the application of this strategy and facilitate the ongoing improvement of training and workshops. The ultimate goal is to enhance the knowledge, skills, and personal preparedness of ER nurses in the field of disaster management.

### **Significance of the Study**

Palestine is exposed to many disasters, especially wars and conflicts, thus, one of the most respondents to disasters in healthcare settings is emergency nurses. This study will provide a baseline data for Palestinian and other Arab emergency nursing staff, which help healthcare professionals build up learning strategies and programs to improve the knowledge, skills, and personal preparedness of nurses for disaster preparedness and management. Additionally, it can help hospital managers adopt an effective training program in the future that will allow nurses to gain more preparedness and skills for disasters. The findings of the current study will also help nursing educators determine the strategies that should be followed in any training program to improve nurses' knowledge, skills, and personal preparedness for disaster preparedness.

### **Purpose of the Study**

The present study purposed to assess the effect of a disaster management training program on knowledge, skills, and personal preparedness of disaster preparedness among ER nurses in Palestine.

## **Questions of the Study**

The following questions have guided this study:

- 1- Is there any effect of a disaster management training program on ER nurses' knowledge of disaster preparedness?
- 2- Is there any effect of a disaster management educational program on ER nurses' skills in disaster preparedness?
- 3- Is there any effect of a disaster management training program on ER nurses' personal preparedness for disaster preparedness?
- 4- Is there any effect of experience on disaster management ER nurses' knowledge, skills, and personal preparedness of disaster preparedness pre and post-intervention program?
- 5- Is there any effect of educational level on disaster management ER nurses' knowledge, skills, and personal preparedness of disaster preparedness pre and post-intervention program?
- 6- Is there any effect of age on disaster management ER nurses' knowledge, skills, and personal preparedness of disaster preparedness pre and post-intervention program?

## **Hypotheses of the Study**

This study was guided by the following hypothesis:

- H1: ER nurses will have higher levels of knowledge of disaster preparedness after attending a disaster management training program.
- H2: ER nurses will experience higher levels of skills in disaster preparedness after attending a disaster management training program.
- H3: ER nurses will demonstrate higher levels of personal preparedness for disaster preparedness after attending a disaster management training program.

H4: There are no differences in ER nurses' knowledge, skills, and personal preparedness for disaster preparedness according to experience in pre and post-disaster management training program.

H5: There are no differences in ER nurses' knowledge, skills, and personal preparedness for disaster management according to the educational level in pre and post-disaster management training program.

H6: There is no difference in disaster management ER nurses' knowledge, skills, and personal preparedness for disaster preparedness according to age in pre and post-disaster management training program.

### **Variables Definitions**

This study included the dependent and independent variables, where the dependent variables included nurses' knowledge, skills, and personal preparedness, and the independent variable involved a disaster management training program. The definitions included conceptual and operational definitions of the study variables.

### ***Conceptual Definitions***

The concepts of this study were theoretically defined as the following:

- **Knowledge.** It is defined as "the fact or condition of knowing something with a considerable degree of familiarity through experience, association, or contact" (Mohanty et al. 2006, p.1).
- **Skills.** It refers to the ability to apply one's knowledge effectively and readily in execution or performance (Staff, 2004).
- **Personal preparedness.** It is a persistent cycle that includes planning, organization, training, equipment, exercising, evaluation, and taking accurate action. (Federal Emergency Management Agency, 2013).

- **Disaster management training program.** It is composed of a series of measures assumed previously by governments, institutions, societies, or individuals to properly respond and adapt to the immediate consequences of a disaster, whether it be man-made or caused by nature. Also, it is defined as; sufficient knowledge and practical skills to react effectively and speedily during and after disasters to strive the negative consequences of these situations (Gladston & Nayak, 2017; Labrague et al., 2018).

### *Operational Definitions*

The nurses' knowledge, skills, and personal preparedness were assessed using the Arabic version of the Disaster Preparedness Evaluation Tool (DPET) (Al-Khalaileh et al., 2012). This tool consists of three subscales with possible answers on a 6-point scale ranging from one (strongly disagree) to six (strongly agree) (Appendix A). The first subscale is the pre-disaster preparedness which consists of 25 items classified into three groups: knowledge, catastrophe skills, and personal preparedness. The second one is the mitigation, which involves 14 items and is categorized into knowledge and victim management. Also, the third subscale is the disaster recovery stage which consists of 6 items classified as knowledge and management. All 45 items measured knowledge, skills, and personal preparedness for disaster management. The scoring for this scale and its subscales was based on the mean as follows: 1-2.99 reflected a weak preparedness perception, 3 to 4.99 indicated moderate preparedness, and 5 to 6 reflected a strong preparedness.

Additionally, the Nursing Triage Observation Checklist (NTOC) that was developed by Aloyce et al., (2014) was adopted to evaluate nurses' skills in triage, which is the main component in disaster plan and management (Appendix A). These skills were evaluated by the investigator before the intervention program and one month after taking the program. The responses were rated

as yes or no and the scoring system for the checklist was as follows:  $> 60\%$  reflected good skills and practices and  $\leq 60\%$  indicated bad skills and practices (Aloyce et al., 2014).

Concerning the disaster management training program, it consisted of 15 hours distributed over three days. It was divided into five topics covering the phases of disaster management. Several training approaches were planned, including case studies, audio-visual lecturing, demonstration, and group discussions.

### **Summary**

There are many disasters around the world and in Palestine, which require the availability of disaster management programs and competent healthcare professionals including nurses to deal with such disasters. In Palestine, there is a lack of studies that investigated disasters and the management of these disasters, in addition to the effect of disaster programs on enhancing nurses' knowledge, skills, and preparedness. Thus, the current study aimed to evaluate the effect of a disaster management training program on knowledge, skills, and personal preparedness for disaster preparedness among emergency nurses in Palestine. Several studies suggested that such training programs enhanced knowledge, skills, and preparedness among nurses. Additionally, the present study can focus on the necessity of evaluating the efficiency of a disaster training program in improving disaster preparedness among Palestinian nurses to adopt such a program in healthcare institutions' educational departments and design appropriate strategies to integrate this program within their plans.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

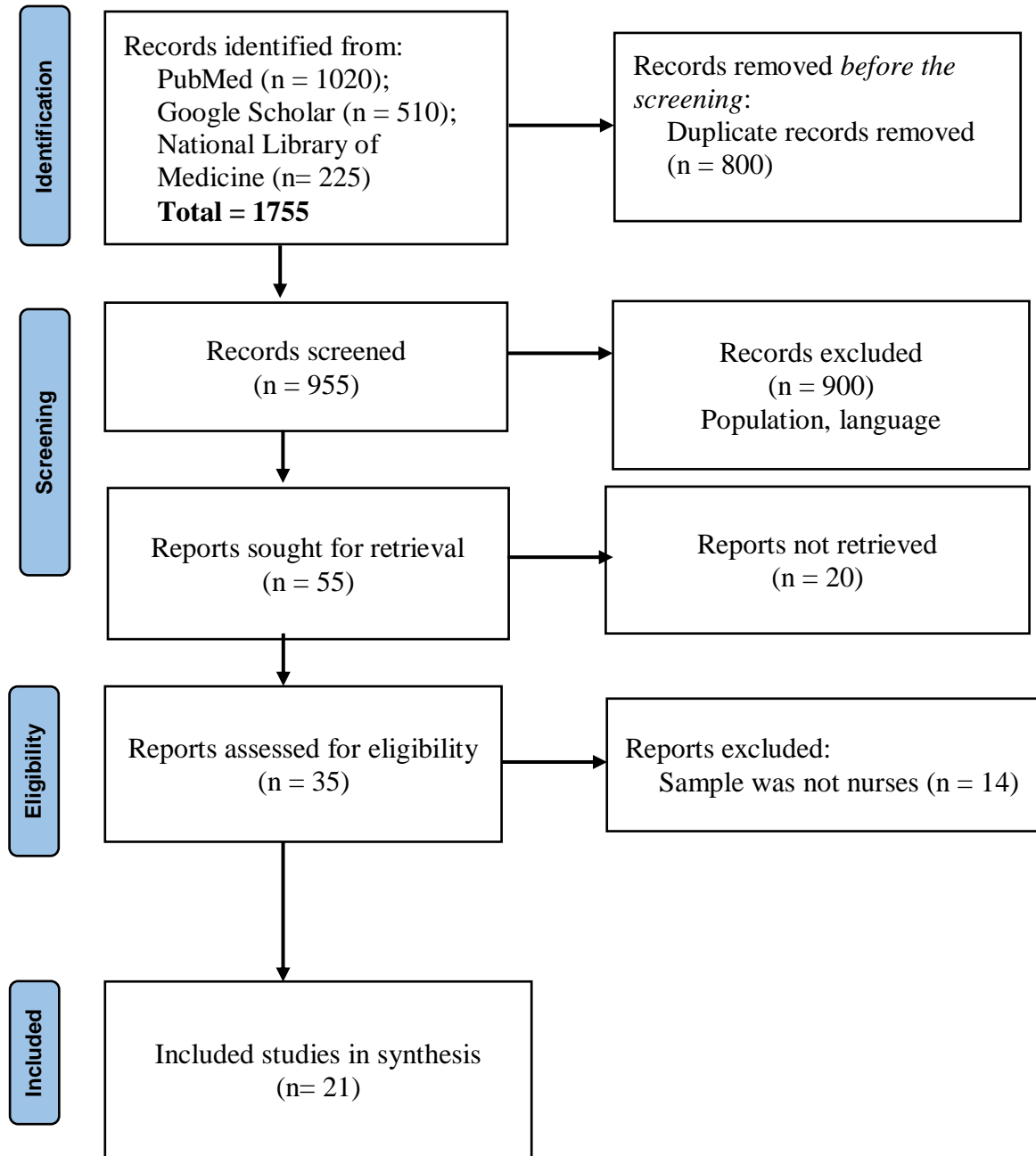
This section provides an overview of the literature on the effectiveness of a disaster education program on nurses' preparedness, including knowledge, skills, and personal preparedness. It revises the literature pertinent to these variables to these variables. It is classified into four sections: searching strategy, theoretical framework, earlier studies, and conceptual framework.

#### **Searching Strategy**

The search process was performed by adopting these databases and search engines: PubMed, Google Scholar, and the National Library of Medicine. The keywords or terms utilized in the search process included disaster, knowledge, disaster management, preparedness, skills, nurses, emergency nurses, disaster education, disaster training, and disaster program/s.

The criteria for included articles involved a time frame between 2010 and 2023, written in the English language, and focused on nurses. The excluded articles involved those focused on other healthcare professionals, published before the year 2010, and in other languages except English. Some old references were included to provide definitions of the study concepts and instruments.

As explained in Figure 1, the PRISMA flow chart was used in the search process, in which the duplicated studies were removed, and then, the titles, the abstracts, and the full text of the articles were screened using eligibility criteria. Finally, 21 articles were included in the final literature review.



**Figure 1: PRISMA Flowchart**

## **Theoretical Framework**

This framework includes the theoretical information related to disasters such as definition, types, phases of disasters, disaster management, the role of the nurses in disaster management, and disasters in Palestine.

### **Definition of Disaster**

Several definitions of disaster exist. One such definition characterizes a disaster as an incident or circumstance of significant magnitude that impacts essential services, including but not limited to housing, transportation, communications, sanitation, water, and health care (Gladston & Nayak, 2017). A disaster is defined as a significant disruption in the operations of a community resulting in severe harm to people, property, financial status, or environmental changes that exceed the inflicted community's capabilities to manage this situation utilizing obtainable resources (UN/ISDR, 2004). According to the WHO (2007), a disaster is characterized as an event that results in significant harm, disruption to the environment, the loss of human life, or deterioration of health and healthcare services. This magnitude of impact necessitates an exceptional response from external entities beyond the affected community or region.

Disaster is produced by a combination of hazards, vulnerable conditions, and scanty capability or actions to mitigate the potential negative outcomes of risk (WHO, 2007). It is an unexpected catastrophe in the community's life that occurs without warning and causes morbidities and mortalities, critical injuries, and displacement of a large number of community members, surpassing the capacities and abilities of the emergency services and regional authorities, necessitating measures from other settings to aid them (Palestinian Civil Defense, 2010). According to Talati et al. (2014), disaster occurs when the patient load exceeds the

emergency department's capabilities to provide proper emergency care, additionally, it forces the hospital to ask for auxiliary resources to provide care to a considerable number of victims.

### **Types of Disasters**

The experts categorized the disasters into two types of disasters: natural and man-made (Eshghi & Larson, 2008).

#### ***Natural Disasters***

Floods, volcanoes, epidemic diseases, earthquakes, and insects are examples of natural disasters that occur without human intervention or control. Some academics categorize disasters depending on the speed of occurring and the extent of spreading (Al Taher, 2011) as follows

- Sudden catastrophic effects: their occurrence is unpredictable and primarily attributed to natural phenomena beyond human influence, such as earthquakes, volcanoes, and storms.
- Slow-acting disasters are characterized by their sluggish onset and progressive escalation in severity over extended periods, ranging from days to months or even years. These events render daily life arduous and perilous, ultimately culminating in the occurrence of a disaster. Examples of such disasters are desertification and drought.

#### ***Man-made Disasters***

These encompass disasters that are directly linked to human activities, whether deliberate or unintentional, such as armed conflicts, wildfires, and environmental contamination. Man-induced natural catastrophes, such as slides resulting from logging activities and flooding produced by human construction in areas with natural floodwater drainage and precipitation, have been categorized into two differing types (Okasha, 2004).

- Unplanned disasters are related to human negligence and lack of perception of the repercussions of erroneous actions, like residential fires and aviation accidents.

- Pre-planned (Deliberate) disasters, such as fires, acts of sabotage, and armed conflicts, are instances that cause extensive damage and have adverse consequences on the urban environment.

### Phases of Disaster

According to Collander et al. (2008), the disaster occurs in three stages involving the Risk (pre-disaster phase), which involves actions to prevent or lessen the possible influence of a disaster, such as preparing hospitals and people to cope with the disaster, including the pre-disaster phase. Crises (The disaster phase) is the stage at which the disaster happens, resulting in major loss of life and property, and at which the disaster response actions take place. Also, the Disaster (post-disaster phase) refers to the period following the disaster in which the recovery and rehabilitation process takes place (Figures 2-A, 2-B).



**Figure 2-A** (Wilks & Moore, 2003)

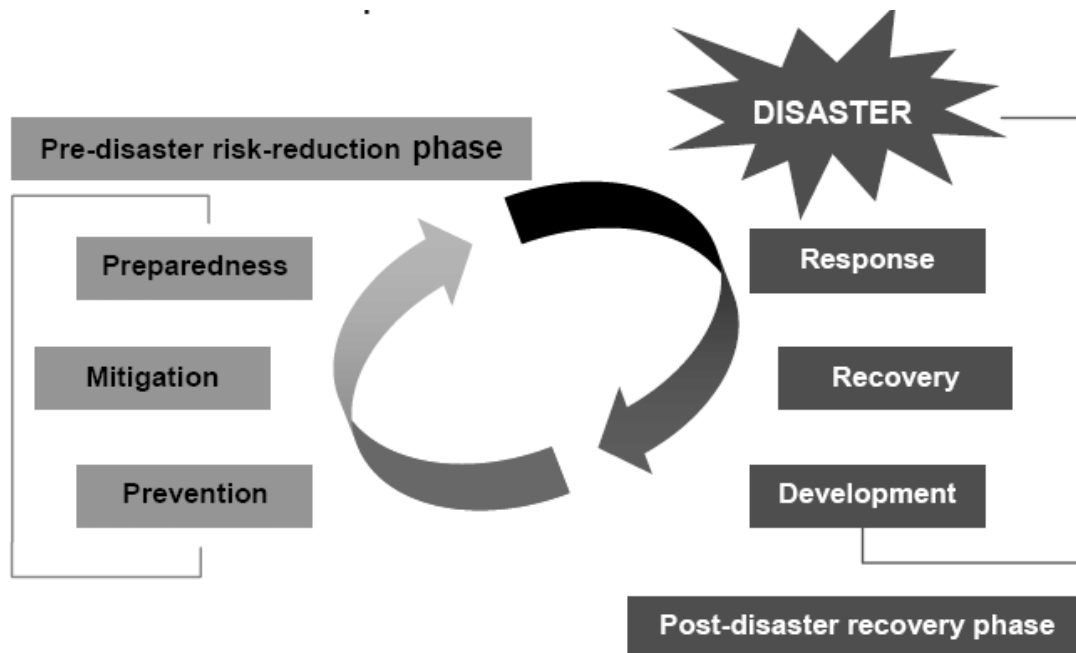


**Figure 2-B** (Shaluf, 2008)

### Figures 2-A, 2-B: Disaster Phases

## Disaster Management

Disaster management can be characterized as the systematic arrangement and administration of resources and responsibilities about the comprehensive handling of all humanitarian facets of calamities, encompassing disaster preparedness response, and restoration (IFRC, 2014). Disaster management is the process of dealing with disaster events before, during, and after their occurrence to prevent or mitigate their effects. It is implemented through four stages: mitigation/prevention, preparedness, response, and rehabilitation or reconstruction, and it requires prior planning and coordination between the parties involved (IFRC, 2014). Another type of cycle, according to Holloway (2003), is the model disaster management cycle, which consists of two main phases that can be described as pre-disaster and post-disaster phases as shown in Figure 3.



**Figure 3: The model disaster management cycle (Holloway, 2003)**

## **Nurses' Role in Disaster Management**

The nurses have a role during each phase of the disaster management cycle.

### ***Mitigation/Prevention***

It refers to the act of averting or diminishing hazards associated with disasters. Identifying the risks and implementing suitable measures, such as a range of activities aimed at reducing the destruction of property and life can prevent or diminish the influence of disaster. The various exercises have an important role in both potential disasters and the acquisition of knowledge from past incidents. These exercises aid in the development of action plans that outline the necessary steps to mitigate or reduce long-term hazards that impact individuals' well-being (Veenema, 2023; WHO & ICN, 2010).

The role of nurses is of utmost importance during the preventative and mitigation stages. To begin this process, it is necessary to ascertain hazards at both personal and societal levels. Nurses engage in collaborative efforts with various healthcare professionals to detect prevalent diseases and injuries, while also formulating strategies for risk mitigation and establishing mechanisms for monitoring disease outbreaks. According to Veenema (2023) and WHO & ICN (2010), nurses have a crucial role in community demand assessments and the identification of vulnerable populations, including individuals with chronic illnesses, disabilities, or mental disorders. This information is of utmost importance for the development of a disaster plan, and nurses actively contribute to the plan's development.

Furthermore, nurses play a crucial role in disseminating knowledge about disasters, hence minimizing risks within organizations, households, and communities. Nurses have a necessitate role in the strategic development, execution, and assessment of community preparation initiatives, as well as in the evaluation of the level of community readiness for potential disasters. In settings

where disaster planning is insufficient or fragmented, nurses assume a crucial role in developing disaster plans and exercises through their coordination and collaboration with community-based groups (Veenema, 2023; WHO & ICN, 2010).

### ***Preparedness***

Preparedness may be the most essential stage in disaster management continuity. Recent events highlight the importance of disaster planning. Inadequate planning for disaster preparedness has resulted in unstable conditions, increasing the loss of life and suffering of survivors (Veenema, 2023; WHO & ICN, 2010).

Preparedness is an ongoing process that requires regular monitoring and assessment in reaction to changes in the environment, personnel, and new information and technology. The establishment of activities that promote and improve reaction capacities is a crucial element of preparedness. This encompasses the creation of a prepared nursing workforce, the creation of databases for proficient nurses, the strategizing of recruitment initiatives, the implementation of exercises, and the provision of training. All of these measures are necessary to establish a functional nursing force that can effectively respond to disasters (Veenema, 2023; WHO & ICN, 2010).

### ***Response***

The response phase encompasses the initial actions undertaken in response to the event. This entails the deployment of emergency personnel to the site of the disaster. The primary objective of the reaction phase is to maximize the preservation of human lives and address the immediate requirements of survivors, in addition to mitigating the potential long-term health ramifications of the disaster. The duration of this time may vary depending on the gravity of the crisis, ranging from little days to several weeks. The responsibilities of nurses during the reaction

phase encompass the provision of emotional as well as physical healthcare. Care is provided in diverse settings under challenging circumstances, requiring the employment of skilled, imaginative, and inventive staff (Veenema, 2023; WHO & ICN, 2010).

The nurse's reaction abilities include managing scarce resources, coordinating care, evaluating whether care standards should be changed, conducting appropriate referrals, screening, assessment, infection control, and evaluation. Identification of those suffering from chronic illnesses or impairments is an important obligation (Veenema, 2023; WHO & ICN, 2010).

### ***Recovery / Rehabilitation***

This phase might begin once the immediate necessities are fulfilled. At this point, efforts are focused on assisting the community and affected populations in recovering from the disaster's effects. Recovery entails restoring key services, reconstructing infrastructure and housing, and addressing the population's needs while aiding them in rebuilding their lives. Unfortunately, recovery is a long-range process that necessitates both short- and long-term objectives for rehabilitation, restoration, and long-term development (Veenema, 2023; WHO & ICN, 2010).

Nurses continue to care for and support people with physical and mental health issues. Patients, including those with chronic conditions, mental illnesses, or disabilities, should be closely monitored to avoid the risk of consequences. Lodging, food, medicines, medical supplies, specialized treatment, long-range medical or mental requirements, and financial support to meet the costs of care must be referred to relevant healthcare professionals, government, or relief groups. In addition, nurses follow up with survivors to ensure that all of their needs are satisfied (Veenema, 2023; WHO & ICN, 2010).

Nurses can help to rebuild the healthcare infrastructure. Temporary medical services should be transferred back to permanent institutions. To ensure that the patient's needs are satisfied, the nurse must give leadership in planning and reconstructing efforts. As a result of the tragedy, more services may be necessary. The nurse is an individual who can determine and advocate for the needs of the patient. The function of advocacy is especially vital during the rehabilitation period to guarantee that all requirements are met (Veenema, 2023; WHO & ICN, 2010).

During the recovery and rehabilitation phases, the nurses examine the disaster response plan and suggest adjustments to better disaster management and the impact of the event on the population. Assessment is an essential component in future disaster mitigation. Nurses are in charge of documenting and evaluating the process, as well as actively participating in follow-up activities such as community planning and development (Veenema, 2023; WHO & ICN, 2010). As the crisis transitions into a long-term recovery phase, nurses assume responsibility for managing the ongoing health dangers to disaster victims, families, and society, as well as the ongoing care needs of persons suffering from chronic diseases and disabilities. They continue to provide psychosocial assistance and health counseling during the disaster recovery phase (Veenema, 2023; WHO & ICN, 2010).

Nurses have a role in coordination of care and health services in affected or reconstructed areas during the rehabilitation and reconstruction phase. They provide ongoing health care to people in need once the community resumes normal activities following the disaster's conclusion. Nurses play a significant role in improving health infrastructure and health support networks by giving expertise (Veenema, 2023; WHO & ICN, 2010). Telecommunications are critical at all stages of disaster management including mitigation, preparedness, response and relief, recovery, and rehabilitation (Figure 4) (International Telecommunication Union, 2023).



**Figure 4: ICTs 4 Disaster Management phases**  
(International Telecommunication Union, 2023)

### Disasters in Palestine

Palestine has been the site of numerous conflicts throughout its ancient and modern history, resulting in significant human and material losses. Among the most well-known wars of the twentieth century were those of 1948, 1956, 1967, 1973, and 1982, as well as the wars on the Gaza Strip in 2008-2009 and 2012, 2014, and the most recent one in 2023. The first Intifada in 1988, the second intifada in 2000, and the Zionist attacks that did not stop in the years that passed between these wars to the Israeli army's aggression (Hillis, 2016) were all catastrophic events in Palestine.

Palestine is continuously harmed by crises and tragedies, including recurrent warfare in the West Bank and Gaza. The Palestinian people are living in tough circumstances, one of these circumstances is the Israeli conflict. They have been suffering under occupation for years, which

is a tremendous disaster for Palestinians. This tragedy simply leads to the destruction of all services and vital resources, in addition to people (Asian Disaster Preparedness Center [ADPC], 2023). The tragedy that occurred in October 2023 resulted in a high number of people who perished, more than 20000 were killed, and more than 50000 were injured. The houses, hospitals, mosques, and entire villages were demolished. Furthermore, large sections of the Gaza Strip have turned into deserts, with no trees, houses, or even people. Nearly more than 2.2 million Gazans were living in a state of persistent anxiety; families were unable to find shelter from bombing attacks, drones, and sea bombings in the overcrowded populated zone (ADPC, 2023). Also, the Palestinian population in the West Bank is suffering as a result of this war. This disaster led to the spread of diseases as a result of Israel's poison gas attack resulting in mass suffocation and death. In addition to psychological problems among victims that need a long time to be overcome (ADPC, 2023).

Unfortunately, Palestine is being exposed to natural or man-made disasters. The historical documents on earthquakes in the Eastern Mediterranean show that the region has seismic activity with strong earthquakes occurring every 100-200 years (Al Taher, 2011). Several earthquakes, some of them powerful and destructive, were recorded in the years 551, 741, 808, 1202, 1837, 1903, and 1927, but the earthquake on July 11, 1927, was the most powerful in Palestine, leading to absence of life and property, destroyed of many houses and structures, displacement of thousands of people, and the killing and injuring many of them (Al Taher, 2011).

The Palestinian government has taken many actions to manage these disasters, for example, the PalDRM was founded in 2017 by a Council of Ministers decision and formed a national disaster risk management committee directed by the Prime Minister (PalDRM, 2018). This center has a legal document that outlines the nature of its work, its tasks, and its structure, as well as an institutional framework that controls the center's activity, and proposals to expand its function.

