

Awareness of Nursing Staff Regarding Disaster Preparedness in the Emergency Department

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Abstract

Background: Disasters have a significant impact on society, nurses, who play a key role in disasters, should be sufficiently prepared and have good knowledge in responding to disasters to reduce the negative consequences on the population affected by disasters as disasters increase globally. **Aim:** Assess awareness of nursing staff regarding disaster preparedness in the emergency department. **Design:** A descriptive research design was used. **Setting:** This study was carried out at Emergency Department at Dar Al Fouad Hospital – Nasr City branch, Egypt. **Sample:** A convenient sample of nurses working at mentioned setting. **Tool:** One tool was used to collect study data: Demographic data, Nurses Knowledge, reported Practice, and Attitude self-administrated interview questionnaire. **Results:** Results of the present study showed that about three-quarters of the studied nurses had unsatisfactory level of knowledge, more than two-thirds of the studied nurses had inadequate level of practice and had negative attitude level regarding to disaster preparedness. **Conclusion:** There was a positive strong highly statistically significant correlation between total knowledge, reported practice, and attitude regarding disaster preparedness among the studied nurses, there was a highly statistically significant relation between total knowledge and nurses' demographic characteristics, also there was no statistically significant relation between total reported practice, attitude regarding to disaster preparedness and nurses' demographic data. **Recommendations:** Providing in-service educational training programs and upgrading courses based on evidence to improve their knowledge and practice related to disaster preparedness in both Arabic and English languages.

Keywords: Awareness of Nursing, Disaster Preparedness, Emergency Department, Nursing staff.

Introduction:

Disasters have a significant impact on society and many of history's great civilizations have been brought to their knees by the effect of natural disasters. A disaster is defined as: “a serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources” (**Rai & Khawas, 2019**).

A disaster is a situation or event which overwhelms local capacity necessitating a request to a national or international level for external assistance. Hospitals and other healthcare facilities classify disasters as either internal or external. Internal disasters cause disruption of normal hospital functions due to injuries or deaths of hospital personnel or damage. External disasters are those that do not affect the hospital infrastructure but do tax hospital resources due to number of patients or types of injuries. An effective response to disaster begins with effective planning and programming, but must include many other steps (**Whitworth et al., 2020**).

Healthcare resilience is an integral part of disaster preparedness and lies at the nexus between this and public health considerations. As the largest group of healthcare professionals worldwide, nurses face continual challenges in further developing their competences in disaster response and recovery. This also seems particularly the case in the community nurse setting where nurses are often required to deal with multiple tasks and work independently (**Søvold et al., 2021**).

Disasters have a potential of producing mass casualties thereby straining the health care systems. This showed that the hospitals