This center is established with the mission of creating a secure Palestine with the capability of dealing with disasters and mitigating their consequences. Also, it effectively institutionalizes disaster management by developing a system with clear powers and sufficient capabilities to ensure the smooth achievement of disaster management objectives, as well as to define effective coordination mechanisms between various governmental departments, civil society institutions, and the private sector when responding to emergency events and disasters (PalDRM, 2018).

Also, the Palestinian Red Crescent Society (PRCS) has a significant role in disaster management. The 2019-2023 Strategy primarily aims to enhance humanitarian services during disasters and emergencies, despite operating in a variety of nations under severe conditions defined by political instability. The PRCS prioritizes emergency medical response, disaster planning and response, social and healthcare services, physical and psychosocial rehabilitation, protection, international humanitarian law compliance, and operational system and process improvement. The 2019-2023 Strategy is consistent with the Palestinian National Strategy and the 2030 International Rescue Committee Strategy (IRCS). It establishes priorities and objectives for the next five years in the areas of health, disaster response, social integration, protection, partnerships, management, and the development of the organizational structure of the society. Furthermore, it defines the initiatives, projects, and activities that will be implemented in the oPt and the diaspora. Periodic reporting, as well as a mid-term assessment, will aid in assessing and monitoring the Strategy's performance (PRCS, 2019).

Furthermore, the significance of hospital preparedness for emergencies has increased at the regional, state, and national levels because hospitals are prime targets for the initial consequences of both natural and man-made disasters. Hospitals are required to be adequately equipped to manage atypical levels of stress due to the substantial surge in demand for their facilities after a

major disaster. Every hospital needs to possess a thoroughly defined and proven disaster management plan. Hospitals should extend their scope to involve both insider and society-level planning to enhance their readiness for mass casualties (Diab & Mabrouk, 2015).

A previous study conducted by Abu Aziz (2010) to identify the main crisis management obstacles that the Palestinian Ministry of Health (MOH) faced during the siege, the extent to which these obstacles affected the MOH's crisis preparedness, the discovery of weaknesses in this area, and the impact of the crisis on the MOH's services. The descriptive-analytical method was used to conduct this study. The data were collected from Gaza MOH directors and heads of departments. A total of 320 questionnaires were distributed and 277 were returned. The findings found that the MOH met the basic requirements for crisis management, but these standards were only available at a lower level, putting the Ministry on the hook for meeting requirements at a higher level than it is now. The study recommended increasing the efficiency and preparedness of MOH staff to deal with crisis management by increasing their scientific understanding in their current positions, crisis administration management knowledge, and pilot training on crisis management.

In conclusion, the main crisis in Palestine is war. The consequences of the war are still being felt. Additionally, the other disasters in Palestine included natural issues, migratory danger, a low level of education, and disaster psychology. Life has become more difficult as a result of these effects (ADPC, 2023). To reduce losses and prevent the recurrence of errors that might expand the numbering of individuals affected by disasters in Gaza and the West Bank, it is essential to prioritize crisis and disaster awareness regarding the significance and progression of disasters, as well as the stages of dealing and adapting to them.

## **Disaster Preparedness and Management**

### ***Knowledge, Skills, and Personal Preparedness for Disaster Preparedness***

The effective management of disasters requires a unique combination of knowledge, skills, and talents. The disaster basic competencies aim to establish a fundamental understanding for hospital personnel at all levels of authority (Florida Department of Health, 2011). This will enable individuals assigned to disaster responsibilities to function with optimal efficiency and effectiveness during occurrences of disasters (Florida Department of Health, 2011). Certain nurses may commence their employment at a hospital without any preexisting knowledge, abilities, or talents during disasters. Individuals can transition from a healthcare facility where they previously served as a part of a response team for an emergency or a part of their hospital's Incident Management Team. Nevertheless, it is imperative to provide hospital staff with training and updates on emergency codes particular to the institution, procedures for notifying patients, available services within the organization, and links with community partners (Florida Department of Health, 2011).

These core competencies outline the necessary knowledge, skills, and abilities for hospital professionals to efficiently prepare for and deal with chemical, biological, radiological, nuclear, and high-yield explosive (CBRNE) risks and vulnerabilities in the healthcare system. The utilization of these competencies will facilitate hospitals in the development, implementation, organization, and assessment of training programs about disaster preparedness and response. The purpose of standardized competencies is to provide uniformity in training levels throughout acute care hospitals (Florida Department of Health, 2011). Core competencies are essential tools that can be utilized during emergencies and in the management cycle, and can be used as a progression roadmap, guiding staff from novice to useful partner in the planning and response phase (Florida

Department of Health, 2011). Thus, training, exercises, deployment during an event, or assessment can all be used to demonstrate competencies. To maintain skill and performance levels, initial and refresher competency exams will be required. Participation in exercises and events will help the organization maintain its efficiency and effectiveness (Florida Department of Health, 2011).

Several studies were undertaken to determine the knowledge, skills, and competencies of nurses in disaster management. The results demonstrated that a majority of nurses exhibited inadequate preparedness across all aspects of disaster management, in addition to a deficiency in their self-assurance to effectively address disaster situations. Songwathana and Timalisina (2021) did an integrative review to evaluate the existing body of research on preparedness for disasters among nurses in developing nations. The results were derived from an analysis of disaster preparedness topics specific to nurses. The primary topics identified in the study were disaster awareness and the perception of self-preparedness. Nurses had a modest disaster preparedness level, as indicated by their knowledge and perspective. Teaching and training play pivotal roles in enhancing the readiness of nurses, often requiring the implementation of diverse solutions. Therefore, the implementation of carefully developed educational packages, manuals for training, and opportunities for nurses to engage in disaster simulations or actively participate in real-life catastrophe situations is of the highest priority in enhancing disaster preparedness and ensuring retention of pertinent skills across all healthcare sectors.

Labrague et al. (2018) carried out a systematic review to evaluate the disaster readiness levels of nurses. Findings indicated that having prior experience in responding to disasters and receiving training specifically dedicated to disasters are factors that enhance preparation for disaster response. Nevertheless, there have been reports indicating that nurses exhibit a lack of

preparedness and confidence when it comes to efficiently responding to crises. Based on the research findings, it is recommended that hospitals adopt policies aimed at mitigating the issue of employee preparation. Moreover, this analysis underscores the significance of offering comprehensive disaster drills that accurately simulate real-life incidents to enhance the readiness of the nursing staff.

Gowing et al. (2017) conducted an additional integrative evaluation to assess the readiness levels toward disasters of medical personnel and support staff. A thematic analysis was conducted to ascertain existing knowledge and areas of deficiency. The primary themes that surfaced encompassed the potential lack of comprehensive preparedness among healthcare professionals and support staff in the face of disasters, the uncertainty surrounding the optimal content and strategies for disaster preparedness, and the necessity for further investigation into the willingness for healthcare professionals and promote staff to attend work and carry out their duties during times of disasters. To inform future research and facilitate the development of new knowledge for effective disaster preparedness, deficiencies in knowledge were identified. The aforementioned factors encompassed the necessity for rigorous research to assess the optimal content and methodologies of disaster preparedness, the involvement of a diverse healthcare team, the readiness for internal disasters, the establishment of validated skills for preparation, validated measurement instruments, and the significance of evaluating preparedness through actual disaster performance.

The existing body of literature suggests that various forms of disaster preparedness training have the potential to enhance individuals' knowledge, skills, and attitudes toward disaster preparedness. The predominant focus of scholarly research has been directed towards natural disasters and the level of readiness exhibited by medical, nursing, public health, and paramedic

practitioners. There is a need for increased focus on the comprehensive healthcare team, including allied healthcare providers and support staff, in both internal and external crisis scenarios. The utilization of validated skills and techniques for the implementation and assessment of disaster preparedness in real-life disaster scenarios will enhance the understanding of optimal preparedness strategies.

***Effect of Disaster Management Educational and Training Programs on Knowledge, Skills, and Personal Preparedness for Disaster Preparedness***

Nurses particularly ER nurses perform an essential part in disaster response, thus, they should be prepared for adapting to different types of disasters (Labrague et al., 2018; Veenema, 2018). Over the last few decades, nurses' awareness of disaster preparedness has grown, however, there is a gap that needs improvement in this area. The majority of nurses are not yet prepared mentally or educationally to handle disasters appropriately (Kalanlar, 2018).

Also, due to the increasing occurrence of disasters, nurses' awareness and preparation should be enhanced by conducting continuous training and educational programs in this area and maintaining their knowledge and skills updated (Kalanlar, 2018). The nurses must be aware of the risks and hazards, implement their training properly (Stoto et al., 2018; Sultan et al., 2020), and have the necessary knowledge, competencies, and skills needed to adapt to and handle disasters (Said & Chiang, 2020).

Nurses need to have a fundamental understanding of crisis management and its phases, involving readiness, reaction, recovery, and mitigating factors, as well as the abilities required at each level (Veenema et al. 2018). Also, Veenema et al. (2016) proposed that nurses should have a basic level of knowledge, abilities, and skills for disaster management. Additionally, they should be able to assist during a disaster, encourage preparedness at community and individual levels, and

show professional commitment by participating in disaster readiness, planning, drills, and training indoors and outdoors in the workplace.

The lack of disaster management knowledge among nurses could be attributed to the absence of a disaster management topic in their nursing curriculum (Mabrouk & Attallah, 2020). Additionally, there is a lack of in-service disaster management training and disaster management plans in hospitals, or if one exists, it is kept in drawers without disseminating to healthcare workers including nurses. Therefore, there is a persistent need to conduct ongoing disaster management training interventions that aim to improve nurses' knowledge and competency in handling disaster situations (Sabola et al., 2023).

The efficacy of educational courses in disaster management has been demonstrated in prior research. For instance, Mirzaei et al. (2019) revealed that implementation of such programs resulted in enhanced readiness among nurses. This improvement was observed through the augmentation of their knowledge, attitudes, and skills in the context of disaster response. Consequently, it is necessary to take continuing education courses in crisis and disaster management. According to Mabrouk and Attallah (2020), there were notable disparities in the knowledge and attitudes of critical care nurses before, immediately following, and three months after they participated in disaster management training programs.

These educational programs were provided using handouts/workshops, online or virtual. Alim et al. (2015) revealed the influence of educational training program with Google Classroom in disaster preparedness and disaster drills on the improvement of nurses' knowledge and disaster preparedness. Also, Diab and Mabrouk (2015) proposed the effectiveness of an education program using a guide booklet on disaster preparedness knowledge and attitudes among nurses. Ghanbari

et al. (2011) found that a disaster management workshop was effective in enhancing disaster preparedness among nurses.

According to Al-qbelat et al. (2021) and Farokhzadian et al. (2023), online programs have demonstrated efficacy in augmenting the level of personal preparedness for crisis management among nurses. Moreover, it is advisable to integrate virtual education with other instructional approaches to foster engagement and establish a cooperative learning atmosphere, hence enhancing the efficacy of interventions (Farokhzadian et al., 2023; Najafi Ghezeljeh et al., 2019). By integrating actual exercises and maneuvers, nurses can get practical experience and enhance their understanding of the essential skills needed for effective disaster management (Farokhzadian et al., 2023).

### **Previous Studies**

This section summarizes the previous studies conducted in regional and international countries related to disaster preparedness. Also, the studies examined the influence of educational programs on emergency nurses' readiness for emergencies.

### ***Disaster Preparedness***

Several researches have been undertaken on disaster preparedness and management. For instance, Küçük et al. (2023) did a study to evaluate the capacity of Turkish nurses (N=340) at a university hospital for tertiary care to handle disasters. The research employed a cross-sectional design, utilizing the Disaster Preparedness Perception Scale in Nurses (DPPSN) and sociodemographic data for data collection. The findings of the study indicated that 58.5% of those who participated had undergone disaster training, while 52.5% of those who had received such training had previously engaged in a disaster-related simulation. Additionally, 83.1% of the respondents had adopted the responsibility of caregivers during a disaster. A significant proportion

of individuals who underwent disaster-related training were provided with in-person instruction (70.1%) from their respective institutions (91.6%), while a majority received training lasting between 2 to 4 hours (75.7%). The average DPPSN score of the nurses who took part in the study was  $3.53 \pm 0.58$  points on a 5-point scale. Findings revealed that nurses exhibited a limited level of preparedness in the face of disasters.

Also, Malak et al. (2022) evaluated the knowledge, abilities, and patient-triage behaviors of Jordanian ER nurses using a cross-sectional, descriptive correlational, observational methodology. Within the government, educational, and private hospitals, 125 RNs were selected using a convenience sample. The results showed that 88.8% of nurses exhibited strong triage practices, 84.8% had intermediate triage abilities, and 88.8% had appropriate knowledge of triage. A positive correlation was found between emergency experience, triage training, and triage knowledge, skills, and practices. Therefore, it is essential to create nursing regulations that incorporate triage into the fundamental education that all ER nurses receive. Therefore, triage training programs need to be implemented and the correlated factors should be taken into account.

Furthermore, a descriptive cross-sectional study was undertaken by Saidam and Eljedi (2020) to examine the role perspectives of Palestinian ER nurses in the Gaza Strip during catastrophes, as well as their level of knowledge about disaster management. All nurses employed in emergency rooms at public hospitals in Gaza were included in the study. The questionnaire was completed by a total of 162 nurses. Data were gathered by utilization of a self-administered questionnaire, which was divided into two distinct categories: personal and demographic data. Within these sections, there were 24 questions about role perception and knowledge of disaster management. Findings indicated that the percentage of individuals who perceive their role as nurses during disasters was 81.5%. This includes their ability to participate in emergency plans,

provide psychosocial support, and have high confidence during emergencies. Additionally, 78.03% of participants demonstrated a satisfactory level of knowledge and role perception regarding disasters. Therefore, nurses need to enhance their knowledge, preparation, and skills by integrating well-defined theoretical and training workshops on crisis management into the nursing curriculum and through staff in-service activities.

Additionally, Brewer et al. (2019) carried out a study utilizing a descriptive survey to assess the nurses' perception of knowledge, skills, and preparation for managing disasters. Thirty-two nurses in New South Wales were engaged. Findings showed that the knowledge, abilities, and preparedness for disaster management were at moderate levels. There was a substantial association between disaster experience and perceived ability to handle disaster situations.

Naser and Saleem (2018) conducted a cross-sectional, descriptive study to evaluate the existing knowledge, attitudes, and training of Yemeni health professionals, specifically ER nurses about preparedness for disasters. The study included a sample size of 531 participants. Findings revealed that 32.0%, 53.5 %, and 14.5% of participants reported high, moderate, and low levels of knowledge, respectively. The qualifications of health administrators in the field of emergency and disaster preparation seemed to be insufficient. Medical educators surpassed managers in their performance on a knowledge assessment. Positive attitudes towards emergency and catastrophe preparedness were observed among the majority of participants. 41.0% of the participants had not had any training in disaster preparedness. The absence of educational programs significantly contributed to a dearth of understanding regarding catastrophe preparedness. Consequently, it is imperative to incorporate emergency and disaster preparation into the curricula of main medical schools, as well as ongoing medical education programs inside healthcare facilities.

Labrague et al. (2016) investigated the disaster preparedness levels of Philippine nurses (N=170 (105 hospital nurses and 65 community nurses) utilizing a descriptive design. Data were gathered utilizing interviews with DEPT. The results found that 80% of the nurses reported inadequate preparation in response to disasters. A round 63% of respondents believed they could serve as educators, 61.17% as caregivers, and 48.24 % as counselors. Also, 57.7% lack awareness of disaster management protocols in the workplace. The participants reported that the important courses in disaster preparation were first aid (46.4%), basic life support (33.53%), and field triage (25.29%).

Furthermore, Tzeng et al. (2016) evaluated the crisis readiness and reaction of hospital RNs (N=311) using a cross-sectional design in Taiwan. A developed questionnaire consisting of 40 items divided into four sections involving personal preparation, self-defense, emergency response, and clinical management was utilized to collect data. Findings found that the participants' mean item scores ranged from 1.92 to 4.07 (SD=0.91 to 0.93), indicating that the majority of hospital nurses had poor preparation in response to disasters. Also, nurses' knowledge, skills, and practice toward disaster preparedness were low.

Additionally, Seyedin et al. (2015) conducted a cross-sectional study to assess nurses' current knowledge of disaster preparedness in emergency departments. A total of 110 Iranian emergency nurses participated in this study. The data were gathered using a questionnaire consisting of demographic data and 42 questions to assess the knowledge and training needs in disaster response. According to the findings, nurses perceived an average knowledge level. The nurses were the most familiar with triage. The most familiarity was basic first aid in wide-ranging disasters, oxygen administration, and artificial respiration, while the least familiarity was evaluating the effectual of their activities in response to these disasters. While the majority of

registered nurses were completely aware of patient triage information, they were unable to make decisions in an emergency, which suggested the need for the nurses to have educational programs in response to disasters.

The study conducted by Al Thobaity et al. (2015) purposed to determine the levels of disaster management skills and knowledge for nursing professionals in Saudi Arabia. A total of 384 RNs were recruited from six hospitals, specifically from the emergency, critical care, and surgery units. Evaluation questionnaires were utilized to collect data about disaster preparedness. Findings suggested that nurses possessed a moderate knowledge level of disaster preparedness and exhibited a lack of preparedness. The knowledge of nurses in military hospitals was found to be superior to that of nurses in government hospitals. A significant proportion of nurses acquired their abilities through participation in disaster simulations. Nurses necessitate enhanced training in facets of disaster management and a specific affirmation of their responsibilities in the context of disaster response. Nurses express a willingness to enhance their abilities through the provision of educational opportunities.

Another cross-sectional study was conducted by Al Ali and Abu Ibaid (2015) to identify healthcare providers including nurses' perceptions of knowledge, skills, and disaster preparedness. The DPET was used to collect data. A total of 207 participants from all northern Jordanian healthcare facilities, including physicians, registered nurses, and midwives. Findings found that participants perceived themselves to have moderate disaster management preparation ( $M = 74.9$ ,  $SD = 21.6$ ), moderate knowledge [ $M = 49.9$ ,  $SD = 12.3$ ], and weak to moderate skills in disaster management ( $M = 35.3$ ,  $SD = 12.7$ ). Significant differences were noticed in perceptions of disaster preparedness, knowledge, and skills based on gender, specialization, and exposure to actual

disaster events. More training courses are required in Jordan to improve nurses' preparedness for disasters.

Al Khalaileh et al. (2012) conducted a cross-sectional study on 474 Jordanian RNs to examine their perceptions of knowledge, abilities, and disaster preparedness. The RNs working in three randomly chosen MOH facilities and two university hospitals were administered the DPET. The results found that 65% of respondents reported insufficient or poor disaster preparation, 18% moderate, 12% good, and 5% very well-prepared. A total of 31% of undergraduate students, 8% of graduate nursing students, 31% of facility drills, 22% of continuing education courses received disaster education, and 11% had been shared in a true disaster. Also, 430 RNs needed to recognize the role of RNs in disasters, in addition to knowledge and skills.

Ahayalimudin et al. (2012) carried out a cross-sectional study to determine Malaysian emergency nurses' and community health nurses' disaster management knowledge, attitudes, and practices (N=468). Findings revealed that 56.1% of ER nurses had enough training compared to 30.7% of community health nurses. ER nurses who participated in disaster response were more likely to provide proper care, similar to those who received disaster-related training. Therefore, involvement in disaster response and attending disaster-related training promote the adequacy of knowledge and practices, as well as positive attitudes. Health administrators must provide disaster-related training to front-line personnel such as ER and community health nurses to enhance their knowledge and practices in disaster management.

### ***Effect of Disaster Management Training Programs***

Multiple studies were undertaken to determine the impact of disaster management training programs on the readiness of nurses for disasters. For instance, Farokhzadian et al. (2023) conducted a study to examine the efficacy of an online training program in enhancing competencies in disaster risk management. A total of 81 Iranian nurses were carefully selected

from a specialist trauma hospital. The nurses were then allocated to either the control group (n = 42) or the intervention group (n = 39) utilizing a random technique. The intervention group engaged in a total of four sessions of online training. Before and during the intervention, both groups performed a demographic survey and the nurses' perceptions of disaster core competencies scale (NPDCC) electronically. Findings indicated a statistically significant disparity in the scores between the control and intervention groups after the application of the training program, which proposes that the training program had a beneficial impact on the proficiency of nurses in the domain of disaster risk management. The findings indicated that there was a notable enhancement in nurses' knowledge, attitudes, and practices about disaster preparedness, progressing from a minor impact to a moderate one.

Sabola et al. (2023) adopted a quasi-experimental design to identify the influence of disaster management training intervention on the competency of nurses. A multistage sampling technique was utilized to select the study settings and 60 Egyptian nurses who worked in the two primary health care centers at Menoufia Governorates were recruited. Four instruments—the Disaster Nursing Competencies Questionnaire, the Disaster Management Knowledge Questionnaire, the Structured Interviewing Questionnaire, and the Nursing Skills Checklist Measurement—were utilized. The results revealed that the total knowledge score of nurses regarding internal disaster preparedness guidelines increased from a range of 1.7% - 6.7% pre-training to 31.9% - 78.3 post-training. All knowledge items showed a highly significant improvement. The impact of nursing intervention on the total score and subdomains of competency levels regarding disaster management before and after training showed a significant improvement in all competency items. The total competency score rose from 1.7% to 25% before the training to 64.1% to 107.4% after it. Findings indicated that the nurses' knowledge, attitudes, and practices

toward disaster preparedness improved from unsatisfactory (poor) to satisfactory (moderate) levels. Thus, using disaster management training interventions can help nurses working in primary health care centers become more knowledgeable and competent in disaster management.

Al-qbelat et al. (2021) conducted a study in Jordan to determine the impacts of a disaster training course on the knowledge, skills, and personal preparation for emergencies in a sample of 50 Jordanian emergency nurses. The study employed a one-group pretest-posttest design. The program was administered to participants over the Zoom platform for a duration of eight hours, spanning a week. The pre-post-educational intervention exerted a substantial impact on the knowledge, skills, and personal preparedness of ER nurses in the face of disasters. The data indicated that nurses had a mean DPET score of 3.90 (SD = 0.9), suggesting a modest level of pre-program knowledge, skills, and personal preparation. In addition, the average scores for knowledge, skills, and personal preparedness were 4.27 (SD = 0.14), 3.88 (SD = 0.16), and 3.8 (SD = 0.14), respectively, indicating that the participants endorsed moderate knowledge, abilities, and personal preparedness levels. Furthermore, the data collected after the program indicated that the nurses' knowledge, abilities, and personal preparation had mean scores of 4.82 (SD = 0.12), 4.79 (SD = 0.13), and 4.9 (SD = 0.13), respectively, suggesting moderate levels of aforementioned variables. However, there was an observed improvement in the levels of the aforementioned variables. The findings of this study provide empirical evidence supporting the efficacy of an educational program focused on disasters in enhancing the knowledge, skills, and personal preparation of ER nurses.

Moreover, Said et al. (2022) used a nonequivalent controlled group design to determine the influences of a modified PFA training program on psychological preparedness for emergencies and disasters of nurses. Five hospitals in Palestine provided trauma unit nurses were chosen and

allocated into two groups, the intervention group, which received a nine-hour modified PFA training session, and the control group. The PFA training's integration of real-world experiences through scenario-based simulation and debriefing enhanced their psychological readiness. A total of 150 nurses (75 nurses in each group completed the basic data) and self-reports were used to evaluate both groups at the beginning of the program (pretest) and the end (posttest). The results illustrated that PFA training had a significant influence on psychological preparation ( $p < 0.05$ ). At the posttest, the mean of psychological preparation scores (37.81 vs. 32.64) was improved in the intervention group rather than in the control group. These results reflected that the levels of nurses' knowledge, attitudes, and practices toward disaster preparedness improved from moderate to large. Thus, the PFA training proved beneficial to the Palestinian nurses who deal with daily political conflicts in addition to the violence and catastrophes that accompany them.

In their study, Mabrouk and Attallah (2020) employed a quasi-experimental approach to explore the impact of a crisis management training program on the knowledge and attitudes of nurses working in critical care units [N=66] at Alexandria University Hospital. A self-administered questionnaire including two instruments, namely the Disaster Management Knowledge Questionnaire (I) and the Disaster Management Attitudes Questionnaire (II), was utilized to collect the data. The nursing staff was partitioned into six cohorts, with each cohort comprising ten to eleven nurses. The intervention encompassed a total of 18 sessions across all groups, with each session having an approximate duration of two hours. To address the subject matter, each group had three consecutive sessions, resulting in a total duration of 6 hours per group. The results of the study indicated that there were significant disparities in the overall knowledge of nurses and its three domains both immediately following and three months after participating in the training program. Moreover, notable enhancements in the overall attitudes of nurses towards disaster

management were observed both immediately following and three months after they participated in the training session. The findings elucidated that the level of knowledge among nurses about fundamental principles of disaster management was inadequate before they participated in the training program, but improved significantly following their engagement in the educational training.

The study conducted by Mirzaei et al. (2019) aimed to examine the effect of a disaster management training program on the knowledge, attitudes, and practices of nursing staff about disaster preparedness. The researchers conducted this interventional investigation at Shahid Rahnemoon Hospital in Iran. At the outset, a sample of 40 nurses was selected randomly, and their knowledge, attitudes, and practices were evaluated through the utilization of a disaster-preparedness questionnaire specifically designed for nurses. The nurses in place were supplied with a disaster readiness training curriculum. The program was conducted as an eight-hour session over the course of one day. One month after the education program, the nurses' level of preparedness, encompassing their knowledge, attitude, and their practices, was reassessed using an identical questionnaire. The results indicated that there was a rise in the average score of nurses' knowledge from 14.23 to 21.30, an increase in their attitude from 62.20 to 71.67, and an improvement in their performance from 7.28 to 11.88. The observed differentiating factors exhibited statistical significance. In addition, there was a statistically significant improvement in the overall mean readiness score of nurses, rising from 82.28 to 104.53. The results indicated that the nurses' understanding, beliefs, and actions regarding disaster preparedness progressed from a moderate level to a strong level.

Another study was performed by Najafi Ghezaljah et al. (2019) to explore the influence of an educational program utilizing a virtual social network (Telegram app) on knowledge and

attitudes regarding disaster preparedness of ER nurses. A pre-post-test equivalent control group design was carried out in two Iranian hospitals. A total of 60 nurses were chosen utilizing a census method and allocated into two groups (control [n = 30] and intervention [n = 30]). The DEPT was utilized to gather data before and after the intervention. The intervention group obtained 34 sessions of disaster preparedness education through a virtual social network. The pretest knowledge score showed no statistically significant difference between groups, however, the intervention group had a higher knowledge score in comparison with the control group in the post-test. Knowledge scores in the intervention group significantly increased from moderate at the pretest to strong at the posttest. The post-test attitudes score was higher than the pretest score, but no statistical difference was demonstrated, indicating that ER nurses had positive attitudes toward the need for disaster preparedness. This result indicates the effectiveness of virtual social networks as a learning method.

Diab and Mabrouk (2015) evaluated the influence of a guide booklet on the knowledge and attitudes of registered nurses (RNs) about disaster preparedness. A quasi-experimental study was conducted on 340 Egyptian nurses, utilizing pre-post-test and follow-up assessments. The data were gathered via instruments designed to assess nurses' understanding of several aspects of disasters, including general disaster knowledge, classification, disaster readiness, and awareness of hospital disasters at both external and internal levels. Additionally, the data included their attitudes towards disaster management plans and socio-demographic information. The results indicated that a significant proportion of nurses had diminished levels of knowledge, awareness, and attitudes during the pre-test phase. Nevertheless, the majority of nurses possessed a moderate to good understanding of general disasters, but just 12.6% were aware of hospital disaster readiness to a sufficient extent, and 37.5% held positive attitudes toward disaster management. The findings

suggest that the nurses' understanding, beliefs, and actions about disaster preparedness have progressed from a low level to a moderate level. Consequently, the advice booklet effectively enhanced nurses' understanding of disaster preparedness, resulting in noticeable progress and a shift in their mindset towards disasters. All hospital staff should have access to continuing nursing education tailored to their specific requirements to enhance their understanding of disaster preparedness.

Ghanbari et al. (2011) conducted a study on 113 Iranian-certified nurses to determine the impact of a disaster nursing education program on nurses' readiness. A one-group pre-post design was used. A preparedness for confronting disasters questionnaire was used to collect data. A one-day disaster management workshop was added to the preparedness program. The nurses' knowledge, attitudes, and performance were assessed one week, and one month after the session. The results found that the mean scores of knowledge, attitude, and performance were improved from pretest to post-test (one month after the session) as follows: 5.55 to 19.88, 66.18 to 72.41, and 3.36 to 12.48, respectively, assessments, reflecting a significant difference ( $p < 0.001$ ). Furthermore, the mean score for total preparedness statistically increased ( $p < 0.001$ ) from 75.14 in the pretest to 104.77 in the posttest. The findings reflected that the nurses' knowledge, attitudes, and practices toward disaster preparedness improved from low to moderate after attending the intervention. According to the findings, disaster programs should be included in their academic educational curriculum and as a continuing educational program to promote and maintain nursing staff preparedness.

### **Summary of Previous Studies**

Previous studies were conducted in numerous nations to evaluate the level of readiness

among RNs in the disaster event and the influence of training initiatives. Most of the studies indicated that nurses had poor to moderate knowledge levels, abilities, or readiness. Also, some research has established interventions to increase preparation through various training programs that provide favorable outcomes and enhanced performance, as well as strengthen the role of registered nurses in providing care to victims of disasters and boosting self-confidence.

All previous studies demonstrated the importance and effectiveness of educational programs using different strategies including workshops and handouts, online, Google Classroom, and virtual networks. These courses enhanced the knowledge and abilities that RNs require in times of crisis to enhance the standard of care given to victims.

Most people agree that one of the most crucial ways to enhance registered nurses' skills, knowledge, and level of personal readiness for disasters and provide them with guidance on how to handle them through disaster preparation education. It's thought that one of the most effective ways to improve nursing competencies is through training, which is made easier to learn, retain, and implement through technological innovations such as computerized programs like PowerPoint and movies. However, all of these studies were conducted regionally and internationally, there is one study executed in Palestine concerning psychological care for nurses during disasters, therefore, this study will fill the gap in this area.

### **Conceptual Framework of the Study**

The researchers proposed some theories to clarify the effect of the learning process and education on changing knowledge, skills, and attitudes such as social cognitive learning theory and experiential learning theory. The Social Cognitive Learning Theory/Social Learning focuses on ongoing interaction between individuals and their environment. The revised theory included the concept of self-efficacy (Bandura, 1977, 1986, 1997), which refers to one's perception that

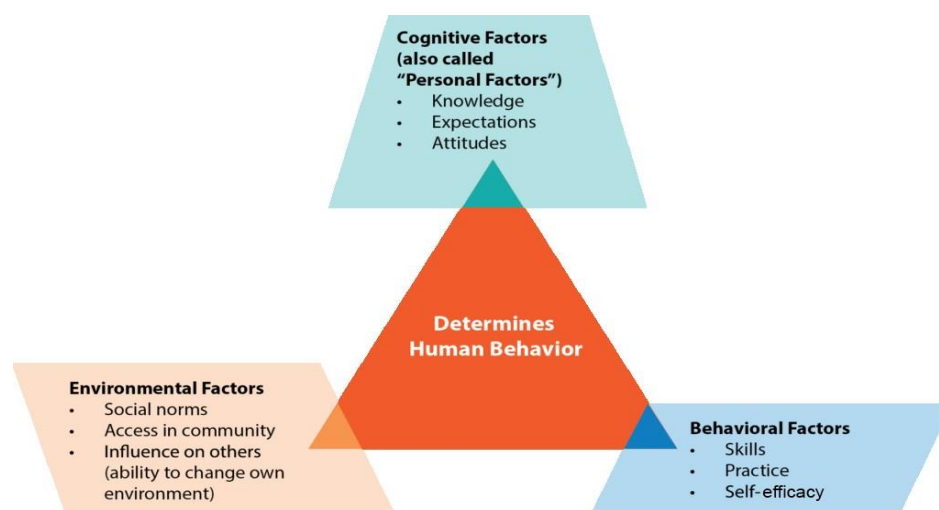
he/she has abilities to perform behaviors essential to attain specific performance. Self-efficacy expresses individuals' confidence in their abilities to control their social environment, behaviors, and motivations (Bandura, 1997).

Various factors in the environment impact an individual's ability to do a behavior, such as offering appropriate support and resources to enhance self-efficacy (Bandura, 2002). Behavior is influenced by the interplay between individuals and their environment, or how individuals interact with their surroundings. According to Bandura (1973, 1977), behavior exerts an influence on both the individual and the environment, subsequently impacting behavior and mutually influencing one another. Reciprocal determinism refers to the intricate interplay of variables that leads to the outcome. Bandura (1973, 1977) posits that social learning theory (Figure 5) posits that behavior, personal attributes, and environmental circumstances are mutually influential and interrelated determinants. Social Cognitive Theory (SCT) posits that certain facets of an individual's knowledge acquisition can be directly associated with observing others within the framework of social interactions, experiences, and external media influences. When individuals observe a model engaging in an activity and the resulting outcomes, their own elements (cognition, affect, and biology) and environmental factors mutually influence their evaluation of that action. Behavior retains the chronological order of occurrences and utilizes this information to direct future actions. Moreover, the act of seeing a model has the potential to function as a source of motivation for the viewer to replicate previously acquired behaviors. According to Bandura (1986, 2002), individuals do not acquire novel behaviors by a process of trial and error, but rather by imitating the actions of others to secure their survival.

According to the SCT, personal variables like self-reflection and self-regulation are not inherent in humans but rather may be intentionally enhanced by individuals to enhance their

cognitive performance. This pertains to the notion that self-efficacy has the potential to be altered or enhanced. The triadic reciprocity model posits that individuals can impact their motivation and performance through their interactions with personal determinants (e.g., self-efficacy), environmental variables (e.g., treatment conditions), and actions (e.g., practice). Enhancing performance necessitates the modification of certain influences. The primary challenge in the process of instruction and learning is to foster the learner's self-assurance in their capacity to effectively do a given task (Bandura, 2011). The theory underscores the need to establish a conducive structural and social context, making it particularly suitable for the assessment stage of an emergency or post-disaster situation.

The Social and Behavior Change Communication (SBCC) interventions specifically ought to encourage role models who exhibit the desirable habits and reap the rewards. This can be accomplished through community gatherings that recognize and honor individuals who exhibit the desired behaviors, as well as through entertainment education programs like radio and television dramas. Also, these interventions emphasize the advantages and incentives that come with exhibiting the desirable actions,

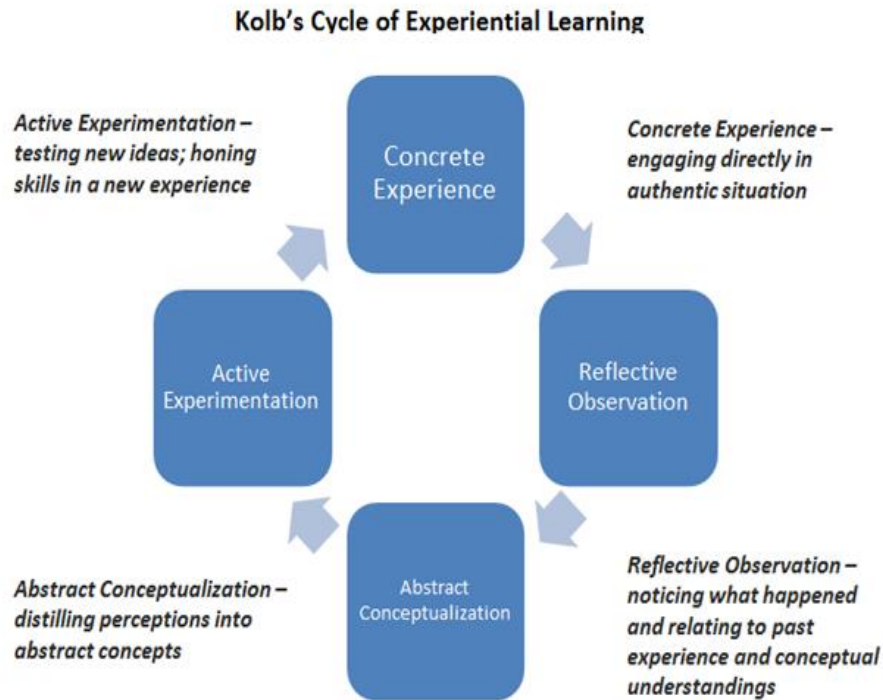


**Figure 5:** Social and Behavior Change Communication (SBCC) for Emergency Preparedness (Johns Hopkins University, 2016-2020)

Improve people's perception of their capacity to engage in the desired behaviors, and provide them with knowledge, resources, and training. (Bandura, 2001; Glanz & Rimer, 2005). As a result, SBCC has been recognized as a crucial component of crisis and emergency preparedness plans. It is recommended that SBCC be included in all phases of an emergency response, ranging from preparation and prevention to crisis response and recovery.

The SBCC's responsibility at the onset of an emergency is to include the public, assist them in assessing their risks, and motivate them to take appropriate action. Response activities will be accompanied by suitable communication interventions thanks to the communication and associated pillars. The emergency communication pillar may be particularly helpful in the areas of coordination; community mobilization and action; message production and dissemination; capacity building; and monitoring and evaluation (Glanz & Rimer, 2005; Health Communication Capacity Collaborative, 2014). Also, people prefer to adopt and practice behaviors that they perceive others doing, thus, social learning principles can be utilized to affect perceptions of the social environment, make behaviors seem more prevalent, and offer social support to individuals who are considering adopting or practicing them (Bandura, 1977).

Another related theory is the Experiential learning theory, which was recognized by Kolb (1984). Kolb believes that knowledge is constantly gained by personal and environmental experiences. Also, the learner must own four abilities to obtain authentic knowledge from an experience, which include the desire to actively take part in the experience, the capability to contemplate the experience, having and using analytical skills for conceptualizing the experience, and possessing the skills of decision-making and problem-solving to apply the new ideas gained from the experience (National Graduate Institute for Policy Studies GRIPS, 2007) as seen in Figure 6.

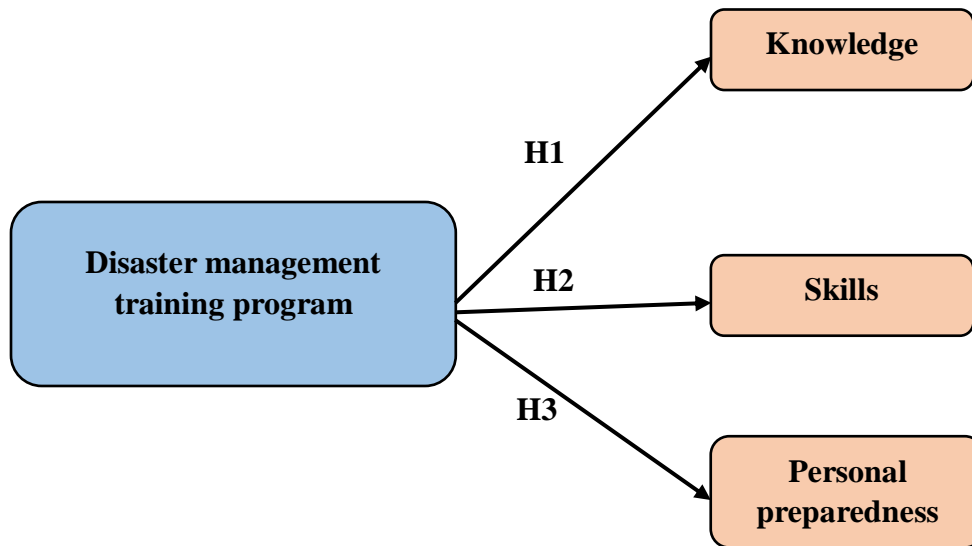


**Figure 6: Kolb's cycle of Experiential learning (Indiana University, 2006)**

Experiential learning theory proposes that knowledge and understanding are acquired by learners through experiences. Students can have a firsthand grasp of the events occurring around them through experience. Educators have begun to leverage the power of experience in study abroad courses, field studies, role plays, and other computer-based initiatives. This idea may find even more uses in the future, which would be exciting for both facilitators and learners (Baker et al., 2002). Disaster preparedness educational programs are one of the most crucial ways to support nurses to be knowledgeable, skilled, and personally prepared for disaster management.

Despite that, the investigator developed a model to interrelate all study variables together. This model was developed based on previous literature discussed the study issue, which findings demonstrated that there was an influence of disaster training programs on nurses' knowledge, skills, and personal preparedness for disaster preparedness (Al-qbelat et al., 2021; Mabrouk & Attallah, 2020; Mirzaei et al., 2019). The model consists of an independent variable including a disaster management training program and dependent variables represented in knowledge, skills,

and personal preparedness. Thus, this study developed the hypotheses that revealed there were disaster management training program has an influence on improving nurses' knowledge, skills, and personal preparedness for disaster preparedness as shown in Figure 7.



**Figure 7: Conceptual framework of the study**

## **CHAPTER THREE**

### **METHODOLOGY**

This chapter includes the study's design, population and sample, intervention, ethical considerations, data collection, and analysis process

#### **Study Design**

The study employed a one-group pretest-posttest design, where the intervention educational program was provided to the targeted sample of nurses after assessing their level of knowledge, skills, and personal preparedness for disaster preparedness, and then reassessing them after the intervention. The study was implemented during the time from May to December 2023.

One group pretest-posttest design is a sort of study methodology that behavioral researchers commonly use to examine the effect of an intervention on a sample. The initial structure of this research design is the use of one group of participants; all participants are part of the same condition, which means that all participants receive the same treatment and assessment. Also, it is a linear ordering, which necessitates assessing a dependent variable before and after treatment. Pretest-posttest designs are the best strategy for comparing participant groups and assessing the degree of change caused by treatments or interventions (Polit & Beck, 2021).

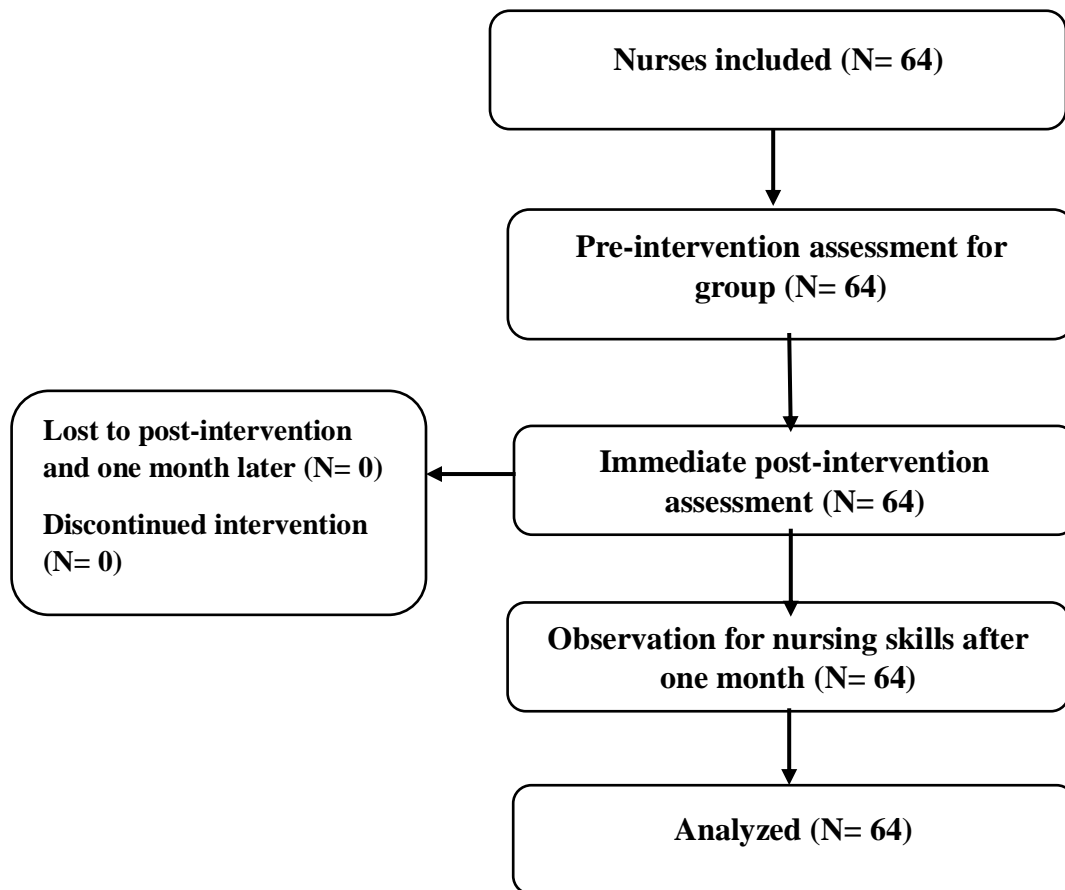
#### **Population, Sample, and Sampling**

This study's population consisted of all RNs working in emergency departments at both government and nongovernment hospitals. The eligible nurses were recruited using a convenience sample strategy. The G\*power program was adopted for calculating sample size. Whereas  $\alpha = 0.05$ , effect size = 0.5, and power = 0.90 with a t-test. This study required a complete sample of 53

participants, with an additional 20% added to avoid participants' dropout and withdrawal, making the total number of participants 64 nurses. The sampling frame is explained in Figure 8.

### **Inclusion and Exclusion Criteria**

All full-time registered nurses with experience of more than one year in the emergency departments who accepted to participate in the study and had not attended any training program in triage or disaster management, regardless of age or gender were included in the study. On the other hand, nurses with part-time jobs working outside the targeted department were excluded from the study.



**Figure 8: The sampling frame of the study**

## Setting

The current study was executed in two health sectors including governmental and non-governmental hospitals. All hospitals in the health sectors in Palestine operate under the same policies and strategies in terms of working hours and staff development (training courses and workshops) (MOH). Augusta Victoria Hospital (AVH) – Jerusalem, and AlMakassed Hospital were selected as non-governmental hospitals. Also, Princess Alia Hospital was selected as a governmental hospital. These hospitals were selected because they are the biggest hospitals in Jerusalem and serve West Bank and Gaza patients. Also, Alia Hospital is the biggest governmental hospital that serves Southern Palestine patients. The emergency departments of the selected hospitals were selected to conduct this study.

The AVH, a non-governmental hospital, is situated on the Mount of Olives in Jerusalem and has been associated with the Lutheran World Federation (LWF) since 1950. The primary objective of the organization has been to help Palestinian refugees in collaboration with the UNRWA, the United Nations agency entrusted with the responsibility of managing refugee initiatives in the area since 1948. In the present day, the hospital persists in the advancement of services catering to the Palestinian community. The AVH hospital currently holds the position of the second-largest healthcare facility in East Jerusalem, boasting a total of 171 beds. It employs over 550 individuals, including 180 nurses, including 12 emergency nurses. The hospital in question is the only remaining institution that offers specialized care services to the West Bank and Gaza Strip, with a particular focus on children receiving hemodialysis and radiation. At present, AVH possesses a triaging department dedicated to the care of cancer patients, boasting a total bed capacity of seven (AVH, 2023).

AlMakassed Islamic Charitable Hospital is the largest Arab hospital in East Jerusalem and is located on the Mount of Olives. It is staffed with highly qualified medical personnel to provide

services to the surrounding community. It has an occupancy of 350 beds and more than 1200 employees including 380 nurses. The Emergency Department contains 24 beds and a heart resuscitation unit for adults and children and 39 emergency nurses working in the emergency department (AlMakassed Islamic Charitable Hospital, 2023).

Regarding governmental hospitals, Princess Alia Governmental Hospital is the largest hospital in Hebron and was established in 1957. It is located on the top of Hebron Mountain (Wadi Altufah Street). It has 302 beds and more than 740 employees including 350 nurses, The Emergency Department at Princess Alia Hospital contains 25 beds and 32 emergency nurses working in the emergency department (Princess Alia Governmental Hospital, 2023).

### **Outcomes Measurements**

A self-reporting structured questionnaire and observation methods were used to collect data. This questionnaire consists of the DPET and sociodemographic characteristics of the nurses (e.g., age, gender, level of education, work experience, and hospital type) (Appendix A). Also, observation of skills was conducted using the NTOC (Appendix A).

The DPET was developed by Tichy et al. (2009) to assess nurses' perceptions of disaster preparedness. This version is categorized into three parts as follows: the disaster preparedness phase (25 items), the mitigation phase, which measures the catastrophe response (14 items), and the disaster recovery phase, which measures the disaster response (6 items). All these items evaluate knowledge (13 items), skills (11 items), and personal preparedness for disaster preparedness (21 items). The responses were rated on a scale ranging from one (strongly disagree) to six (strongly agree). The scoring system for this scale and subscales was according to the mean, where 1-2.99 indicated weak preparedness, 3 to 4.99 reflected moderate preparedness, and 5 to 6 indicated strong preparedness. The original tool is valid and reliable with Cronbach's alpha of

0.923 for the DPET scale, and 0.93, 0.93, and 0.91, respectively for knowledge, skills, and post-disaster management subscales (Tichy et al., 2009). The Arabic version was adopted and it is valid and reliable with a Cronbach's alpha of 0.90 for the DPET scale, and 0.91, 0.90, and 0.91, respectively for the knowledge, skills, and post-disaster management subscales (Al Khalaileh et al., 2012) (Appendix B). The internal reliability using Cronbach's alpha in this study for DPET was 0.881 and 0.891, 0.881, and 0.892, respectively for the knowledge, skills, and post-disaster management subscales. The permission to use the Arabic version of the tool was obtained from the author (Appendix C).

NTOC created by Aloyce et al. (2014) was utilized to identify triage skills for nurses working in the emergency departments by monitoring the participants while they were implementing their skills in triage pre and post-intervention program. This checklist included items such as assessing airway, respiratory, and circulatory status, pain assessment, taking short, documenting assessment results, and assigning categories of care (Appendix A). The responses on these items with yes or no. Also, the total score for this tool was counted as follows: < 60 % reflected bad skills and  $\geq 60$  % indicated good skills (Aloyce et al., 2014). This checklist is valid and reliable (Aloyce et al., 2014).

### **Disaster Management Training Program**

The disaster management training program consisted of five topics divided into six sessions that involved (I) an overview of disaster management, the role of RNs in every phase of a disaster and principles of nursing care in a disaster, and clarification of basic terms and definitions, (II) Simple Triage and Rapid Treatment (START) Triage, (III) decontamination measures and the appropriate use of Personal Protective Equipment (PPE) during CBRNE incidents, (IV) basic life support (BLS) and cardiopulmonary resuscitation (CPR), and (V) advanced trauma support, which

include management of bleeding, fractures, and head trauma. Several teaching strategies were used involving group discussion, audio-visual lecturing, case studies, demonstration and re-demonstration on Mankins, videos, and group discussions (Table 1).

### **Validity of the Disaster Management Training Program**

The original material was obtained from Al-qbelat et al. (2021) after obtaining an approval letter to use it (Appendix D). Then, the educational material was evaluated for content validity using the content validity index (CVI) by three panels of experts in Palestine in emergency and disaster management who evaluated the content for completeness, understanding, and clarity (Appendix E). They agreed about the validity of the content and two of them recommended adding a topic about mass causality. The final program is illustrated in Table (1) and Appendix (F).

**Table 1: Disaster management training program**

<b>Time</b>	<b>Session, topic, &amp; duration</b>	<b>Contents</b>	<b>Rationale</b>	<b>Teaching strategies (methods and materials)</b>
<b>First day</b>	<b>The first session</b> Disaster management (2 hours)	Disaster (definition, types, magnitude, stages), basic terminology related to a disaster, nurses' role, and nursing principles in each stage of disaster management.	To identify disaster management definitions, types, stages, and nurses' roles.	Lecture Videos Group work

<b>Time</b>	<b>Session, topic, &amp; duration</b>	<b>Contents</b>	<b>Rationale</b>	<b>Teaching strategies (methods and materials)</b>
<b>First day</b>	<b>The second session</b> Simple Triage and Rapid Treatment (START) Triage (3 hours)	The triage concept and triage tags and mass causality	To properly triage and sort patients to provide high-quality care.	Lecture Colorful posters Videos Discussion about triage scenarios Re-demonstration.
<b>Second day</b>	<b>The third session</b> Decontamination procedures (2 hours)	Procedures of Decontamination and the appropriate utilization of personal protective equipment during Chemical, Biological, Radiological, and Nuclear incidents which include Respiratory Protective Devices and Dermal Protective Equipment.	To identify the equipment of personal protection and how to protect themselves	Lecture Videos
	<b>The fourth session</b> Basic life support (BLS) and cardiopulmonary resuscitation (CPR) (3 hours)	BLS and CPR	To enhance the practice of BLS and CPR	Videos about BLS and CPR Re-demonstration on manikins.

**Continued Table 1: Disaster management training program**

<b>Time</b>	<b>Session, topic, &amp; duration</b>	<b>Contents</b>	<b>Rationale</b>	<b>Teaching strategies (methods and materials)</b>
<b>Third day</b>	<b>The fifth session</b> Advanced Trauma support Disaster Psychology (4 hours)	It involves (1) injury mechanisms; (2) primary survey; (3) protection of airway and spinal cord; (4) interventions for opening airway; (5) bleeding control; (6) fractures and head trauma.  Disaster psychology involves caring for vulnerable groups, psychological support, and posttraumatic stress syndrome (PTSS).	To recognize the advanced trauma and identify posttraumatic stress. Also, psychological support and interventions.	Lecture Videos Group work
	<b>The sixth session</b> Debriefing (1 hour)	Obtaining feedback	To obtain the strengths and improvement points of the training program	Group discussion

### **Field Work and Data Collection Procedure**

After obtaining ethical approvals from the selected hospitals, meetings were arranged with the managers of the hospitals and Directors of nursing to identify the purposes and outcomes of this study. Then, meetings were conducted with head nurses of emergency departments to facilitate nurses' recruitment according to eligible criteria. Also, in collaboration with the nursing directors, the study's release was directed at ER nurses via electronic communication linkages. The participants who expressed interest in taking part in this study signed the informed consent forms (Appendix G). Additionally, the continuous education department emailed nurses with printed information about the study's date, location, and time.

The intervention was implemented according to these steps: firstly, the pre-assessment was carried out before the intervention program by distributing questionnaires to determine levels of participants' knowledge, skills, and personal preparedness for disaster preparedness. Also, the observation was performed by the investigator for the agreed nurses. Secondly, the ER nurses were categorized into groups based on their time interests. After that, they recruited the intervention training. The disaster management training program consisted of 15 hours distributed over six sessions for three days (5 hours daily) and a break time of 30 minutes was provided every two hours. The training was held for each group in the educational hall in each hospital. The intervention program in English language was provided by the investigator in addition to volunteers from health education departments in each selected hospital and a specialized physician in emergency and triaging. Figures 9- A, 9-B, 9-C, and 9-D illustrate the implementation of the training program.



**Figure 9-A: Implementation of disaster management training program**



**Figure 9-B: Implementation of disaster management training program**



**Figure 9-C: Implementation of disaster management training program**



**Figure 9-D: Implementation of disaster management training program**

To evaluate the training program, a posttest was performed by using the same questionnaire immediately after the training program. Also, an observation checklist of triage skills was performed one month after a training program by an investigator. The investigator asked the head nurses to provide a copy of the nursing schedule to determine the scheduling for the recruited nurses to facilitate their observation. Those nurses were observed twice on shifts A and B without informing them and NTOC was used to collect data. The training program was conducted over a period of three months from September to December 2023. After that, the Arab American University awarded certificates of appreciation for 15 credit hours as acknowledgment for their participation in this training program (Appendix H).

### **Ethical Considerations**

The study was committed to the ethical principles of the Institutional Review Board (IRB) at Arab American University (Appendix I). Also, approval was obtained from the MOH and selected non-governmental hospitals before implementing the study (Appendix J).

Confidentiality was assured in all stages of the study, it was clear that participation is voluntary, where the participants could withdraw at any time during the study with no direct benefit or reward. Also, the participants were informed that they will be observed at any time during the study without informing them. The data were entered in one file, which was kept on the computer with a particular code and without backup to maintain confidentiality.

### **Data Analysis**

To conduct descriptive and analytical tests on the study sample, the Statistical Package for Social Sciences (SPSS) software version 25.0 was utilized. Descriptive results included frequencies, percentages, mean, and standard deviations for all variables included in the study. Also, a paired t-test was used to assess the differences between groups in pre and post-intervention.

Additionally, the Wilcoxon Signed rank test was used to examine the differences between the participants' observations pre and post-intervention. The effect of sociodemographic variables (age, educational levels, and experience) on the study group in pre and post-intervention was assessed using independent t-test and ANOVA. A p-value set at  $\leq 0.05$  was considered statistically significant.

### **Summary**

A one-group pretest-posttest design was utilized to conduct this study. The population included all RNs working in emergency departments at both governmental and non-governmental hospitals. The 64 eligible nurses were recruited using a convenience sample strategy. A self-reporting structured questionnaire involving DPET and observation method using NTOC was adopted to collect data pre and post-training program. The disaster management training program consisted of 15 hours distributed over six sessions for three days (5 hours daily). The descriptive analysis was used to describe the study's variables. Also, paired t-test, independent t-test, ANOVA, and Wilcoxon Signed rank test were used for analyzing the study. Findings were considered significant at p-value  $\leq 0.05$ .

## CHAPTER FOUR

### RESULTS

This chapter describes the results of this study which aimed to assess the influence of a training program for disaster management on knowledge, skills, and personal preparedness of ER nurses in Palestine. This chapter discusses sample characteristics, the effect of disaster management training programs on knowledge, skills, and personal preparedness, and the observation of nurses' skills in triage.

#### Characteristics of the Study Participants

Table 2 explains the demographic characteristics of the study sample, findings revealed that 54.7% of the nurses were males and 45.3% were females. The highest participants' age was between > 30 and 40 years (42.2%). More than half of the participants (54.7%) had work experience from 1 to 10 years. Most of the participants (73.4%) had a bachelor level. Also, about two-thirds of the nurses (71.9%) were from non-governmental hospitals.

**Table 2: Characteristics of the study participants (N=64)**

Characteristics	Categories	n (%)
<b>Gender</b>	Male	35 (54.7)
	Female	29 (45.3)
<b>Age/year</b>	23-30	25 (39.1)
	> 30-40	27 (42.2)
	> 40	12 (18.7)
<b>Educational level</b>	Bachelor	47 (73.4)
	Higher than a bachelor	17 (26.6)
<b>Years of work experience/years</b>	1-10	35 (54.7)
	> 10	29 (45.3)
<b>Type of hospital</b>	Governmental	18 (28.1)
	Non-governmental	46 (71.9)

N: number; %: percentage

### **Level of Nurses' Knowledge Pre-Intervention**

Table 3 shows the nurses' knowledge level at pre-intervention, findings found that the nurses endorsed moderate knowledge level regarding disaster preparedness ( $M= 3.83, SD= 0.82$ ). Out of 13 items, only two items "I would be interested in educational classes on disaster preparedness that relate specifically to my community's situation" and "I am aware of classes about disaster preparedness and management that are offered for example at either my workplace, the university, or the community" had the highest means ( $4.52, SD= 1.18$ ;  $4.23, SD =1.28$ , respectively), which reflected a high level of knowledge. However, the item "I have participated in emergency plan drafting and emergency planning for disaster situations in my community" had the lowest mean ( $3.31, SD=1.39$ ) and reflected a moderate level of knowledge.

### **Level of Nurses' Skills Pre-Intervention**

Table 4 illustrates the level of nurses' skills pre-intervention, findings showed that the nurses had moderate skills level in disaster preparedness ( $M= 3.70, SD= 0.87$ ). Out of 11 items, only one item "I am aware of what the potential risks in my community are (e.g. earthquakes, floods, terror, etc.)" had the highest mean ( $4.11, SD= 1.02$ ), which reflected a high level of skills. However, the item "I participate/have participated in creating new guidelines, and emergency plans, or lobbying for improvements on the local or national level" had the lowest mean ( $3.14, SD=1.33$ ) and reflected a moderate level of skills.

**Table 3: Nurses' knowledge of disaster preparedness pre-intervention (N=64)**

Items	Knowledge pre-intervention program Mean (SD)
I participate in disaster drills or exercises at my workplace (clinic, hospital, etc.) on a regular basis.	3.73 (1.42)
I have participated in emergency plan drafting and emergency planning for disaster situations in my community.	3.31 (1.39)
I know whom to contact (chain of command) in disaster situations in my community.	4.16 (1.25)
I participate in one of the following educational activities on a regular basis: continuing education classes, seminars, or conferences dealing with disaster preparedness.	3.89 (1.33)
I read journal articles related to disaster preparedness.	3.78 (1.35)
I am aware of classes about disaster preparedness and management that are offered for example at either my workplace, the university, or the community.	4.23 (1.28)
I would be interested in educational classes on disaster preparedness that relate specifically to my community's situation.	4.52 (1.18)
I find that the research literature on disaster preparedness and management is easily accessible.	3.67 (1.02)
I find that the research literature on disaster preparedness is understandable.	3.80 (0.91)
Finding relevant information about disaster preparedness related to my community needs is an obstacle to my level of preparedness.	3.95 (1.10)
I know where to find relevant research or information related to disaster preparedness and management to fill in gaps in my knowledge.	3.75 (1.06)
I have a list of contacts in the medical or health community in which I practice. I know referral contacts in case of a disaster situation (health department, e.g.).	3.66 (1.19)
In case of a disaster situation, I think that there is sufficient support from local officials on the county, region, or governance level.	3.41 (1.30)
<b>Total nurses' knowledge pre-intervention</b>	<b>3.83 (0.82)</b>

SD: Standard Deviation

**Table 4: Nurses' skills in disaster preparedness pre-intervention (N=64)**

<b>Items</b>	<b>Skills pre-intervention program Mean (SD)</b>
I consider myself prepared for the management of disasters.	3.72 (1.38)
I participate/have participated in creating new guidelines, and emergency plans, or lobbying for improvements on the local or national level.	3.14 (1.33)
I would be considered a key leadership figure in my community in a disaster situation.	3.72 (1.25)
I am aware of what the potential risks in my community are (e.g. earthquakes, floods, terror, etc.).	4.11 (1.02)
In case of bioterrorism/biological or chemical attacks, I know how to use personal protective equipment.	3.66 (1.10)
In case of bioterrorism/biological or chemical attacks, I know how to execute decontamination procedures.	3.52 (1.11)
In the case of bioterrorism/biological or chemical attacks, I know how to perform isolation procedures so that I minimize the risks of community exposure.	3.63 (1.04)
I am familiar with the local emergency response system for disasters.	3.55 (1.15)
I am familiar with accepted triage principles used in disaster situations.	3.73 (1.26)
I have personal/family emergency plans in place for disaster situations.	3.66 (1.07)
I have an agreement with loved ones and family members on how to execute our personal/family emergency plans.	3.58 (1.11)
<b>Total nurses' skills pre-intervention</b>	<b>3.70 (0.87)</b>

SD: Standard Deviation

### **Level of Nurses' Personal Preparedness Pre-Intervention**

Table 5 clarifies the level of nurses' personal preparedness pre-intervention, findings demonstrated that the nurses had moderate personal preparedness level for disaster preparedness ( $M= 3.85$ ,  $SD= 0.83$ ). Out of 21 items, only eight items “I know the limits of my knowledge, skills, and authority as an RN to act in disaster situations, and I would know when I exceed them”, “I can differentiate the signs and symptoms of acute stress disorder and post-traumatic stress disorder (PTSD)”, “I would feel confident providing patient education on stress and abnormal functioning related to trauma”, “I feel reasonably confident I can care for patients independently without the supervision of a physician in a disaster situation”, “I am familiar with what the scope of my role as a registered nurse in a post-disaster situation would be”, “I can identify possible indicators of mass exposure evidenced by clustering of patients with similar symptoms”, “As an RN, I would feel confident in my abilities as a direct care provider and first responder in disaster situations”, and “As an RN, I would feel reasonably confident in my abilities to be a member of a decontamination team” had the highest means ( $4.2$ ,  $SD= 1.02$ ;  $4.14$ ,  $SD =1.12$ ;  $4.13$ ,  $SD= 1.03$ ;  $4.11$ ,  $SD= 1.12$ ;  $4.11$ ,  $SD= 0.97$ ;  $4.03$ ,  $SD= 0.95$ ;  $4.03$ ,  $1.00$ ;  $4.03$ ,  $1.14$ , respectively), which reflected high personal preparedness level. However, the item “I am familiar with the main Groups (A–B- C) of biological weapons (Anthrax, Plague, Botulism, Smallpox, etc.), their signs and symptoms, and effective treatments” had the lowest mean ( $3.25$ ,  $SD=1.33$ ) and reflected moderate personal preparedness level.

**Table 5: Nurses' personal preparedness for disaster preparedness pre-intervention (N=64)**

<b>Items</b>	<b>Personal preparedness pre-intervention program Mean (SD)</b>
I know the limits of my knowledge, skills, and authority as an RN to act in disaster situations, and I would know when I exceed them.	4.2 (1.02)
I can identify possible indicators of mass exposure evidenced by clustering of patients with similar symptoms.	4.03 (0.95)
I can manage the common symptoms and reactions of disaster survivors that are of affective, behavioral, cognitive, and physical nature.	3.88 (0.98)
I am familiar with psychological interventions, behavioral therapy, cognitive strategies, support groups, and incident debriefing for patients who experience emotional or physical trauma.	3.72 (1.09)
I am able to describe my role in the response phase of a disaster in the context of my workplace, the general public, media, and personal contacts.	3.81 (1.11)
I am familiar with the main Groups (A–B- C) of biological weapons (Anthrax, Plague, Botulism, Smallpox, etc.), their signs and symptoms, and effective treatments.	3.25 (1.33)
I feel confident recognizing deviations in health assessments indicating potential exposure to biological or chemical agents.	3.52 (1.16)
As an RN, I would feel confident in my abilities as a direct care provider and first responder in disaster situations.	4.03 (1.00)
As an RN, I would feel confident as a manager or coordinator of a shelter.	3.77 (1.23)
As an RN, I would feel reasonably confident in my abilities to be a member of a decontamination team.	4.03 (1.14)
In case of a bioterrorism/biological or chemical attacks, I know how to perform focused health history and assessment, specific to the biological or chemical agents that are used.	3.73 (1.04)
I feel reasonably confident I can care for patients independently without the supervision of a physician in a disaster situation.	4.11 (1.12)
I am familiar with the organizational logistics and roles among local and national agencies in disaster response situations.	3.30 (1.10)
I would feel confident implementing emergency plans, evacuation procedures, and similar functions.	3.94 (1.09)
I would feel confident providing patient education on stress and abnormal functioning related to trauma.	4.13 (1.06)
I would feel confident providing education on coping skills and training for patients who experience traumatic situations so they can manage themselves.	3.88 (1.14)

**Continued Table 5: Nurses' personal preparedness for disaster preparedness pre-intervention (N=64)**

<b>Items</b>	<b>Personal preparedness pre-intervention program Mean (SD)</b>
I can differentiate the signs and symptoms of acute stress disorder and post-traumatic stress disorder (PTSD).	4.14 (1.12)
I am familiar with what the scope of my role as a registered nurse in a post-disaster situation would be.	4.11 (0.97)
I participate in peer evaluation of skills in disaster preparedness and response.	3.78 (1.13)
I am familiar with how to perform focused health assessments for PTSD.	3.75 (1.18)
I feel confident managing (caring, evaluating) emotional outcomes for acute stress disorder or PTSD following disaster or trauma in a multi-disciplinary way such as through referrals, and follow-ups and I know what to expect in the ensuing months.	3.91 (1.15)
<b>Total nurses' personal preparedness pre-intervention</b>	<b>3.85 (0.83)</b>

SD: Standard Deviation

### **Observation of Nurses' Skills Pre-Intervention**

Table 6 shows the observation of nurses' skills pre-intervention, the results indicated that 51 nurses (79.6%) had good skills in triage. Also, the following five questions had the highest percentages (100%) "Does the performance involve: airway assessment?", "Does the performance involve respiratory status assessment?", "Temperature measurement", "Does the circulatory status assessment include Blood pressure?", and "Does the circulatory status assessment include pulse rate". On the contrary, the following questions had the lowest percentages "Does the nurse actually triage the patients?" (46.9%), "Does respiratory status assessment include listening for breath sounds?" (53.1), and "Does the circulatory status assessment include capillary refills?" (56.3%).

**Table 6: Observation of nurses' skills pre-intervention (N=64)**

<b>Items to be checked</b>	<b>Yes</b>	<b>No</b>
	<b>n (%)</b>	<b>n (%)</b>
Is there a nurse assigned for patients' triage?	56 (87.5)	8(12.5)
If Yes in 1 above, does the nurse actually triage the patients?	30 (46.9)	34 (53.1)
Does the triage performance involve:		
• Airway assessment	64 (100)	0
• Respiratory status assessment	64 (100)	0
• Circulatory status assessment	58 (90.6)	6 (9.4)
Does the respiratory status assessment include:		
• Look for chest movement	52 (81.3)	12 (18.8)
• Listen for breath sounds	34 (53.1)	30 (46.9)
• Breathing pattern	46 (71.9)	18 (28.1)
Does circulatory status assessment include:		
• Blood pressure	64 (100)	0
• Pulse rate	64 (100)	0
• skin/mucous color (pink, pale)	44 (68.8)	20 (31.3)
• Skin temperature (warm, hot, cool/cold)	47 (73.4)	17 (26.6)
• Capillary refills	36 (56.3)	28 (43.8)
Temperature measurement	64 (100)	0
Pain assessment	60 (93.8)	4 (6.3)
Neurological assessment: Alert, responds to voice, responds to pain, Unresponsive.	42 (65.6)	22 (34.4)
Does the nurse document the triage anywhere?	57 (89.1)	7 (10.9)
Does re-assessment on regular basis of those patients who are waiting done to see if their conditions have deteriorated and need to be seen more urgently?	53 (82.8)	11 (17.2)
<b>Total observation of nurses' skills pre-intervention &gt; 60.0% good skills</b>	<b>51( 79.6)</b>	<b>13 (20.4)</b>

n: number; %: percentage

### Level of Nurses' Knowledge Post-Intervention

Table 7 reveals the level of nurses' knowledge post-intervention, the results found that the nurses reported high knowledge level of disaster preparedness (M= 5.15, SD= 0.29). All 13 items had high levels of knowledge, and the two items "I participate in one of the following educational activities on a regular basis: continuing education classes, seminars, or conferences dealing with disaster preparedness" and "I would be interested in educational classes on disaster preparedness that relates specifically to my community situation." had the highest means (5.56, SD= 0.5; 5.22, SD =0.51, respectively). However, the item "I find that the research literature on disaster preparedness and management is easily accessible" had the lowest mean (5.00, SD=0.59) and also reflected a high level of knowledge.

**Table 7: Nurses' knowledge of disaster preparedness post-intervention (N=64)**

Items	Knowledge post-intervention program Mean (SD)
I participate in disaster drills or exercises at my workplace (clinic, hospital, etc.) on a regular basis.	5.02 (0.85)
I have participated in emergency plan drafting and emergency planning for disaster situations in my community.	5.05 (0.57)
I know who to contact (chain of command) in disaster situations in my community.	5.08 (0.57)
I participate in one of the following educational activities on a regular basis: continuing education classes, seminars, or conferences dealing with disaster preparedness.	5.56 (0.50)
I read journal articles related to disaster preparedness.	5.11 (0.48)
I am aware of classes about disaster preparedness and management that are offered for example at either my workplace, the university, or the community.	5.16 (0.59)

SD: Standard Deviation

**Continued Table 7: Nurses' knowledge of disaster management post-intervention (N=64)**

<b>Items</b>	<b>Knowledge post-intervention program Mean (SD)</b>
I am aware of classes about disaster preparedness and management that are offered for example at either my workplace, the university, or the community.	5.16 (0.59)
I would be interested in educational classes on disaster preparedness that relates specifically to my community situation.	5.22 (0.51)
I find that the research literature on disaster preparedness and management is easily accessible.	5.00 (0.59)
I find that the research literature on disaster preparedness is understandable.	5.05 (0.51)
Finding relevant information about disaster preparedness related to my community needs is an obstacle to my level of preparedness.	5.13 (0.57)
I know where to find relevant research or information related to disaster preparedness and management to fill in gaps in my knowledge.	5.14 (0.58)
I have a list of contacts in the medical or health community in which I practice. I know referral contacts in case of a disaster situation (health department, e.g.).	5.16 (0.54)
In case of a disaster situation, I think that there is sufficient support from local officials on the county, region, or governance level.	5.13 (0.54)
<b>Total nurses' knowledge post-intervention</b>	<b>5.15 (0.29)</b>

SD: Standard Deviation

### **Level of Nurses' Skills Post-Intervention**

Table 8 illustrates the level of nurses' skills post-intervention, findings revealed that the nurses had high levels of skills in disaster management (Mean= 5.04, SD= 0.27). Out of 11 items, eight items had high levels of skills, and the item "I am aware of what the potential risks in my community are (e.g. earthquakes, floods, terror, etc.)" had the highest mean (5.22, SD= 0.54). However, three items had moderate levels of skills, and the item "I participate/have participated

in creating new guidelines, and emergency plans, or lobbying for improvements on the local or national level” had the lowest mean (4.84, SD=0.71).

**Table 8: Nurses' skills in disaster preparedness post-intervention (N=64)**

<b>Items</b>	<b>Skills post-intervention program Mean (SD)</b>
I consider myself prepared for the management of disasters.	5.11 (0.66)
I participate/have participated in creating new guidelines, emergency plans, or lobbying for improvements on the local or national level.	4.84 (0.71)
I would be considered a key leadership figure in my community in a disaster situation.	4.97 (0.64)
I am aware of what the potential risks in my community are (e.g. earthquake, floods, terror, etc.).	5.22 (0.54)
In case of a bioterrorism/biological or chemical attacks, I know how to use personal protective equipment.	5.14 (0.58)
In case of bioterrorism/biological or chemical attacks, I know how to execute decontamination procedures.	5.05 (0.62)
In a case of bioterrorism/biological or chemical attacks, I know how to perform isolation procedures so that I minimize the risks of community exposure.	4.97 (0.59)
I am familiar with the local emergency response system for disasters.	5.02 (0.63)
I am familiar with accepted triage principles used in disaster situations.	5.06 (0.61)
I have personal/family emergency plans in place for disaster situations.	5.13 (0.70)
I have an agreement with loved ones and family members on how to execute our personal/family emergency plans.	5.03 (0.68)
<b>Total nurses' skills post-intervention</b>	<b>5.04 (0.27)</b>

SD: Standard Deviation

### Level of Nurses' Personal Preparedness Post-Intervention

Table 9 clarifies the level of nurses' personal preparedness post-intervention, findings found that the nurses had high personal preparedness level for disaster preparedness ( $M= 5.12$ ,  $SD= 0.27$ ). Out of 21 items, 18 items had high personal preparedness levels, and the two items "As an RN, I would feel confident in my abilities as a direct care provider and first responder in disaster situations", "I am familiar with the main Groups (A–B- C) of biological weapons (Anthrax, Plague, Botulism, Smallpox, etc.), their signs and symptoms, and effective treatments", had the highest means ( $5.38$ ,  $SD= 0.54$ ;  $5.30$ ,  $SD =0.58$ ; respectively), which reflected a high level of personal preparedness. However, three items had moderate levels of personal preparedness, and the items "I am familiar with how to perform focused health assessments for PTSD", "I would feel confident providing patient education on stress and abnormal functioning related to trauma", "I would feel confident providing education on coping skills and training for patients who experience traumatic situations so they can manage themselves" had the lowest means ( $4.97$ ,  $SD=0.61$ ,  $4.97$ ,  $SD=0.47$ ,  $4.98$ ,  $SD=0.63$ , respectively).

**Table 9: Nurses' personal preparedness for disaster preparedness post-intervention (N=64)**

Items	Personal preparedness post-intervention program Mean (SD)
I know the limits of my knowledge, skills, and authority as an RN to act in disaster situations, and I would know when I exceed them.	5.19 (0.53)
I can identify possible indicators of mass exposure evidenced by clustering of patients with similar symptoms.	5.05 (0.45)

SD: Standard Deviation

**Continued Table 9: Nurses' personal preparedness for disaster preparedness post-intervention (N=64)**

Items	Personal preparedness post-intervention program Mean (SD)
I can manage the common symptoms and reactions of disaster survivors that are of affective, behavioral, cognitive, and physical nature.	5.17 (0.65)
I am familiar with psychological interventions, behavioral therapy, cognitive strategies, support groups, and incident debriefing for patients who experience emotional or physical trauma.	5.23 (0.61)
I am able to describe my role in the response phase of a disaster in the context of my workplace, the general public, media, and personal contacts.	5.19 (0.61)
I am familiar with the main Groups (A–B- C) of biological weapons (Anthrax, Plague, Botulism, Smallpox, etc.), their signs and symptoms, and effective treatments.	5.30 (0.58)
I feel confident recognizing deviations in health assessments indicating potential exposure to biological or chemical agents.	5.13 (0.60)
As an RN, I would feel confident in my abilities as a direct care provider and first responder in disaster situations.	5.38 (0.54)
As an RN, I would feel confident as a manager or coordinator of a shelter.	5.13 (0.60)
As an RN, I would feel reasonably confident in my abilities to be a member of a decontamination team.	5.23 (0.58)
In case of a bioterrorism/biological or chemical attacks, I know how to perform focused health history and assessment, specific to the biological or chemical agents that are used.	5.23 (0.55)
I feel reasonably confident I can care for patients independently without the supervision of a physician in a disaster situation.	5.16 (0.62)
I am familiar with the organizational logistics and roles among local and national agencies in disaster response situations.	5.14 (0.58)
I would feel confident implementing emergency plans, evacuation procedures, and similar functions.	5.09 (0.66)
I would feel confident providing patient education on stress and abnormal functioning related to trauma.	4.97 (0.47)
I would feel confident providing education on coping skills and training for patients who experience traumatic situations so they can manage themselves.	4.98 (0.63)
I can differentiate the signs and symptoms of acute stress disorder and post-traumatic stress disorder (PTSD).	5.03 (0.64)

SD: Standard Deviation

**Continued Table 9: Nurses' personal preparedness for disaster preparedness post-intervention (N=64)**

Items	Personal preparedness post-intervention program Mean (SD)
I can differentiate the signs and symptoms of acute stress disorder and post-traumatic stress disorder (PTSD).	5.03 (0.64)
I am familiar with what the scope of my role as a registered nurse in a post-disaster situation would be.	5.05 (0.57)
I participate in peer evaluation of skills in disaster preparedness and response.	5.08 (0.59)
I am familiar with how to perform focused health assessments for PTSD.	4.97 (0.61)
I feel confident managing (caring, evaluating) emotional outcomes for acute stress disorder or PTSD following disaster or trauma in a multi-disciplinary way such as referrals, and follow-ups and I know what to expect in ensuing months.	5.03 (0.66)
<b>Total nurses' personal preparedness post-intervention</b>	<b>5.12 (0.27)</b>

SD: Standard Deviation

### **Observation of Nurses' Skills One-Month Post-Intervention**

Table 10 shows the observation of nurses' skills in triage one-month post-intervention program, the results indicated that all nurses (100%) demonstrated good skills in triage. Most of the nurses achieved the required skills in triage, however, the lowest percentage was for the question "Does the respiratory status assessment include listening for breath sounds (92.2%)."

**Table 10: Observation of nurses' skills in triage one-month post-intervention (N=64)**

Items to be checked	Yes	No
	n (%)	n (%)
Is there a nurse assigned for patients' triage?	64 (100)	0
If Yes in 1 above, does the nurse actually triage the patients?	59 (92.2)	5 (7.8)
Does the triage performance involve:		
• Airway assessment	64 (100)	0
• Respiratory status assessment	63 (98.4)	1 (1.6)
• Circulatory status assessment	63 (98.4)	1 (1.6)
Does the respiratory status assessment include:		
• Look for chest movement	63 (98.4)	1 (1.6)
• Listen for breath sounds	59 (92.2)	5 (7.8)
• Breathing pattern	61 (95.3)	3(4.7)
Does circulatory status assessment include:		
• Blood pressure	64 (100)	0
• Pulse rate	64 (100)	0
• skin/mucous color (pink, pale)	64 (100)	0
• Skin temperature (warm, hot, cool/cold)	64 (100)	0
• Capillary refills	62 (96.9)	2 (3.1)
Temperature measurement	64 (100)	0
Pain assessment	64 (100)	0
Neurological assessment: Alert, responds to voice, responds to pain, Unresponsive.	61 (95.3)	3 (4.7)
Does the nurse document the triage anywhere?	64 (100)	0
Does re-assessment on regular basis of those patients who are waiting done to see if their conditions have deteriorated and need to be seen more urgently?	64 (100)	0
<b>Total observation of nurses' skills one-month post-intervention &gt; 60.0% good skills</b>	<b>64 (100)</b>	<b>0</b>

n: number; %: percentage

## Effect of Disaster Management Training Program on Nurses' Knowledge of Disaster Preparedness

Table 11 illustrates the difference between nurses' knowledge of disaster preparedness in pre and post-intervention utilizing paired t-test. Findings revealed that the mean of knowledge in the pretest was 3.83 (SD = 0.82) and the posttest mean was 5.15 (SD = 0.29). There was a statistically significant difference in nurses' knowledge of disaster preparedness in pre and post-intervention ( $t_{(63)} = -13.326$ ;  $p < 0.001$ ), reflecting the effectiveness of the training program and supporting hypothesis number one.

**Table 11: Nurses' knowledge of disaster preparedness pre-post intervention: paired t-test**

Nurses' knowledge					
Stage	Mean	SD	95% CI	t-test	p-value
Pre-test	3.83	0.82	-1.51- -1.11	-13.326	0.000**
Post-test	5.15	0.29			

SD: Standard Deviation; CI: Confidence Interval

\* p significant at  $\leq 0.05$ ; \*\* p significant at  $\leq 0.01$

## Effect of Disaster Management Training Program on Nurses' Skills for Disaster Preparedness

Table 12 shows the difference between nurses' skills in disaster preparedness in pre and post-intervention utilizing paired t-test. Findings revealed that the mean of skills in the pretest was 3.70 (SD 0.87) and the posttest mean was 5.04 (SD= 0.27). There was a statistically significant difference in nurses' skills in disaster preparedness in pre and post-intervention ( $t_{(63)} = -12.539$ ;  $p < 0.001$ ), indicating the effectiveness of the training program and supporting hypothesis number two.

**Table 12: Nurses' skills in disaster preparedness pre-post intervention: paired t-test**

Nurses' skills					
Stage	Mean	SD	95% CI	t-test	p-value
Pre-test	3.70	0.87	-1.58- -1.29	-12.539	0.000**
Post-test	5.04	0.27			

SD: Standard Deviation; CI: Confidence Interval

\* p significant at  $\leq 0.05$ ; \*\* p significant at  $\leq 0.01$

### Effect of Disaster Management Training Program on Nurses' Personal Preparedness of Disaster Preparedness

Table 13 explains the difference between nurses' personal preparedness for disaster preparedness in pre and post-intervention utilizing paired t-test. Findings found that the mean of personal preparedness in pretest was 3.85 (SD = 0.83) and the posttest mean was 5.12 (SD = 0.27). A statistically significant difference was demonstrated in personal preparedness for disaster preparedness in pre and post-intervention ( $t_{(63)} = -12.256$ ;  $p < 0.001$ ), indicating the effectiveness of the training program and supporting hypothesis number three.

**Table 13: Nurses' personal preparedness pre-post intervention: paired t-test**

Personal preparedness					
Stage	Mean	SD	95% CI	t-test	p-value
Pre-test	3.85	0.83	-1.47- -1.06	-12.256	0.000**
Post-test	5.12	0.27			

SD: Standard Deviation; CI: Confidence Interval

\* p significant at  $\leq 0.05$ ; \*\* p significant at  $\leq 0.01$

Table 14 clarifies the difference between total disaster preparedness among nurses in pre and post-intervention utilizing paired t-test. Findings found that the mean of DPET in the pretest was 3.79 (SD = 0.78) and the posttest mean was 5.11 (SD = 0.23). A statistically significant variation was shown in DPET among nurses in pre and post-intervention ( $t_{(63)} = -13.949$ ;  $p < 0.001$ ), indicating the effectiveness of the training program.

**Table 14: Disaster management pre-post intervention (DPET): paired t-test (N= 64)**

Total disaster management					
Stage	Mean	SD	95% CI	t-test	p-value
Pre-test	3.79	0.78	-1.50- -1.13	-13.949	0.000**
Post-test	5.11	0.23			

SD: Standard Deviation; CI: Confidence Interval

\* p significant at  $\leq 0.05$ ; \*\* p significant at  $\leq 0.01$

Table 15 explains the observation of nurses' skills in triage pre and one-month post-intervention using Wilcoxon Signed rank test. The results revealed that only 51 nurses (79.6%) demonstrated high levels of skills in triage in pre-intervention and all nurses (100%) demonstrated high levels of skills. Findings revealed significant differences in demonstration triage skills among nurses in pre and one-month post-intervention ( $Z = -6.759$ ;  $p < 0.001$ ), indicating that the training program was effective.

**Table 15: Observation of nurses' skills pre-post intervention (N=64): Wilcoxon Signed rank test**

Items to be checked	Pre-intervention		Post-intervention		Wilcoxon Signed rank test Z	p-value
	Yes n (%)	No n (%)	Yes n (%)	No n (%)		
Is there a nurse assigned for patients' triage?	56 (87.5)	8(12.5)	64 (100)	0	-2.828	0.008**
If Yes in 1 above, does the nurse actually triage the patients?	30 (46.9)	34 (53.1)	59 (92.2)	5 (7.8)	-4.116	0.000**
Does the triage performance involve:						
• Airway assessment	64 (100)	0	64 (100)	0	000	1.000 <sup>a</sup>
• Respiratory status assessment	64 (100)	0	63 (98.4)	1 (1.6)	000	1.000 <sup>a</sup>
• Circulatory status assessment	58 (90.6)	6 (9.4)	63 (98.4)	1 (1.6)	-2.236	0.025*
Does the respiratory status assessment include:						
• Look for chest movement	52 (81.3)	12 (18.8)	63 (98.4)	1 (1.6)	-3.317	0.001**
• Listen for breath sounds	34 (53.1)	30 (46.9)	59 (92.2)	5 (7.8)	-5.000	0.000**
• Breathing pattern	46 (71.9)	18 (28.1)	61 (95.3)	3(4.7)	-3.873	0.005**
Does circulatory status assessment include:						
• Blood pressure	64 (100)	0	64 (100)	0	000	1.000 <sup>a</sup>
• Pulse rate	64 (100)	0	64 (100)	0	000	1.000 <sup>a</sup>
• Skin/mucous color (pink, pale)	44 (68.8)	20 (31.3)	64 (100)	0	-4.472	0.000**
• Skin temperature (warm, hot, cool/cold)	47 (73.4)	17 (26.6)	64 (100)	0	-4.123	0.000**
• Capillary refills	36 (56.3)	28 (43.8)	62 (96.9)	2 (3.1)	-5.009	0.000**
Temperature measurement	64 (100)	0	64 (100)	0	000	1.000 <sup>a</sup>
Pain assessment	60 (93.8)	4 (6.3)	64 (100)	0	-2.000	0.046*

a. No statistics are computed because pre and post-intervention results are constants.

n: number; %: percentage

\* p significant at  $\leq 0.05$ ; \*\* p significant at  $\leq 0.01$

**Continued Table 15: Observation of nurses' skills pre-post intervention (N=64): Wilcoxon Signed rank test**

Items to be checked	Pre-intervention		Post-intervention		Wilcoxon Signed rank test Z	p-value
	Yes n (%)	No n (%)	Yes n (%)	No n (%)		
Neurological assessment: Alert, responds to voice, responds to pain, Unresponsive.	42 (65.6)	22 (34.4)	61 (95.3)	3 (4.7)	-4.359	0.000**
Does the nurse document the triage anywhere?	57 (89.1)	7 (10.9)	64 (100)	0	-2.646	0.008**
Does re-assessment on regular basis of those patients who are waiting done to see if their conditions have deteriorated and need to be seen more urgently?	53 (82.8)	11 (17.2)	64 (100)	0	-3.317	0.001**
<b>Total observation of nurses' skills pre-intervention &gt; 60.0% good skills</b>	<b>79.6%</b>	<b>20.4%</b>	<b>100%</b>	<b>0</b>	<b>-6.759</b>	<b>0.000**</b>

a. No statistics are computed because pre and post-intervention results are constants.

n: number; %: percentage

\* p significant at  $\leq 0.05$ ; \*\* p significant at  $\leq 0.01$

Table 16 shows the influence of work experience on nurses' knowledge, skills, and personal preparedness for disaster preparedness in pre and post-intervention. Findings revealed no significant differences in knowledge, skills, and personal preparedness in pre and post-intervention based on working experience ( $p > 0.05$ ), which supports hypothesis number four.

**Table 16: Differences between knowledge, skills, and personal preparedness pre and post-intervention according to experience: Independent t-test**

Variables	Work experience				
	Category	M	SD	t-test	p-value
Knowledge pre-intervention	1-10 years	3.82	0.71	-0.141	0.889
	> 10 years	3.85	0.95		
Knowledge post-intervention	1-10 years	5.09	0.25	-1.729	0.089
	> 10 years	5.22	0.32		
Skills pre-intervention	1-10 years	3.62	0.89	-0.785	0.435
	> 10 years	3.79	0.86		
Skills post-intervention	1-10 years	5.04	0.23	0.033	0.973
	> 10 years	5.04	0.32		
Personal preparedness pre-intervention	1-10 years	3.80	0.80	-0.581	0.563
	> 10 years	3.92	0.88		
Personal preparedness post-intervention	1-10 years	5.07	0.22	-1.852	0.069
	> 10 years	5.19	0.30		
Disaster preparedness pre-intervention	1-10 years	3.75	0.72	-0.503	0.617
	> 10 years	3.85	0.85		
Disaster preparedness post-intervention	1-10 years	5.07	0.17	-1.583	0.119
	> 10 years	5.16	0.28		

SD: Standard Deviation

\* p significant at  $\leq 0.05$ ; \*\* p significant at  $\leq 0.01$

Table 17 illustrates the influence of educational level on nurses' knowledge, skills, and personal preparedness for disaster preparedness in pre-post-intervention. Findings revealed that there were no significant differences in knowledge, skills, and personal preparedness in pre-post-intervention based on educational level ( $p > 0.05$ ), which supports hypothesis number five.

**Table 17: Differences between knowledge, skills, and personal preparedness pre and post-intervention according to educational level: Independent t-test**

Variables	Educational level				
	Category	M	SD	t-test	p-value
<b>Knowledge pre-intervention</b>	Bachelor	3.90	0.73	1.042	0.301
	Higher than bachelor	3.65	1.05		
<b>Knowledge post-intervention</b>	Bachelor	5.13	0.28	-0.852	0.397
	Higher than bachelor	5.20	0.31		
<b>Skills pre-intervention</b>	Bachelor	3.74	0.85	0.547	0.586
	Higher than bachelor	3.60	0.95		
<b>Skills post-intervention</b>	Bachelor	5.02	0.29	-1.025	0.309
	Higher than bachelor	5.10	0.19		
<b>Personal preparedness pre-intervention</b>	Bachelor	3.95	0.75	1.576	0.120
	Higher than bachelor	3.58	1.02		
<b>Personal preparedness post-intervention</b>	Bachelor	5.11	0.27	-0.783	0.437
	Higher than bachelor	5.17	0.25		
<b>Disaster preparedness pre-intervention</b>	Bachelor	3.87	0.71	1.279	0.206
	Higher than bachelor	3.85	0.95		
<b>Disaster preparedness post-intervention</b>	Bachelor	5.09	0.24	-1.013	0.315
	Higher than bachelor	5.16	0.22		

SD: Standard Deviation

\* p significant at  $\leq 0.05$ ; \*\* p significant at  $\leq 0.01$

Table 18 explains the influence of age on nurses' knowledge, skills, and personal preparedness for disaster preparedness in pre-post-intervention. Findings revealed that there were no significant differences in knowledge, skills, and personal preparedness in pre and post-intervention based on age ( $p > 0.05$ ), which supports hypothesis number six.

**Table 18: Differences between knowledge, skills, and personal preparedness pre and post-intervention according to age: ANOVA test**

Variables	Age		
	Mean Square	F	p-value
Knowledge pre-intervention	0.700	1.022	0.366
Knowledge post-intervention	0.182	2.184	0.121
Skills pre-intervention	0.188	0.238	0.789
Skills post-intervention	0.248	2.542	0.145
Personal preparedness pre-intervention	0.494	0.694	0.504
Personal preparedness post-intervention	0.03	0.313	0.732
Disaster preparedness pre-intervention	0.457	0.736	0.483
Disaster preparedness post-intervention	0.081	1.446	0.244

\* p significant at  $\leq 0.05$ ; \*\* p significant at  $\leq 0.01$

### Summary

The study's findings demonstrated that ER nurses' knowledge, skills, and personal preparedness levels for disaster preparedness before the training program were moderate but their levels were strong after the training program. The differences in aforementioned variables in pre and post-intervention proved the effectiveness of this training program. Also, there were no effects of age, educational level, and experience on nurses' knowledge, skills, and personal preparedness pre and post-training program ( $p > 0.05$ ).

## CHAPTER FIVE

### DISCUSSION

This section provides the interpretations of the study's findings and comparison with those of other national and international studies. The current study explained the influence of an educational program on the nurses' knowledge, skills, and personal preparedness for disasters. In addition to limitations, implications, and recommendations.

#### **Effect of Disaster Management Training Program on Nurses' Knowledge of Disaster Preparedness**

This study revealed that the nurses' knowledge level regarding disaster preparedness in a pre-intervention program was moderate. This finding is in parallel with earlier studies demonstrated that nurses had a moderate level of knowledge in Jordan (Ali & Abu Ibaid, 2015; Al Khalaielah et al., 2012; Al-qbelat et al., 2021), Saudi Arabia (Al Thobaity et al., 2015), and Yemen (Naser & Saleem, 2018). On the contrary, other studies reported low knowledge levels of disaster preparedness (Diab & Mabrouk, 2015; Labrague et al., 2016; Seyedin et al., 2015; Tzeng et al., 2016). This study's finding could be related to many factors including a shortage of in-service educational disaster management training programs and a lack of disaster management plans in hospitals; and if there are management plans, there is a lack of dissemination of these plans to healthcare professionals, including nurses (PRCS, 2023; Sabola et al., 2023). Furthermore, the findings may be attributed to a deficiency in healthcare workers' knowledge regarding work emergency management plans and response protocols, a limited understanding of disaster causality, and inadequate implementation of practical disaster training courses (Al Ali & Abu Ibaid, 2015). Moreover, it may be related to the absence of disaster management topics in the nursing curriculum in universities (Mabrouk & Attallah, 2020), which reported that not all material

concerning disaster management is addressed at the university level, thus educational programs are necessary to fill this gap. As a result, there is a continual need for disaster management training interventions aimed at improving nurses' knowledge and ability to deal with disasters.

Moreover, this study found a significant difference in knowledge of disaster preparedness in pre and post-intervention, indicating the effectiveness of the disaster management training program, in which the knowledge improved from moderate to strong. This finding is similar to earlier studies that suggested the effectiveness of intervention and training programs for disasters in improving knowledge from moderate to strong (Najafi Ghezeljeh et al., 2019; Mirzaei et al., 2019). On the contrary, a previous study reported the effectual of a disaster training program in improving knowledge levels, but the knowledge scores were moderate at pre-post training (Al-qbelat et al., 2021). Despite the varying levels of knowledge post-intervention, training programs resulted in increased nurses' knowledge of disaster preparedness. High nurses' knowledge levels of disaster preparedness in this study could be related to sample characteristics, where Palestinian emergency nurses suffer from critical political situations that require them to have a high level of knowledge to provide immediate necessary care according to patients' situations. Therefore, it is crucial to enhance continuing education, workshops, and training courses to raise the degree of knowledge.

### **Effect of Disaster Management Training Program on Nurses' Skills of Disaster Preparedness**

This study revealed that the nurses' skills level regarding disaster preparedness in a pre-intervention was moderate. This result is consistent with earlier studies which demonstrated that nurses reported a moderate skills level in disaster preparedness in Jordan (Al-qbelat et al., 2021), and Saudi Arabia (Al Thobaity et al., 2015). On the contrary, other studies reported low levels of skills in disaster preparedness (Diab & Mabrouk, 2015; Labrague et al., 2016; Seyedin et al., 2015;

Tzeng et al., 2016). This study's finding could be due to several factors including a lack of continuous and updated disaster training and skills in hospitals, for example implementing drills related to disaster management including nurses and other healthcare professionals (PRCS, 2023; Sabola et al., 2023). Additionally, these results could be due to a lack of experience and training in disaster causality and a deficiency in realistic and empirical disaster training programs (Al Ali & Abu Ibaid, 2015). As a result, there is a continual need for disaster management training interventions aimed at improving nurses' skills and their capabilities to deal with disasters.

Moreover, this study found a significant difference in skills of disaster preparedness in pre and post-intervention, indicating the effectiveness of the disaster management training program. Also, the levels of skills improved from moderate to strong. This finding is consistent with earlier studies suggesting the influence of intervention and training programs for disasters in improving skills from moderate to strong levels (Najafi Ghezeljeh et al., 2019; Mirzaei et al., 2019; Said et al., 2022). On the contrary, a previous study reported the effectiveness of a disaster training program in enhancing the levels of skills for disaster preparedness, but the levels of skills were the same at moderate levels (Al-qbelat et al., 2021). Also, other studies reported the effectiveness of the training programs, where the levels of skills enhanced from low to moderate (Diab & Mabrouk, 2015; Ghanabari et al., 2011; Mabrouk & Atallah, 2020; Sabola, 2023). Despite the levels of skills for disaster preparedness post-intervention, the results suggested the effectiveness of these programs which led to increased nurses' skills in disaster preparedness.

The reasons for the improvement of the levels of skills from moderate to strong in this study may be related to teaching strategies that are used to perform the educational program, in which scenarios, videos, demonstrations, and re-demonstrations on Mankins. Xia et al. (2019) found that triage training utilizing scenarios assists in raising and improving the skills level. Also,

Hughes et al. (2017) revealed that different teaching strategies used during the implementation of the program such as videos and presentations (exercises) greatly contribute to improving skills. Furthermore, Ahayalimudin and Osman (2016) revealed that the training fosters preparedness for coping with disaster outcomes. Also, strong nurses' levels of skills for disaster preparedness in this study could be related to sample characteristics, the Palestinian ER nurses experience daily critical care situations that need high levels of skills in disaster management to provide urgent care based on patients' situations. Thus, it is important to improve nurses' skills by providing continuous training courses to enhance their skills.

Concerning the observation of nurses' skills pre-intervention, the study's results indicated that 51 (79.6%) of the nurses had good skills in triaging. This result is consistent with a previous study conducted among Jordanian emergency nurses (Malak et al., 2022). On the other hand, the results of observation of nurses' skills in triage one-month post-intervention program indicated that all nurses (100%) demonstrated good skills in triaging. This finding suggested that a training course had a positive effect on nurses' skills in the triaging process. Also, training enhanced nurses' experiences and practices in triage. Previous studies have found that nursing training and educational programs had an important correlation with enhancing knowledge and increasing skills in nurses which can lead to positive consequences such as improving the quality of nursing care and lowering mortality rate and death cases (Audit et al., 2018; Rosseter, 2014).

In Palestine, nurses are not active members of community disaster management due to their lack of participation in planning and preparedness for disaster emergencies (Saidam & Eljedy 2020). Therefore, nurses must have the knowledge and abilities to react appropriately in emergencies.

## **Effect of Disaster Management Training Program on Personal Preparedness for Disaster Preparedness**

The findings revealed that the nurses had a moderate personal preparedness level for disaster preparedness in pre-intervention. This finding is congruent with previous studies that demonstrated nurses reported a moderate disaster preparedness level in Jordan (Al-qbelat et al., 2021) and Saudi Arabia (Al Thobaity et al., 2015).). This finding may be due to many factors including a lack of continuous and updated disaster training in hospitals and implementing drills related to disaster management among nurses and other healthcare professionals (PRCS, 2023; Sabola et al., 2023).

Conversely, the nurses' level of personal preparedness post-intervention program was strong, which is consistent with earlier studies (Najafi Ghezeljeh et al., 2019; Mirzaei et al., 2019; Said et al., 2022). Also, a previous study reported the effectiveness of a disaster training program on the improvement of personal preparedness, but the levels of pre-post interventions were the same at moderate levels (Al-qbelat et al., 2021). Also, other studies revealed the effectiveness of the training in improving the levels of personal preparedness from low to moderate (Diab & mabrouk, 2015, Ghanabari et al., 2011; Mabrouk & Atallah, 2020; Sabola, 2023). The study's results indicated the influence of the disaster management training program in enhancing personal preparedness among nurses. These results could be due to the positive relationship between disaster training and personal preparedness (Setyawati et al., 2020). Joes and Dufrene (2014) considered preparation for disastrous events as the highest priority for healthcare professionals. Moreover, a strong level of preparedness can be achieved by incorporating specific theoretical and training sessions on disaster management into nursing courses and providing in-service activities for staff members.

Furthermore, according to Duong (2009), medical professionals' undergraduate education does not devote enough attention to preparing students for disasters. Thus, providing healthcare personnel with disaster education and training will improve their preparedness for disasters and guarantee their capacity to respond to such catastrophic occurrences. According to Maeda et al., (2016) disaster risk management has been demonstrated to be influenced by participation in disaster-related education initiatives. Additionally, the nurses can enhance the crisis response through the curriculum, which should include workshops, simulations, and seminars.

This study revealed that there were no significant variances in knowledge, skills, and personal preparedness in pre-post-intervention based on demographic characteristics (age, educational level, and years of experience), which are supported by Mabrouk and Atallah (2020) findings. These results could be due to the sample characteristics, where the study included the same group pre-and post-test. Also, this study included nurses who hadn't attended any disaster training program before and triaging courses.

The important concern from these findings is that continuing education for nurses should be a regular part of their work and should be matched to the likelihood of both man-made and natural disasters. Also, the nurses must be aware of their role in the preparation, mitigation, response, and recovery phases of disasters. They can also do this by attending national disaster events and training.

## **Conclusion**

The study's conclusion indicated that the ER nurses' knowledge, skills, and personal preparedness after the training program were all strong. This study provides a figure about the importance of conducting a disaster management training program and necessitates enhancing nurses to be proactive in anticipating and responding to disasters, particularly in Palestine. Thus,

continuous educational and training programs about disaster management should be conducted for emergency nurses and updated information should be provided to them.

### **Strengths and Limitations**

The strengths of the study included that this is the first study in Palestine that examined the influence of a disaster management training program on ER nurses' knowledge, skills, and personal preparedness of disaster preparedness. Additionally, this study followed up on nurses' skills by using an observation checklist one-month post-intervention. The cooperation of nurses and managers in implementing the training program by providing all resources and facilities. Furthermore, adopting valid and reliable tools in collecting data. Also, the training program was effective according to pre-post intervention results.

However, the current study has these limitations; the sample was convenient which might influence the generalizations of the study findings. Also, this study is one group pre-posttest, which limits the effectiveness of the program, thus pre-posttest control group design should be conducted. The Israeli War and conflict delayed the implementation of the program due to checkpoints and the closure of areas.

### **Implications of the Study**

To sum up, the primary issue facing Palestine is conflict. The effects of the conflict are still being seen today. Other disasters in Palestine included inadequate levels of education, migration risk, natural calamities, and disaster psychology. These impacts have made life more challenging (ADPC, 2023). It is vital to pay attention to crisis and disaster knowledge in terms of definition, stages, and phases of management and coping with them to minimize losses and prevent recurring mistakes that could increase the number of catastrophe victims in Gaza and the West Bank.

Generally, this study provided these implications for nursing education, nursing practice, policy, and future research.

### ***Implications for Nursing Education***

Frequent global disasters are hazardous to human survival. Preparation for emergencies and disasters is required, which involves awareness of the community's significant problems, potential dangers, and the likelihood that a disaster will occur. To respond to calamities effectively and immediately, healthcare professionals including nurses need to be well-informed on disaster preparedness and response.

To prepare undergraduate and graduate nursing students for disaster management in Palestine, academic institutions and education authorities are urged to involve disaster preparedness and management topics in the nursing curriculum. Therefore, to ensure that nurses are ready to respond to both natural and human-made catastrophes, nurse educators should offer all-hazard disaster training. Also, the training programs and disaster courses should include proper teaching strategies including traditional and non-traditional methods to enhance capacity building. Summative and formative evaluations for these training programs and courses should be conducted to ensure the effectiveness of these programs.

### ***Implications for Nursing Practice***

Programs for continuous education should be implemented to help emergency nurses identify and enhance their preparedness for responding to emergencies and disasters. Also, it is necessary to assess their shortcomings, as well as their knowledge and expertise in disaster management to obtain disaster preparedness training as ongoing nursing education and to ensure that there is a sufficient supply of nurses in the event of a disaster. Nurses must be ready for emergencies, by periodically engaging them in emergency response exercises and disaster

management training and encouraging nurses to create a personal catastrophe plan to organize their own disaster management needs.

### ***Implications for Policy***

Policymakers in cooperation with MOH and educational institutions should develop strategies to increase healthcare professionals including nurses' awareness of disaster knowledge, skills, and personnel preparedness.

The findings of this Palestinian study might be considered as a reference for policymakers and healthcare professionals to focus on disaster management by designing special training programs, conducting regular in-service training programs, and updating them to improve nurses' knowledge, skills, and personal preparedness. Furthermore, other interventions could be developed to improve their skills such as disaster drills, training, and scenarios during implementation.

Additionally, it is necessary to create a disaster management strategy that complies with the requirements of the many interdisciplinary departments and schedule orientation sessions for all staff members engaged. Also, nurses should be active members in designing and developing disaster management plans and programs. These plans should be disseminated to all healthcare professionals and nurses and should be updated to be congruent with changes.

### ***Implications for Future Research***

Promoting the utilization of nursing research in disaster and disaster management is imperative to provide evidence-based data for practice and education decisions. To enhance the generalizability of the study findings and promote collaboration across many health disciplines in disaster training programs for interdisciplinary disaster management circumstances, it is recommended to replicate the study in diverse locations.

Additionally, to ensure the effectiveness of the disaster training program, other experimental designs such as a pre-posttest control group design could be used to control any extraneous variables. It is important to call for more research to enhance hospital nurses' preparedness for disaster response in Palestine. Furthermore, the experiences of registered nurses could be investigated using qualitative and longitudinal studies to identify barriers to disaster management could be helpful.

### **Recommendations**

Upon the results of this study, these recommendations were suggested:

- Conduct regular and updated training programs to increase the emergency nurses' competencies in disaster management.
- Create a disaster management strategy that complies with the requirements of the many interdisciplinary departments, and schedule orientation sessions for all staff members including emergency nurses.
- Engage the emergency nurses in developing any disaster management plans and programs to enhance the implementation and dissemination of these plans.
- Integrate disaster preparedness and management courses in nursing curricula to set undergraduate and graduate nursing students to handle emergencies.
- Conduct a pre-posttest equivalent control group study to examine the direct effect of the disaster management program on both groups (control and experimental). Also, conduct a qualitative study to assess the nurses' experiences with such intervention programs.

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**LIST OF APPENDICES**

## APPENDIX A

### English Version of the Questionnaire

**Demographic Data:**

- Age:  23-30 years       above 30-40 years       above 40 years
- Gender:     Male       Female
- Educational Level:  Bachelor       High Studies
- Years of Experience:  1-10 years       above 10 years
- Weekly hours: .....
- Hospital:     Governmental       Non- Governmental

**2- Disaster Preparedness Evaluation Tool (DPET)**

The following items pertain to how you view your professional and personal level of preparedness for disasters. Rate the items from (1) strongly disagree to (6) strongly agree

No	Preparedness for a Disaster	Strongly disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	strongly Agree
1	I participate in disaster drills or exercises at my workplace (clinic, hospital, etc.) on a regular basis.						
2	I have participated in emergency plan drafting and emergency planning for disaster situations in my community.						
3	I know who to contact (chain of command) in disaster situations in my community.						

No.	Preparedness for a Disaster	Strongly disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
4	I participate in one of the following educational activities on regular basis: continuing education classes, seminars, or conferences dealing with disaster preparedness.						
5	I read journal articles related to disaster preparedness.						
6	I am aware of classes about disaster preparedness and management that are offered for example at either my workplace, the university, or community.						
7	I would be interested in educational classes on disaster preparedness that relate specifically to my community situation.						
8	I find that the research literature on disaster preparedness and management is easily accessible.						
9	I find that the research literature on disaster preparedness is understandable.						
10	I consider myself prepared for the management of disasters.						

No.	Preparedness for a Disaster	Strongly disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
11	Finding relevant information about disaster preparedness related to my community needs is an obstacle to my level of preparedness.						
12	I know where to find relevant research or information related to disaster preparedness and management to fill in gaps in my knowledge.						
13	I have a list of contacts in the medical or health community in which I practice. I know referral contacts in case of a disaster situation (health department, e.g.).						
14	In case of a disaster situation I think that there is sufficient support from local officials on the county or state level.						
15	I participate/have participated in creating new guidelines, emergency plans, or lobbying for improvements on the local or national level.						
16	I would be considered a key leadership figure in my community in a disaster situation.						

No.	Preparedness for a Disaster	Strongly disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
17	I am aware of what the potential vulnerabilities in my community are (e.g. earthquake, floods, terror, etc.).						
18	I know the limits of my knowledge, skills, and authority as an NP to act in disaster situations, and I would know when I exceed them.						
19	In case of a bioterrorism/ biological attack, I know how to use personal protective equipment.						
20	In case of a bioterrorism/biological attack I know how to execute decontamination procedures.						
21	In a case of bioterrorism/biological attack I know how to perform isolation procedures so that I minimize the risks of community exposure.						
22	I am familiar with the local emergency response system for disasters.						
23	I am familiar with accepted triage principles used in disaster situations.						

No.	Preparedness for a Disaster	Strongly disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
24	I have personal/family emergency plans in place for disaster situations.						
25	I have an agreement with loved ones and family members on how to execute our personal/family emergency plans.						
No.	Mitigation (Alleviation, Relief and Response Stage of a Disaster).	Strongly disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
26	I can identify possible indicators of mass exposure evidenced by a clustering of patients with similar symptoms.						
27	I can manage the common symptoms and reactions of disaster survivors that are of affective, behavioral, cognitive, and physical nature.						
28	I am familiar with psychological interventions, behavioral therapy, cognitive strategies, support groups and incident debriefing for patients who experience emotional or physical trauma.						

No.	Mitigation (Alleviation, Relief and Response Stage of a Disaster).	Strongly disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
29	I am able to describe my role in the response phase of a disaster in the context of my workplace, the general public, media, and personal contacts.						
30	I am familiar with the main Groups (A, B, C) of biological weapons (Anthrax, Plague, Botulism, Smallpox, etc.), their signs and symptoms, and effective treatments.						
31	I feel confident discerning deviations in health assessments indicating potential exposure to biological agents.						
32	As an NP, I would feel confident in my abilities as a direct care provider and first responder in disaster situations.						
33	As an NP, I would feel confident as a manager or coordinator of a shelter.						
34	As an NP, I would feel reasonably confident in my abilities to be a member of a decontamination team.						

No.	Mitigation (Alleviation, Relief and Response Stage of a Disaster).	Strongly disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
35	In case of a bioterrorism/biological attack, I know how to perform focused health history and assessment, specific to the bio agents that are used.						
36	I feel reasonably confident can treat patients independently without supervision of a physician in a disaster situation.						
37	I am familiar with the organizational logistics and roles among local, state, and federal agencies in disaster response situations.						
38	I would feel confident implementing emergency plans, evacuation procedures, and similar functions.						
39	I would feel confident providing patient education on stress and abnormal functioning related to trauma.						
No	Evaluation Stage of Disaster	Strongly disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
40	I would feel confident providing education on coping skills and training for patients who experience traumatic situations so they are able to manage themselves.						

No	Evaluation Stage of Disaster	Strongly disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree
41	I am able to discern the signs and symptoms of Acute Stress disorder and Post Traumatic Stress Syndrome (PTSD).						
42	I am familiar with what the scope of my role as a nurse practitioner in a post-disaster situation would be.						
43	I participate in peer evaluation of skills on disaster preparedness and response.						
44	I am familiar with how to perform focused health assessment for PTSD.						
45	I feel confident managing (treating, evaluating) emotional outcomes for Acute Stress Disorder or PTSD following disaster or trauma in a multi-disciplinary way such as referrals, and follow-ups and I know what to expect in ensuing months.						

### 3-Nursing Triage Observation Checklist (NTOC)

The checklist will be used to assess triage practices for nurses working in the emergency departments by observing the participants while they were performing their triage activities:

Nurse: .....

	Items to be checked	Response		
		Yes	No	Comments
1	Is there a nurse assigned for patients' triage?			
2	If Yes in 1 above, does the nurse actually triage the patients?			
3	Does the triage performance involve:			
	• Airway assessment			
	• Respiratory status assessment			
	• Circulatory status assessment			
4	Does respiratory status assessment includes:			
	• Look for chest movement			
	• Listen for breath sound			
	• Breathing pattern			
5	Does circulatory status assessment includes:			
	• Blood pressure			
	• Pulse rate			
	• skin/mucous color (pink, pale)			
	• Skin temperature (warm, hot, cool/cold)			
	• Capillary refills			
6	Temperature measurement			
7	Pain assessment			
8	Neurological assessment: Alert, responds to voice, responds to pain, Unresponsive.			

9	Does the nurse document the triage anywhere?			
10	Does re-assessment on regular basis of those patients who are waiting done to see if their conditions have deteriorated and need to be seen more urgently?			
11	If No in question 1 above, how patients are handled in the emergency departments?			

## APPENDIX B

## Arabic Version of the Questionnaire

## 1- المعلومات الشخصية والاجتماعية

- العمر:  30-23 سنة  من 30-40 سنة  40 سنة فما فوق
- الجنس:  ذكر  أنثى
- المستوى التعليمي:  بكالوريوس  دراسات عليا
- سنوات الخبرة كممرض قانوني:  من 1-10 سنوات  10 سنوات فأكثر
- عدد ساعات العمل أسبوعياً كممرض قانوني: .....
- نوع المستشفى الذي تعمل به:  حكومي  غير حكومي

## 2- أداة تقييم التأهب للكوارث (DPET (Disaster preparedness Evaluation Tool)

البنود التالية تعود لكيفية انطباعك عن استعداداتك الشخصية والمهنية للتعامل مع الكوارث، اختار إجابة لكل بند من بنود الاستجابة المناسبة والتي تتراوح ما بين غير موافق بشدة وموافق بشدة. بحيث:

- 1= غير موافق بشدة  
2= غير موافق  
3= غير موافق بعض الشيء  
4= موافق بعض الشيء  
5= موافق  
6= موافق بشدة

الرقم	هذه البنود تعود لمدى استعدادك للكارثة	غير موافق بشدة	غير موافق	غير موافق بعض الشيء	موافق بعض الشيء	موافق	موافق بشدة
1	أشارك في تمرين أو تدريب على التعامل مع الكارثة بشكل منتظم في مكان عملي.						
2	شاركت في وضع خطة طوارئ والتخطيط للحالات الطارئة في مجتمعي.						
3	اعرف بمن اتصل "مرجعية الأوامر" في حالات الكوارث في مجتمعي.						

الرقم	هذه البنود تعود لمدى استعدادك للكارثة	غير موافق بشدة	غير موافق	غير موافق بعض الشيء	موافق بعض الشيء	موافق	موافق بشدة
4	أقرأ مقالة في مجلة تتعلق بالجاهزية للكوارث						
5	شاركت في إحدى النشاطات التعليمية التالية بشكل منتظم: تعليم مستمر، محاضرات، حصص أو مؤتمرات حول الجاهزية للكوارث						
6	أنا مهتم ومتابع لدورات الجاهزية وإدارة الكوارث التي تقدمها سواء مؤسستي "مكان عملي"، الجامعات أو في المجتمع.						
7	أنا مهتم بالدورات التعليمية عن الجاهزية للكوارث والتي تتعلق خصوصاً بمجتمعي.						
8	أجد أن الأبحاث والدراسات في موضوع الجاهزية للكوارث متوفرة بسهولة.						
9	أجد أن الأبحاث والدراسات في موضوع الجاهزية للكوارث مفهومة.						
10	اعتبر نفسي مُعد للتعامل مع الكوارث.						
11	إيجاد معلومات ذات صلة بالجاهزية لكوارث تتعلق بحاجات المجتمع، هي معيق لمستوى جاهزيتي.						
12	اعرف أين أجد المعلومات والأبحاث ذات الصلة والتي تتعلق بالجاهزية والتعامل مع الكوارث لزيادة وتحسين معلوماتي.						
13	املك قائمة اتصال في المجتمع الصحي الذي اعمل فيه، واعرف الجهات الطبية لتحويل المرضى في حالة الكوارث.						
14	في حالة الكارثة اعتقد انه يوجد دعم كافي من الجهات الرسمية في الدولة والإقليم والمحافظه.						
15	أشارك / شاركت في إنشاء دليل جديد، خطة طوارئ، أو تجمع للتطوير والتحسين على المستوى المحلي أو الوطني.						
16	سوف اعتبر قائد معتمد في مجتمعي في حالة الكوارث.						
17	أنا منتبه للأخطار المحتملة في مجتمعي المحلي (مثل الهزات الأرضية، الفيضانات، إرهاب، الخ).						

الرقم	هذه البنود تعود لمدى استعدادك للكارثة	غير موافق بشدة	غير موافق	غير موافق بعض الشيء	موافق بعض الشيء	موافق	موافق بشدة
18	اعلم حدود معلوماتي، مهاراتي، والسلطة كمرض قانوني لا تصرف في حالة الكوارث واعرف متى استعمالها						
19	في حالة العمليات الإرهابية / الهجمات البيولوجية والكيميائية، اعرف كيف استعمال أدوات الحماية الشخصية.						
20	في حالة العمليات الإرهابية / الهجمات البيولوجية والكيميائية، اعرف كيف أنجز إجراء منع التلوث.						
21	في حالة العمليات الإرهابية / الهجمات البيولوجية والكيميائية، اعرف كيف يؤدي إجراءات العزل وبالتالي أقلل من خطورة تعرض المجتمع للإصابات.						
22	أنا مطلع على نظام الاستجابة الطارئة المحلي للكوارث.						
23	أنا مطلع على مبادئ تصنيف الحالات المتبع في حالات الطوارئ والكوارث.						
24	امتلك خطط طوارئ شخصية / عائلية موضوعة لحالات الطوارئ.						
25	امتلك اتفاق من الناس المحبين وأفراد عائلتي على كيفية انجاز خططنا الشخصية/العائلية الطارئة.						
الرقم	البنود التالية تعود للتكيف (مرحلة رفع المعاناة والتخفيف والاستجابة للكارثة)	غير موافق بشدة	غير موافق	غير موافق بعض الشيء	موافق بعض الشيء	موافق	موافق بشدة
26	استطيع التعرف على المؤشرات المحتملة لدلائل التعرض للخطر من خلال تصنيف المرضى الذين عندهم نفس الأعراض.						
27	استطيع معالجة الأعراض والتفاعلات الشائعة للناجين من الكارثة ذات التأثير السلوكي، المعرفي، والجسدي.						
28	أنا مطلع على التداخلات النفسية، المعالجة السلوكية، التخطيط، مجموعة الدعم، والتحدث مع المرضى الذين تعرضوا لصدمات عاطفية أو جسدية لرفع معاناتهم.						

الرقم	البنود التالية تعود للتطيف (مرحلة رفع المعاناة والتخفيف والاستجابة للكارثة)	غير موافق بشدة	غير موافق	غير موافق بعض الشيء	موافق بعض الشيء	موافق	موافق بشدة
29	أنا قادر على وصف دوري في مرحلة الاستجابة للكارثة في مجال العمل، القطاع العام، الإعلام، والاتصالات الشخصية.						
30	أنا على اطلاع على المجموعات الأساسية (أ، ب، ج) من الأسلحة البيولوجية (الجمرة الخبيثة، الطاعون، الجدري، الخ) علاماتها، أعراضها والمعالجة المؤثرة.						
31	اشعر بأنني واثق من تمييز الاختلافات في التقييم الصحي الذي يدل على احتمالية التعرض لعوامل بيولوجية أو كيميائية.						
32	كممرض قانوني اشعر بأنني واثق من قدراتي كمزود عناية مباشر وكمستجيب أول في حالات الكوارث.						
33	كممرض قانوني اشعر بأنني واثق لأكون مديراً أو منسق مركز إيواء.						
34	كممرض قانوني اشعر بأنني وبشكل معقول واثق من قدراتي لكي أكون عضواً في فريق منع التلوث.						
35	في حالات الإرهاب / الهجمات البيولوجية والكيميائية، اعرف كيف أنجز تاريخ مرضي وتقييم صحي مركزين خاصين بالعامل البيولوجي أو الكيماوي المستعمل.						
36	اشعر أنني واثق بشكل معقول أنني أستطيع العناية بالمرضى بشكل مستقل من دون مراقبة طبيب في حالة الكارثة.						
37	أنا على اطلاع على لوجستية المنظمات والأدوار بين الهيئات المحلية والوطنية في حالات الاستجابة للكوارث.						
38	اشعر بأنني واثق من تنفيذ خطة الطوارئ، إجراءات الإخلاء والوظائف المشابهة.						
39	اشعر بأنني واثق بتقديم تثقيف صحي للمرضى في حالات الضغط النفسي والوظائف الغير طبيعية المتعلقة بالصدمة.						

موافق بشدة	موافق	موافق بعض الشيء	غير موافق بعض الشيء	غير موافق	غير موافق بشدة	البنود التالية تتعلق بمرحلة تقييم الكارثة ( تبدأ فوراً بعد الكارثة )	
						اشعر بأنني واثق بتقديم تعليم في مهارات التعايش (التأقلم) وتدريب المرضى الذين تعرضوا لحالة صدمة حتى يستطيعوا العناية بأنفسهم.	40
						أنا أستطيع أن أميز علامات وأعراض الاضطراب النفسي الحاد والاضطراب النفسي ما بعد الصدمة.	41
						أنا أعرف كيف سيكون مدى (مجال) دوري كممرض قانوني بعد الكارثة.	42
						أنا أشارك في تقييم جماعي للمهارات في الإعداد والاستجابة للكوارث.	43
						أنا مطلع على كيفية أداء تقييم صحي مركز للاضطراب النفسي ما بعد الصدمة.	44
						أشعر أنني واثق من التعامل (العناية، التقييم) مع النتائج العاطفية للاضطراب النفسي الحاد أو الاضطراب النفسي ما بعد الصدمة التي تتبع الكارثة بمجالات شتى مثل التحويل والمتابعة، واعرف ما المتوقع حدوثه في الأشهر القادمة.	45

## APPENDIX C

### Permission to use the Arabic version of the Tool

4/19/23, 8:37 AM

Mail - rissa@avh.org

**From:** Murad Alkhalailah <dr.alkhalailah2009@gmail.com>  
**Sent:** Wednesday, April 19, 2023 5:25 AM  
**To:** malakeh malak <malakeh.m@zuj.edu.jo>  
**Subject:** Re: Permission to use Arabic Version of DPET

welcome dr Malakah  
please consider this email as permission to adopt DPET Arabic version in the  
research work of your student  
please do not hesitate to further inquiry  
kindly find attached file A&E version

On Tue, 18 Apr 2023 at 15:43, malakeh malak <[malakeh.m@zuj.edu.jo](mailto:malakeh.m@zuj.edu.jo)> wrote:  
Dear Dr. Khalailah

Greetings

In beginning, I would like to identify myself to you, I'm Dr. Malakeh Malak Associate Professor at Al-Zaytoonah University of Jordan. I'm currently the supervisor of one of the postgraduate students in the Doctorate program at Arab American University in Palestine who would like to use this tool (DPET) in her dissertation.

Kindly could you please provide us permission to use the Arabic version of this tool? in addition to an Arabic copy of this tool.

Regards

Dr. Malakeh.Z. Malak  
Associate professor  
Community Health Nursing  
Al-Zaytoonah University of Jordan  
Amman, Jordan

--

**Best Regards**  
**Murad Al Khalailah, RN, PhD**  
**Associate Prof.**  
**Faculty of Nursing**  
**Jarash University**  
**Jordan-Jarash**  
**Mobile 00962788022202**

## APPENDIX D

### Permission to Use the Original Material Educational Program

3/5/24, 2:23 PM

Mail - rissa@avh.org

**From:** razanmousa1996@yahoo.com  
**Date:** 11 May 2023 at 12:10:53 GMT+3  
**To:** rihab sajadieh <rihabsajadieh@hotmail.com>  
**Subject:** Re: Permission to use your disaster management educational program

Welcome Mrs Rihab  
Please consider this e mail as permission to adopt the material used in implementation of disaster program in your dissertation. Please do not hesitate to further inquiry.  
Kindly find attached file.

Best Regards  
Razan Qbeilat

On Wednesday, May 10, 2023, 03:52:52 PM GMT+3, rihab sajadieh <rihabsajadieh@hotmail.com> wrote:

Dear Razan  
Hope you are fine

In the beginning, I would like to introduce myself to you, I'm Rihab Issa PHD candidate in the Arab American University Palestine and I took your email from my supervisor Dr. Malakeh.  
I'm working on my dissertation and it's about Disaster management and I would like to use your educational program about Disaster management that you provided to the nurses in your thesis. Kindly could you please provide me permission to use your educational material in addition please send me a copy of the material you used.

Regards

Rihab Issa

Sent from my iPhone

## **APPENDIX E**

### **Content Validity Index (CVI) for Disaster Management Training Program**

#### **Letter Seeking Permission to Validate Disaster Management Training Program**

##### **Dear Experts**

I am a Ph.D. student at Arab American University at Palestine. I would like to conduct a dissertation entitled "The Effect of Disaster Management Training Program on Emergency Nurses' Knowledge, Skills, and Personal Preparedness in Palestine". This study purposed to assess the effect of a training program for disaster management on knowledge, skills, and personal preparedness among emergency nurses in Palestine.

I developed a disaster management intervention program based on a previous study and we modified this program based on participants' needs, interests, and abilities, in additional to cultural background. I would like to assess the content validity index (CVI) for the intervention program using a 4-point rating scale, whereas "1 = not relevant; 2= unable to assess relevance without item revision or the item is in need of such revision that it would no longer be relevant; 3= relevant but needs minor alteration; 4= very relevant and succinct.

If this is possible, please indicate so by replying to me through e-mail:

Sincerely,

Rihab Sa'd

Ph.D. Student

<b>Material</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
Content organization is clear, consistent, and appropriate.				
The material can attract users' attention.				
The material has new and interesting information.				
The material has various cultural elements.				
The material has interesting pictures, videos, and graphics.				
The material is relevant to the target group.				
The material has appropriate, understandable, and editable instructions.				
The material contains vocabularies that are suitable for learning.				
The material has teaching aids that help the teaching activity.				
The material can be used in various situations.				

## APPENDIX F

### Material of Educational Program

#### Educational Material

**Disaster Preparedness (2 hours)** Disaster (definition, types, magnitude, stages), basic terminology related to a disaster, nurses' role, and nursing principles in each stage of disaster management.

#### A Disaster

is a sudden, calamitous or man-made event that seriously disrupts the functioning of a society and causes human, material, and economic or environmental losses that exceed the societies ability to cope using its own resources.



6

#### What is a "Disaster"?

A disaster is present when *need exceeds resources!*

DISASTER = Need > Resources

A response **NEED** that is *greater* than the **RESOURCES** that are available!

7

#### TYPES OF DISASTERS



**Human-Made Events**  
 Warfare, Transportation accidents, Bombing, Structural collapse, Fires, Pollution, Hazardous Materials Incident (Oil Spill), Civil unrest, Terrorism (CBRNE incidents), Cyber attacks, Airplane crash, Water supply contamination





**Natural Disasters**  
 Earthquake, Volcano, Hurricane, Flood, Tornado, Landslide, Avalanche, Pandemics/Epidemics, Tsunamis, Extreme heat and cold, etc.







8

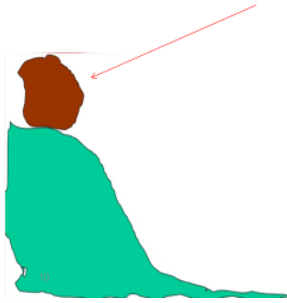
#### Disaster Risk

The potential disaster losses, in lives, health status, livelihoods, assets and services, which could occur to a particular society over some specified future time period.

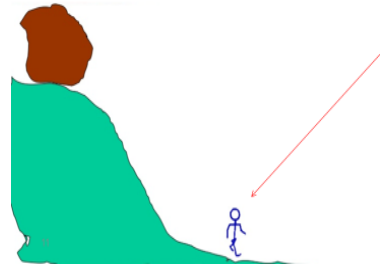


9

**Hazard** A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.



**Vulnerability:** The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard.



## Disaster Levels

- **Level I:** If the organization, agency, or community is able to contain the event and respond effectively utilizing its own resources.
- **Level II:** If the disaster requires assistance from external sources, but these can be obtained from nearby agencies.
- **Level III:** If the disaster is of a magnitude that exceeds the capacity of the local community or region and requires assistance from state level or even federal assets

14

## 1- Pre-impact Phase

- The initial phase of disaster, prior to the actual occurrence.
- A warning is given at the sign of the first possible danger to a community.
- The emergency preparedness plan is put into effect.
- Communication is a very important factor during this phase.
- The role of the nurse during this warning phase is to assist in preparing shelters and emergency aid stations and establishing contact with other emergency service group.

16

## 3- Post-impact Phase

- Recovery begins during the emergency phase and ends with the return of normal community order and functioning.

18

## Disaster Phases

- 1- Pre-impact phase
- 2- Impact phase
- 3- Post-impact phase

15

## 2- Impact Phase

- This phase occurs when the disaster actually happens.
- It may last for several minutes (e.g. after an earthquake, plane crash or explosion) or for days or weeks (e.g. in a flood, famine or epidemic).
- The impact phase continues until the threat of further destruction has passed.
- This is the time when the emergency operation center is established and put in operation.
- Every shelter has a nurse as a member of disaster action team. The nurse is responsible for psychological support to victims in the shelter.

17

## The Effect on Community

- May destroy the local health care infrastructure, which therefore will be unable to respond to the emergency (outcomes in terms of increased morbidity and mortality).
- Increasing the risk of communicable diseases.
- May affect the psychological, emotional, and social well-being of the population in the affected community.
- May cause shortages of food and cause severe nutritional deficiencies.
- May cause large population movements (refugees) creating a burden on other health care systems and communities.

19

## Local Government Responsibilities

- Identifying hazards and assessing their potential risk to the community.
- Determining the community's capability to mitigate against, prepare for, respond to, and recover from major emergencies.
- Identifying and employing methods to improve the community's emergency management capability through efficient use of resources and improved coordination.

20

## Local Government Responsibilities

- Developing and coordinating preparedness plans.
- Establishing warning systems.
- Stocking emergency supplies and equipment.
- Educating the public and training emergency personnel.
- Assessing damage caused by the emergency.
- Activating response plans and rescue operations.
- Ensuring that shelter and medical assistance are provided.
- Recovering from the emergency and helping citizens return to normal life as soon as possible.

21

## Basic Disaster Supplies Kit

- Water, one gallon of water per person per day for at least three days, for drinking and sanitation
- Food, at least a three-day supply of non-perishable food
- Battery-powered or hand crank radio with tone alert and extra batteries for both
- Flashlight and extra batteries
- First aid kit
- Whistle to signal for help
- Manual can opener for food
- Moist towelettes, garbage bags and plastic ties for personal
- Sanitation
- Cell phone with chargers and a backup battery

22

## Principles of Disaster Nursing

- Rapid assessment of the situation and of nursing care needs.
- Triage and initiation of life-saving measures first.
- The selected use of essential nursing interventions and the elimination of nonessential nursing activities
- Evaluation of the environment and the mitigation or removal of any health hazards.
- Leadership in coordinating patient triage, care, and transport during times of crisis
- Provision of understanding, compassion, and emotional support to all victims and their families.

23

**Capacity:** The combination of all the strengths, attributes and resources available within a society or organization that can be used to achieve agreed goals.



24

**Disaster risk management** : The systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster.



25

## Disaster Risk Reduction Plan

A document prepared by an authority, sector, organization or enterprise that sets out goals and specific objectives for reducing disaster risks together with related actions to accomplish these objectives.



26

## Emergency Management

The organization and management of resources and responsibilities for addressing all aspects of emergencies, in particular preparedness, response and initial recovery steps.



27

## Intensive Risk

The risk associated with the exposure of large concentrations of people and economic activities to intense hazard events, which can lead to potentially catastrophic disaster impacts involving high mortality and loss.



28

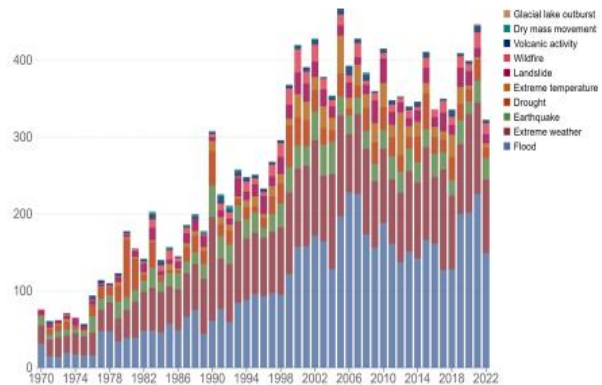
## Global Reported Natural Disaster by Type

- EM-DAT data includes all categories classified as "natural disasters" (distinguished from technological disasters, such as oil spills and industrial accidents). This includes those from drought, earthquakes, extreme temperatures, extreme weather, floods, fogs, glacial lake outbursts, landslide, dry mass movements, volcanic activity, and wildfires.

29

Global reported natural disasters by type, 1970 to 2022

The annual reported number of natural disasters, categorised by type. This includes both weather and non-weather related disasters.



Source: EM-DAT, CRED / Université catholique de Louvain, Brussels (Belgium)

OurWorldInData.org/natural-disasters - CC BY

## Emergency Management Plan

The basic plan describes :

- the organization and how it will function during a disaster.
- The leadership structure,
- relationships with other agencies and the legal requirements for emergency preparedness planning are included

32

## Emergency Management Plan

- Provide maximum safety and protection from injury and illness for patients, visitors, and staff.
- Provide care promptly and efficiently to all individuals requiring medical attention in an emergency.
- Provide a logical and flexible chain of command to enable maximum use of resources.
- Maintain and restore essential services as quickly as possible following an emergency incident or disaster.
- Protect clinic property, facilities, and equipment.

33

## Emergency Management Plan



34

## Emergency management plan Video

- <https://www.youtube.com/watch?v=tKa8POjWfE0>
- <https://www.youtube.com/watch?v=3QWz5PIs6ml>
- <https://www.youtube.com/watch?v=lkEnRVeuQT4>

35

## MITIGATION

is the pre-event planning and action steps that aim to lessen the effects of potential disaster

- Identify Risk
- Analyze and Evaluate Risk
- Treat Risk
- Monitor Risk

36

## MITIGATION

Hazard vulnerability assessment/risk assessment

- Increase security
- Increase testing specific to the event; increased surveillance
- Mass prophylaxis/immunization
- Assessment & identification of potential hazards/vulnerabilities
- Isolation & quarantine

37



Images from F&DHR and CDC Emergency

## Preparedness

The knowledge and capacities developed by governments, professional response and recovery organizations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions.



39

## ROLE OF A NURSE IN DISASTER PREPAREDNESS

### PERSONAL PREPAREDNESS:

- Capacity Building
- Readiness to work in the multidisciplinary team
- Knowledge about community
- Types of disaster and its management
- Certified first aider and Knows CPR
- Knowledge about Policies and protocols
- Communication skill

40

## ROLE OF A NURSE IN DISASTER IMPACT AND RESPONSE

"Actions taken in anticipation of, during and immediately after impact to ensure that its effects are minimized and that people are given immediate relief and support

- ▶ First responders; triage
- ▶ Epidemiology; surveillance
- ▶ Rapid needs assessment
- ▶ Risk communication
- ▶ Assist with medical surge capacity

41

## Simple Triage and Rapid Treatment (START) Triage (3 hours)

The concept of triage and triage tags by colorful posters, and videos. Discussion about triage scenarios and re-demonstration

### Simple Triage And Rapid Treatment ( START)



1

### Simple Triage And Rapid Treatment ( START)

- **system to triage multiple victims in 30 seconds or less**
- **based on three primary observations (RPM):**
  - Respiration
  - Perfusion
  - Mental Status

2

### Triage- Definition

- The process of quickly examining sick or injured people, for example after an accident or a battle, so that those who are in the most serious condition can be treated first (English dictionary, 2019).
- In medicine, is the process of sorting patients in order of priority for treatment and evacuation. Triage may take many different forms, and operates at a number of different levels (Wayne Smith, 2012)

**The aim of triage is to categorize wounded according to:**

1. The severity of the injury
2. The need for treatment
3. The possibility of salvageability

3

4

### Influencing factors

1. The number of the wounded
2. Nature of their wounds
3. Their condition
4. The facilities & personnel availability
5. The line of evacuation and duration of transport

5

### Triage

- Triage decisions should be made by the most experienced nurse or DR
- Triage decisions must be respected by the team
- Triage is a continuous process in both green and red zones, patient reassessments are important
- Using triage protocol enable the team to have same scale for all patients

6

### Triage protocol

- Simple
- Allows for rapid triage of a large number of patients with minimal time
- Initial patient assessment and treatment should take less than 30 seconds for each patient
- Ends as soon as decision can be made
- 4 possible color – coded acuity levels

7

DELAYED                      DEAD                      URGENT

Priority	Treatment	Color
Immediate	1	RED
Urgent	2	Yellow
Delayed	3	Green
Dead	0	Black

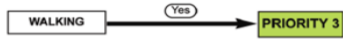




8

### First Step in START

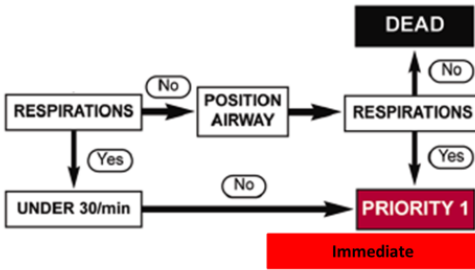
- Tell all the people who can **get up and walk to move** to a specific area (**Green**)
- If they can get up and walk, they are probably not at risk of immediate death
- Tag them



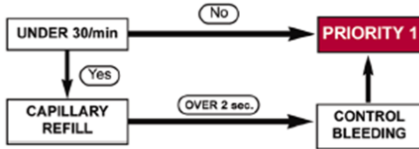
### PRIORITY 3

- Not injured or "Walking wounded"
- Have motor, respiratory, mental function

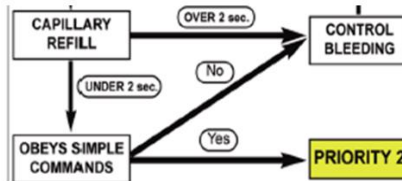
### DELAYED



11



13



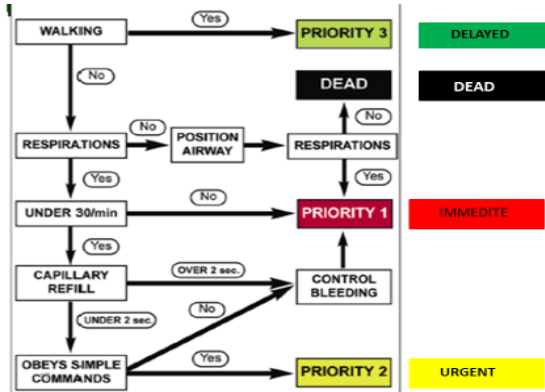
15

## PRIORITY 2

- Did not move out, when asked
- Airway OK
- Breathing within 11 and 29
- Capillary refill less than 2 seconds or radial pulses present
- Can follow instructions to move unaffected limb

## Urgent

10



### Characteristics of Triage Nurse

- Extensive knowledge of emergency medical treatment
- Adequate training and competent skills, language, terminology
- Ability to use the critical thinking process
- Good decision maker

19

### Role of the Nurse at the Disaster Site

- Ensure safety
- First Aid
- Emergency care

20

## Confirm triage and set priorities

### Let's Practice (Apply START)

- There has been an explosion and it is a MCI
- Bob is a 25 yr. old male
- He is able to follow commands but has trouble hearing
- His Cap Refill is < 2 seconds
- His Radial Pulse is nonexistent
- Can't move due to a compound left femur fracture
- Respirations are > 30 and he is coughing What color tag is he and why?

21

<p><b>1</b></p> <p>HR 140 SBP 70 %O<sub>2</sub>Sats 85 RR 40 GCS 14</p> <p>144 79 90 [SpO<sub>2</sub>] 40 13</p> <p><b>40-year-old male</b></p> <ul style="list-style-type: none"> <li>• GSW abdomen: 2 wounds anteriorly RLQ. One small L posterior mid-thoracic wound</li> <li>• Rigid abdomen. Absent bowel sounds</li> </ul>	<p><b>2</b></p> <p>HR 51 SBP 165/90 %O<sub>2</sub>Sats 96 RR 19 GCS 15</p> <p>50 167/88 98 [SpO<sub>2</sub>] 16 15</p> <p><b>73-year-old female</b></p> <ul style="list-style-type: none"> <li>• GSW lower back: L flank wound, 10cm dia. wound R para lumbar</li> <li>• No obvious bleeding</li> <li>• Unable to move legs to command</li> </ul>	<p><b>3</b></p> <p>HR 138 SBP 85 %O<sub>2</sub>Sats 92 RR 28 GCS 15</p> <p>136 90 96 [SpO<sub>2</sub>] 20 15</p> <p><b>28-year-old male - ?gunman</b></p> <ul style="list-style-type: none"> <li>• R anterior chest wound. Small wound below L scapula</li> <li>• Large wound R thigh: pre-hosp tourniquet remains in place. Bone fragments visible</li> </ul>
<p><b>4</b></p> <p>HR 115 SBP 133 %O<sub>2</sub>Sats 99 RR 16 GCS 13</p> <p>110 130 97 16 14</p> <p><b>44-year-old male</b></p> <ul style="list-style-type: none"> <li>• Single 6cm scalp wound</li> <li>• Bone fragments and small amount of brain matter visible</li> <li>• Calms with minimal analgesia</li> <li>• Pressure dressing in situ</li> </ul>	<p><b>5</b></p> <p>HR 122 SBP 118 %O<sub>2</sub>Sats 90 RR 44 GCS 15</p> <p>90 113 99 [SpO<sub>2</sub>] 26 15</p> <p><b>22-year-old female</b></p> <ul style="list-style-type: none"> <li>• GSW R humerus: tense, swollen upper arm. <b>Cold R hand.</b></li> <li>• <b>Capillary return &gt; 4 seconds</b></li> <li>• Multiple wounds dressings L lower leg. Bleeding stopped. Warm foot</li> </ul>	<p><b>6</b></p> <p>HR 111 SBP 172 %O<sub>2</sub>Sats 92 RR 22 GCS 15</p> <p>88 147 96 [SpO<sub>2</sub>] 14 14</p> <p><b>61-year-old male</b></p> <ul style="list-style-type: none"> <li>• GSW R femur: wound lateral lower 1/3 + 7cm wound lower medial aspect. Swelling and deformity</li> <li>• No obvious bleeding</li> <li>• Complaining of pain</li> </ul>

22

## Confirm triage and set priorities

<p><b>7</b> HR 130 SBP 120 %O<sub>2</sub>Sats 99 RR 18 GCS 15</p> <p><b>101</b> 100 96 15 15</p> <p><b>8-year-old female</b></p> <ul style="list-style-type: none"> <li>• Bruising and closed deformity R shoulders.</li> <li>• Closed deformity L tibia/fib.</li> <li>• Arrives with family</li> <li>• Very distressed</li> </ul>	<p><b>8</b> HR 99 SBP 126 %O<sub>2</sub>Sats 93 RR 14 GCS 7</p> <p><b>70</b> 90 99 (15% O<sub>2</sub>) Intubated Intubated</p> <p><b>28-year-old male</b></p> <ul style="list-style-type: none"> <li>• Front seat passenger.</li> <li>• Apparently unrestrained.</li> <li>• Bleeding scalp wound.</li> <li>• Open fracture of R tibia/fib.</li> <li>• Open fracture humerus just above elbow.</li> </ul>	<p><b>9</b> HR 93 SBP 88 %O<sub>2</sub>Sats 92 RR 30 GCS 14</p> <p><b>70</b> 110 96 (5L O<sub>2</sub>) 14 15</p> <p><b>66-year-old male (driver ?)</b></p> <ul style="list-style-type: none"> <li>• Abrasion to left forehead.</li> <li>• Discoloration across chest and abdomen from seat belt.</li> <li>• Pale and clammy.</li> <li>• Pain on L side of chest and neck.</li> <li>• Painful deformity of left wrist.</li> </ul>
<p><b>10</b> HR 116 SBP 85 %O<sub>2</sub>Sats 91 RR 22 GCS 11</p> <p><b>96</b> 96 (5L O<sub>2</sub>) 28 14</p> <p><b>17-year-old male</b></p> <ul style="list-style-type: none"> <li>• Soft hematoma with small abrasion L side of head.</li> <li>• Closed deformity R femur.</li> <li>• Discoloration and deformity across lower abdomen.</li> <li>• Asymmetric pelvis.</li> </ul>	<p><b>11</b> HR 115 SBP 74 %O<sub>2</sub>Sats 74 RR 40 GCS 15</p> <p><b>88</b> 112 90 (10L O<sub>2</sub>) 20 15</p> <p><b>44-year-old female</b></p> <ul style="list-style-type: none"> <li>• Traumatic amputation L foot; bleeding minimal, tourniquet in place.</li> <li>• Contusions R side of chest and difficulty breathing.</li> </ul>	<p><b>12</b> HR 100 SBP 80 %O<sub>2</sub>Sats 78 RR 28 GCS 14</p> <p><b>114 Inopine</b> 100 94 (15L O<sub>2</sub>) 20 14</p> <p><b>71-year-old female</b></p> <ul style="list-style-type: none"> <li>• Legs very swollen and discolored. Intense pain. L lower leg is cold to touch.</li> <li>• Closed fracture of the R femur and open fracture of L ankle.</li> <li>• Cuts to face. Open fracture R wrist.</li> </ul>

23

## Decontamination procedures (2 hours)

Procedures of Decontamination and the appropriate utilization of personal protective equipment (PPE) during Chemical, Biological, Radiological, and Nuclear (CBRN) incidents which include Respiratory Protective Devices and Dermal Protective Equipment

### Personal Protective Equipment



1

### Personal Protective Equipment

- specialized clothing or equipment worn by an employee for protection against infectious materials"



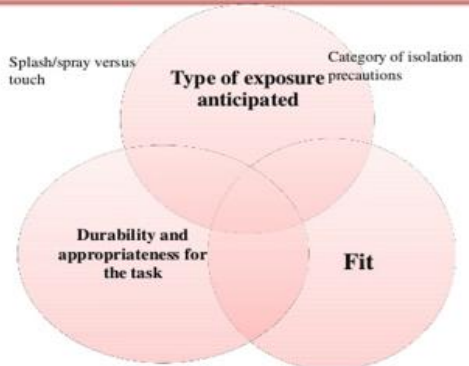
2

## Types of PPE Used in Healthcare Settings

- Gloves
- Gowns
- Masks and respirators
- Goggles
- Face shields

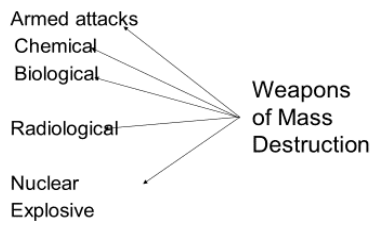
3

## Factors Influencing PPE Selection



4

## Types of Terrorism



5

## Biological agents

1. **A**bsorption: Skin contact
2. **I**ngestion: Through mouth
3. **I**njection: Needles or projectiles
4. **I**nhalation: By breathing



6

## Biological Weapons

- Bacteria (like Anthrax, Brucellosis, Tularemia, Plague)
- Viruses (Smallpox, Marburg, Yellow Fever)
- Rickettsia (Typhus fever, Spotted fever)
- Fungi (the molds that cause stem rust of wheat and rye)
- Toxins (Ricin, Botulinum and Saxitoxin)
- Infectious Pathogens: Emerging threats; SARS
- 'Old' threats: TB, HIV, Malaria



7

## Radiological weapons

- A radiation emission device (RED)
- Built using radioactive material



8

## Chemical Weapons

- Choking and blood agents
- Blistering agents
- Nerve gases degrade the functioning of the nervous system

9

## Criticality

### Chemical

- Effects are immediate and obvious
- Victims localized by time and place
- Overt/obvious
- Illicit immediate response
- First responders are police, fire, (EMS) emergency medical services

10

### Biological

- Effects are delayed and not obvious
- Victims are dispersed in time and place
- Covert/ hidden
- No first responders
- Unless announced, attack identified by medical and public health personnel

## Intervention

1. Ensure scene safety and a protective environment for all personnel and patients
2. Ensure that fire department resources has been notified and have been dispatched
3. Attempt to identify exposure
4. Apply appropriate personal protective equipment
5. Immediately remove all patients from the exposure

11

1. **Vapor material source:** remove from source of contamination.
2. **Liquid material source:** remove contaminated equipment and clothing and perform gross and technical showering decontamination procedures.
3. **Solid material source:** remove material by physical measures of brushing away source, then gross and technical showering decontamination procedures if indicated.

12

1. Maintain airway; suction as needed. Provide assisted ventilations with bag-valve mask and 100% oxygen if breathing or ventilatory compromise is apparent.
2. If potential for inhalational injury exists, administer oxygen via non-rebreathing mask at 15 L/min.
3. Obtain vital signs.
4. If nausea or vomiting is absent, encourage oral hydration.
5. If hypothermic, immediately remove from the environment into a warm setting. Remove cold, wet clothing and apply warm blankets.
6. If eye exposure has occurred, irrigate with sterile saline

13

**Basic life support (BLS) and cardiopulmonary resuscitation (CPR) (3 hours)**

Videos about BLS and CPR were presented to the trainees and re-demonstration were presented on Manikins.

**Advanced Trauma support** It involves (1) injury mechanisms;(2) primary survey;(3) protection of airway and spinal cord;(4) interventions for opening airway;(5) bleeding control ;(6) fractures and head trauma.

**Disaster Psychology** involves caring for vulnerable groups, psychological support, and posttraumatic stress syndrome (PTSS. (4 hours)

**Advance Trauma Support**



**Basics of Trauma Assessment**

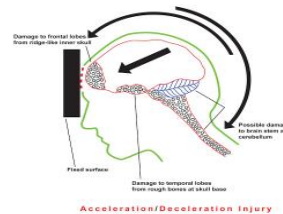
- Preparation
- Triage
- Primary Survey
- Resuscitation
- Secondary Survey
- Monitoring and Evaluation, Secondary adjuncts
- Transfer to Definitive Care

Mechanisms of Injury



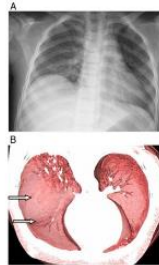
**Penetrating Wound**

- Compression forces
- Shear Forces
- Acceleration/Deceleration Injury



**Overpressure**

Body cavity compressed at a rate faster than the tissue around it, resulting in rupture of the closed space



9

**Primary Survey**

- **A**irway and Protection of Spinal Cord
- **B**reathing and Ventilation
- **C**irculation
- **D**isability
- **E**xposure and Control of the Environment

10

**Airway and Protection of Spinal Cord**

■ **Airway Assessment**

- Vital Signs
- Mental Status
- Airway Patency
- Traumatic Injury above the clavicles
- Ventilation Status

■ **Clinical Pearls**

- Patients who are speaking normally generally do not have a need for immediate airway management
- Hoarse or weak voice may indicate a subtle tracheal or laryngeal injury

11

**Airway Interventions**

- Maintenance of Airway Patency
- Airway Support
- Definitive Airway



12

**Protection of Spinal Cord**

• **Spinal Protection:**

1. Rigid Cervical Spinal Collar = Cervical Spine
2. Long rigid spinal board



13

**Breathing and Ventilation**

- **General Principle:** Adequate gas exchange is required to maximize patient oxygenation and carbon dioxide elimination
- **Breathing/Ventilation Assessment:**
  - Exposure of chest
  - General Inspection
  - Auscultation to assess for gas exchange
  - Palpation

14

## Breathing and Ventilation

- Identify Life Threatening Injuries



13-15



## Circulation

- Shock
- Clinical Signs of Shock
  - Altered mental status
  - Tachycardia (HR > 100)
  - Arterial Hypotension (SBP < 90)
  - Inadequate Tissue Perfusion
    - Pale skin color
    - Cool clammy skin
    - Delayed cap refill (> 3 seconds)
    - Altered LOC
    - Decreased Urine Output (UOP < 0.5 mL/kg/hr)

18

## Circulation

- Types of Shock in Trauma
  - Hemorrhagic
  - Obstructive
  - Neurogenic

19

## Circulation

- Emergency Nursing Treatment
  - Two Large IV Lines
  - Cardiac Monitor
  - Blood Pressure Monitoring
- General Treatment Principles
  - Stop the bleeding
  - Close open-book pelvic fractures
  - Restore circulating volume/IV fluid / or blood transfusion
  - Immobilize fractures

20

## Disability

- Baseline Neurologic Exam
  - Pupillary Exam
  - AVPU Scale
  - Gross Neurological Exam – Extremities
  - Glasgow Coma Scale

A	The patient is awake.
V	The patient responds to verbal stimulation.
P	The patient responds to painful stimulation.
U	The patient is completely unresponsive.

13-21

## Exposure

- Remove all clothing
  - Examine for other signs of injury
  - Injuries cannot be diagnosed until seen by provider
- Logroll the patient to examine patient's back
  - Maintain cervical spinal immobilization
  - Palpate along thoracic and lumbar spine
  - Minimum of 3 people, often more providers required
- Avoid hypothermia
  - Apply warm blankets after removing clothes
  - Hypothermia = Coagulopathy
    - Increases risk of hemorrhage

## Head Injury

### Your turn: Minor head injury

1. Help your casualty to sit down
2. Apply a cold compress to the injured area  
Treat any wounds >
3. Monitor your casualty  
Watch for > drowsiness and vomiting
4. Get help if necessary  
Make sure there is a responsible adult to stay with them

St John Ambulance

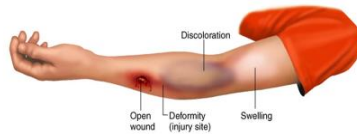
### Your turn: Severe head injury

1. Dial 911 for emergency help
2. Do NOT move your casualty if you suspect they could have a neck injury
3. Make sure the airway is open
4. Treat any serious wounds
5. Monitor casualty until emergency help arrives

St John Ambulance

### Signs and Symptoms of Injury continued

#### BONE, JOINT AND MUSCLE INJURIES



20

13-27

## Fractures

### RICE

- R**est the injured area for 48 hours
- I**ce for 20 minutes at a time, 4 to 8 times per day
- C**ompress to help reduce swelling
- E**levate the injured limb 6 to 10 inches above the heart

verywell

13-29

- Transverse**  
The fracture line crosses the bone at a right angle.
- Greenstick**  
An incomplete fracture and bending of bone that is more likely in children whose bones are soft.
- Comminuted fracture**  
The bone is broken into more than two fragments.
- Hairline fracture**  
The bone fragments do not separate.
- Impacted**  
One fragment is driven into the bone of the other fragment.

### Dislocations



13-30



FIGURE 12-16. Dislocated ankle

13-31

### Sprains



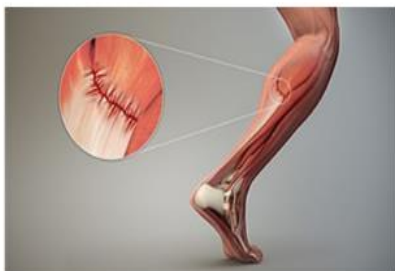
13-32

### Muscle Injuries

- Typically caused by overexertion, careless or sudden movement, poor body mechanics
- Common injuries include **strains, contusions and cramps**
- Usually less serious than bone and joint injuries
- Repeated injury can lead to chronic problem

13-33

### Strains



13-34

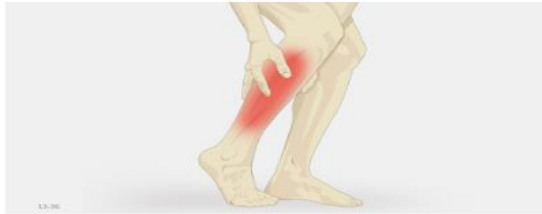
### Contusion

- Bruised muscle
- May result from a blow
  - Occurs when muscle compressed between object causing blow and underlying bone
- Cause pain, swelling and discoloration
  - May persist up to a month



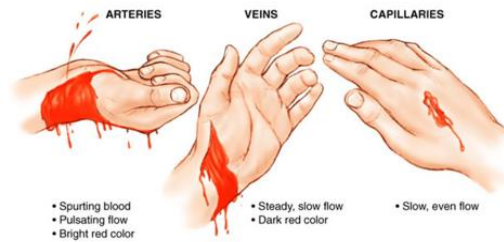
14-35

### Muscle Cramps



### External Bleeding

- Hemorrhage means bleeding.
- Examples include nosebleeds and bleeding from open wounds.
- As an EMT, you must understand how to control external bleeding.



13-38

39

### Emergency Medical Care for External Bleeding

- Follow standard precautions.
  - Wear gloves, eye protection, and possibly a mask or gown.
  - Make sure the patient has an open airway and is breathing adequately.
  - Provide high-flow oxygen.

13-40

### Emergency Medical Care for External Bleeding

- Several methods are available to control external bleeding.
  - Direct, even pressure and elevation
  - Pressure dressings and/or splints
  - Tourniquets
- It will often be useful to combine these methods.

13-41

### Direct Pressure



42

### Elevation



43

### Pressure Dressing



44

### Tourniquet



45

### Splints

- Air splints
  - Can control internal or external bleeding associated with severe injuries
  - Stabilize fractures
  - Act like a pressure dressing
  - Commonly referred to as soft splints or pressure splints

13-46



13-47

## Disaster Psychology

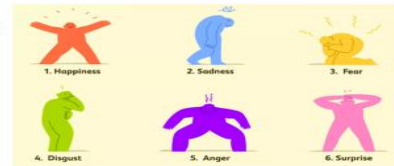
### Victims level: 5 levels

- Primary victims: same victims
- Secondary victims: relatives
- Third level victims: HCP
- Fourth level victims: witnessed community individuals (reporters)
- Fifth level victims: general public



### Immediate psychological responses to a disaster

- ❖ Personal character play a significant role in individual responses to trauma.
- ❖ Expected reactions



### Post-traumatic responses to a disaster

- ❖ Post traumatic responses resemble the emotions, thoughts, and behaviors that are part of bereavement process. Process of coping begins with feelings of disbelief, difficulty concentration, denial, as primary defense.
- ❖ Anxiety and fear represent next phase followed by sadness and depression.



3

### Post-traumatic responses to a disaster

- Risk for development of a major psychiatric disorder include depression, panic disorder, acute and post-traumatic stress disorder and substance abuse
- Predisposing factors: childhood history, multi life stressors, lack of family and social support, and survivor guilt



4

### Acute and post-traumatic stress disorder

- Acute stress disorder or post-traumatic stress disorder symptoms shared by both conditions occurs in three categories:
- 1-Reliving the traumatic event through intrusive thoughts or images, nightmares, or flashbacks,
- 2-avoidance of associations to the traumatic event and feelings of numbness and detachment
- 3- increase arousal , nervousness or "on alert" much of time, insomnia, and inability to concentrate

13-5

### Difficulties with PTSD Diagnosis

- Onset of symptoms may not occur for months to years after trauma
- Professionals may misdiagnose or not recognize symptoms
- Individual psychosocial factors may interfere with individuals seeking help
- Avoidant behaviors may result in an inability for others to recognize the need for treatment

13-6

### Duration of PTSD

- To meet criteria for PTSD, symptom duration must be at least one month
- Acute PTSD: duration of symptoms is less than 3 months
- Chronic PTSD: duration of symptoms is 3 months or more
- Often, the disorder is more severe and lasts longer when the stress is of human design (i.e., war-related trauma)

13-7

### Cultural Perspectives

- Culture is a strong determinant of how communities will respond to a disaster.
- Attention must be paid to norms and values as these will affect issues related to confidentiality, family roles, and spiritual practices.
- Differences in beliefs and values shape victims' willingness to engage in psychological interventions.
- Cultural considerations include ethnicity, gender, language and previous exposure to violence and trauma

13-8



9

### Psychological First Aid: PFA

- PFA provided within context of caring and compassionate relationship between caregiver and victims.
- Goal of this relationship is to facilitate victim's coping through support, resources, and information.
- A person in need of immediate psychological assistance should not be referred for psychotherapy without intervention by disaster nurse first.

10

### Basic care provided in psychological first aid

- Comfort
- Protection from further distress
- Immediate physical care
- Reunite loved ones
- linking with Sources of support
- Identify who need help
- Facilitate sense of being in control
- Allowing sharing experience but not forcing it
- Provision of culturally appropriate ways of grieving
- Normalization of activity and routine

13-11

### Psychological First Aid: PFA

- Two modalities were used to intervene with these victims: critical incident stress debriefing CISD and crisis management.

13-12

### Critical incident stress debriefing CISD

- CISD use a trained team , participate in groups with victims over 3-4 hours ASAP after disaster but this way does not prevent the long term negative outcomes

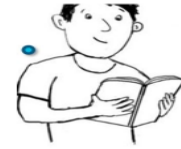


13-13

### Crisis management

occur within 6-8 weeks of disaster through 7 stages

- 1- psychological assessment
- 2- establish collaborative relationship
- 3- identify the problems
- 4- encourage expression of emotions
- 5- explore alternatives and coping strategies
- 6- implement action plan
- 7- plan follow up



13-14

### Interventions: The Debriefing Process

- Debriefing- intervention after a person has been assessed to be affected by a critical incident; includes listening, empathizing, educating, and supporting.
- Traumatized people should be encouraged to function where possible and maintain healthy eating habits and sleep patterns.
- disasters affect not only those directly involved but others who suddenly feel that their security is threatened.
- Communities respond by providing support.

13-15

### Long term interventions

- A number of victims will require long term interventions:
- Individual, group, family therapy, cognitive behavioral approaches and medications are part of services needed
- Distinguish between normal grief and pathological grief require skills of mental health professional
- In Cognitive-behavioral approaches, survivors review events repeatedly with repetition memories lose their intensity and ability to cause anxiety and pain.
- Antidepressants and antianxiety medications valuable

13-16

### Disaster Nurse

- Disaster nurse is a third level victims.
- Factors influence disaster nurse' response to the event are :The more significant impact, difficult working conditions, lack of necessary resources,& proximity of disaster.
- She is not immune from physical and psychological stress, so must available to them same resources afford to victims.

13-17

**Debriefing (1 hour)** For obtaining participants' feedback.

All of the participants expressed gratitude for the fruitful disaster management educational session, and they stated that they need more programs like this to assist them cope with the situation and enhance their capacity.

## APPENDIX G

## Informed Consent

*Arab American University*  
*Scientific Research Deanship*  
*Ethical Review Committee*



الجامعة العربية الأمريكية  
 عمادة البحث العلمي  
 لجنة أخلاقيات البحث العلمي

## INFORMED CONSENT

AAUP-IRB Code No.: .....

AAUP-IRB Date: .....

I, ..... (Name of Participant / optional) hereby agree to take part in the clinical research (clinical study/questionnaire study/drug trial) specified below:

**Title of Study:** ..... The Effect of Disaster Management Training Program on Emergency

**Nurses' Knowledge, Skills, and Personal Preparedness in Palestine**

Fulfillment of .....PHD..... degree, in .....Nursing ....., in AAUP.  
 (Name of program)

The nature and purpose of which has been explained to me by .....Rihab Issa....., and interpreted by .....Rihab Issa..... to the best of his/her ability in English.

I have been told about the nature of the research in terms of methodology, possible adverse effects and complications (as per Participant Information Sheet).

After knowing and understanding all the possible advantages and disadvantages of this research, I voluntarily consent of my own free will to participate in the clinical research specified above.

I understand that I can withdraw from this research at any time without assigning any reason whatsoever.

Date: .....

Signature: .....  
 (Participant)**IN THE PRESENCE OF:**

Name: .....

Designation: ..... Signature: .....

(Witness for Signature of Participant)

I confirm that I have explained to the patient the nature and purpose of the above-mentioned research.

Date: .....18/4/2023.....

Signature: .....Rihab Issa.....

(Attending investigator)

**APPENDIX H**  
**Certificates of Appreciation**

الجامعة العربية الأمريكية  
ARAB AMERICAN UNIVERSITY



**Arab American University**  
**Faculty of Graduate Studies**

This is to certify that



Has successfully completed a 15 hours' Training Program on  
*Disaster Management*

**Vice President for Ramallah Campus**

**Prof. Mohammad Asia**

**Date of Certificate:** Jan 15, 2024

## APPENDIX I

## Institutional Review Board (IRB) at Arab American University

Arab American University- Palestine  
Deanship of Scientific Research  
IRB committee  
Tel: 04-241-8888, ext 1196  
E-mail: [irb.aaup@aaup.edu](mailto:irb.aaup@aaup.edu)



الجامعة العربية الامريكية فلسطين  
عمادة البحث العلمي  
لجنة أخلاقيات البحث العلمي  
تلفون: 1196 ext 04-241-8888  
البريد الإلكتروني: [irb.aaup@aaup.edu](mailto:irb.aaup@aaup.edu)

## IRB Approval Letter

**Study Title: The Effect of Disaster Management Training Program on Emergency Nurses' Knowledge, Skills, and Personal Preparedness in Palestine**

**Submitted by: Rihab Issa Sa'd**

**Date received:** 19<sup>th</sup> April 2023

**Date reviewed:** 24<sup>th</sup> May 2023

**Date approved:** 26<sup>th</sup> May 2023

Your Study titled "The Effect of Disaster Management Training Program on Emergency Nurses' Knowledge, Skills, and Personal Preparedness in Palestine" With archived number 2023/A/90/N was reviewed by the Arab American University IRB committee and was approved on 26<sup>th</sup> May 2023.

Reham Khalaf-Nazzal, MD, PhD  
IRB committee chairman  
Arab American University of Palestine



## General Conditions:

1. Valid for 8 months from date of approval.
2. It is important to inform the committee with any modification of the approved study protocol.
3. The committee appreciates a copy of the research when accomplished.

لجنة أخلاقيات البحث العلمي في الجامعة العربية الامريكية

IRB at Arab American University

## APPENDIX J

## Approval from the Ministry of Health and Selected Hospitals

3/5/24, 1:58 PM

Mail - rissa@avh.org

**From:** Imad Rasheed Ali Abu Khader <imad.abukhader@aaup.edu>  
**Sent:** Wednesday, July 19, 2023 4:30 PM  
**To:** bassil65@yahoo.com  
**Cc:** Rihab Issa  
**Subject:** تسهيل مهمة بحث علمي

حضرة الدكتور باسل بواطنة المحترم،  
 مدير دائرة التعليم المستمر ،  
 تحية طيبة وبعد،

تُهدىكم كلية الدراسات العليا أطيب التحيات وبالإشارة الى الموضوع أعلاه، يُرجى تسهيل مهمة الطالبة رحاب سعد والتي هي طالبة في برنامج دكتوراه التمريض حيث تقوم بعمل بحث كالمروحة الدكتوراه بعنوان:

the effect of training Program for disaster management on emergency Nurses` knowledge, Skills and personal preparedness in Palestine : Quasi experimental study

في مستشفى عالية الحكومي / الخليل  
 حيث سيتم عمل تقييم لمرضى أقسام الطوارئ قبل وبعد المحاضرات

وسيتم اجراء البحث باشراف

د. ملكة ملك  
 د. عماد ابو خضر

مرفق الاستيانة

وسيتم تزويدكم بالمادة العلمية

مع الاحترام

د. عماد ابو خضر  
 مساعد عميد كلية الدراسات العليا  
 الجامعة العربية الامريكية

**From:** Imad Rasheed Ali Abu Khader  
**Sent:** Saturday, August 5, 2023 7:29 PM  
**To:** dr.abdalla2007@gmail.com <dr.abdalla2007@gmail.com>  
**Cc:** Basima Amleh/Joudeh <basimamoh@gmail.com>  
**Subject:** تسهيل مهمة بحث علمي

حضرة الدكتور عبد الله القواسمي المحترم،  
 مدير دائرة البحث العلمي الصحي،  
 تحية طيبة وبعد،

تُهدىكم كلية الدراسات العليا أطيب التحيات وبالإشارة الى الموضوع أعلاه، يُرجى تسهيل مهمة الطالبة رحاب سعد والتي هي طالبة في برنامج دكتوراه التمريض حيث تعمل على أطروحة الدكتوراه بعنوان:

the effect of training Program for disaster management on emergency Nurses` knowledge, Skills and personal preparedness in Palestine : Quasi experimental study

في مستشفى عالية الحكومي / الخليل

مع الاحترام

د. عماد ابو خضر  
 مساعد عميد كلية الدراسات العليا  
 الجامعة العربية الامريكية

مركز الدراسات  
 ترقية طبية وبعده...  
 2024/3/5 الموافق...  
 18-OCT-2023 09:47 From: [Redacted]  
 State of Palestine  
 Ministry of Health  
 Education in Health and Scientific  
 Research Unit  
 وزارة الصحة  
 وحدة التعليم الصحي  
 والبحث العلمي  
 رقم: 6959  
 التاريخ: 18/10/2023  
 الوكيل المساعد لشؤون المستشفيات والطوارئ المحترم...  
 تيمموا بقرآنكم  
 الموضوع: تسهيل مهمة بحث دكتوراه  
 برضى تسهيل مهمة الدوائية: رباب سعد - برنامج الدكتوراه في التمريض - الجامعة العربية  
 الأمريكية، بعنوان:  
 "The Effect of Disaster Management Training Program on Emergency  
 Nurses' Knowledge, Skills, and Personal Preparedness in Palestine"  
 حيث ستقوم الطالبة بجمع معلومات عن طريق تعبئة استبانة الدراسة من قبل المعرضين/ات (بعد  
 اخذ موافقتهم/ن)، وذلك في:  
 مستشفى عاليه  
 مع العلم ان مشرف الدراسة: د. عماد ابو حضر.  
 على ان يتم الالتزام بالمحافظة على اخلاقيات البحث العلمي وسرية المعلومات.  
 على ان يتم تزويد الوزارة بنسخة PDF من نتائج البحث. التمهيد بعدم النشر لحين الحصول على موافقة وزارة  
 الصحة.  
 مع الاعتزاز...  
 د. نيد الله القواسمي  
 رئيس وحدة التعليم والتدريب والبحث العلمي  
 6959/18/10/2023  
 د. نيد الله القواسمي  
 رئيس وحدة التعليم والتدريب والبحث العلمي  
 6959/18/10/2023  
 15 Fax: 995-233-7901 scientific@scs.edu.jo mail.com 995-233-7901 فاكس

## AlMakassed Hospital Approval

6/13/23, 8:18 AM

Mail - rissa@avh.org

Untitled

Cont.Education <cont.edu@almakassed.org>

Mon 6/12/2023 4:19 PM

To:Rihab Issa <rissa@avh.org>;

Dear Mrs Rehab,

We wanted to let you know that we got your request, about studying at AlMakassed hospital among emergency nurses., the general manager agreed for that.

Continuous education dept.

Al Makassed hospital- Jerusalem

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Arab American University  
Faculty of Graduate Studies



الجامعة العربية الأمريكية  
كلية الدراسات العليا

### تسهيل مهمة بحث علمي

حضرة الدكتور عننان فرهود المحترم  
مدير مستشفى جمعية المقاصد الخيرية الإسلامية ،

تحية طيبة وبعد،

تُهدىكم كلية الدراسات العليا في الجامعة العربية الأمريكية أطيب التحيات وبالإشارة الى الموضوع أعلاه، يُرجى تسهيل مهمة بحث علمي لطلبة الدكتوراه في التمريض رحاب عيسى سعد برقم جامعي 202012374 والتي هي طالبة في برنامج دكتوراه التمريض بعنوان:

The effect of disaster management Training program on emergency Nurses` knowledge, Skills and personal preparedness in Palestine

وهو احد متطلبات درجة الدكتوراه  
يرجى تسهيل مهمتها في مشفاكم الموقر :

1 . مستشفى المقاصد

الفئة المستهدفة: تـمـريـض الطـواري  
الاستبيان يعين من قبل الممرض بنفسه لمدة تقارب 20 دقيقة والمعلومات فيه لاغراض البحث العلمي فقط

ملاحظة: مرفق الاستبيان ومقترح الدراسة أيضا

مع الاحترام

د. عماد ابو خضر

مساعد عميد كلية الدراسات العليا للشؤون الطبية والصحية

لغاية الاستاذ عماد ابو خضر  
مدير التمريض المحترم  
20/6/2023



Page 1 of 1

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Ramallah Tel: +970-2-2941999 Fax: +970-2-2941979 Abu Qash - Near Alrehan  
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## Augusta Victoria Hospital Approval

Arab American University

Faculty of Graduate Studies



الجامعة العربية الأمريكية

كلية الدراسات العليا

### تسهيل مهمة بحث علمي

حضرة الدكتور فادي الاطرش المحترم  
المدير التنفيذي العام لمستشفى المطلع ،

تحية طيبة وبعد،

تُهدىكم كلية الدراسات العليا في الجامعة العربية الأمريكية أطيب التحيات وبالإشارة إلى الموضوع أعلاه، يُرجى تسهيل مهمة بحث علمي لطالبة الدكتوراه في التمريض رحاب عيسى سعد برقم جامعي 202012374 والتي هي طالبة في برنامج دكتوراه التمريض بعنوان:

The effect of disaster management Training program on emergency Nurses' knowledge, Skills and personal preparedness in Palestine

وهو احد متطلبات درجة الدكتوراه  
يرجى تسهيل مهمتها في مشغلكم الموقر :

1 . مستشفى الاوغستا فيكتوريا | المطلع

الفئة المستهدفة: تـمـريـض الطـواري  
الاستبيان يعنى من قبل الممرض بنفسه لمدة تقارب 20 دقيقة والمعلومات فيه لاغراض البحث العلمي فقط

ملاحظة: مرفق الاستبيان ومقترح الدراسة أيضا

مع الاحترام

د. عماد ابو خضر

مساعد عميد كلية الدراسات العليا للشؤون الطبية والصحية



Page 1 of 1

## الملخص

**المقدمة:** ممرضو الطوارئ هم غالبية المتخصصين في الرعاية الصحية الذين يحتاجون إلى الاستعداد جيداً للتعامل مع الأزمات الشديدة والعمل مع ضحايا الكوارث. هناك نقص في برامج التدريب على التأهب للكوارث في فلسطين. لذا هدفت هذه الدراسة إلى تقييم أثر برنامج تدريبي لإدارة الكوارث على المعرفة والمهارات والاستعداد الشخصي لدى ممرضي الطوارئ في فلسطين.

**الطرق:** تم استخدام تصميم المجموعة الواحدة للاختبار القبلي والبعدي. تم توظيف ما مجموعه 64 ممرض طوارئ من المستشفيات الحكومية وغير الحكومية في فلسطين في برنامج التدخل. يتكون التدخل من 15 ساعة موزعة على ثلاثة أيام. تم جمع البيانات باستخدام أداة تقييم التأهب للكوارث وقائمة مراجعة مراقبة فرز التمريض التي تم استخدامها لتقييم مهارات الممرضين.

**النتائج:** أظهرت النتائج أن معرفة ممرضي الطوارئ ومهاراتهم واستعدادهم الشخصي للتأهب للكوارث قبل البرنامج التدريبي كانت متوسطة. و كانت معرفة الممرضيين ومهاراتهم واستعدادهم الشخصي قوياً بعد البرنامج التدريبي. كان هنالك اختلافات كبيرة في معرفة الممرضيين ومهاراتهم واستعدادهم الشخصي قبل وبعد برنامج التدريب على الكوارث (اختبار ت = -13.326 ، القيمة الإحصائية  $> 0.001$  ؛ اختبار ت = -12.539 ، القيمة الإحصائية  $> 0.001$  ؛ اختبار ت = -12.256 ، القيمة الإحصائية  $> 0.001$  ، على التوالي). أشارت ملاحظة مهارات الممرضيين قبل التدخل إلى أن 51 (79.6%) ممرضاً من المشاركين لديهم مهارات جيدة بينما بعد التدخل بشهر أشارت النتائج إلى أن جميع الممرضين (100%) أظهروا مهارات جيدة.

**الاستنتاجات:** أثبتت النتائج فعالية برنامج التدريب على الكوارث في تحسين معارف ومهارات ممرضى الطوارئ والاستعداد الشخصي لإدارة الكوارث. ولذلك، ينبغي لوضعي السياسات والمتخصصين في الرعاية الصحية تشجيع تحديث برامج التعليم المستمر للتأهب للكوارث بين ممرضى الطوارئ.

**الكلمات المفتاحية:** الكوارث، إدارة الكوارث، برنامج التدريب على الكوارث؛ ممرضى الطوارئ؛ المعرفة؛ الاستعداد الشخصي؛ المهارات.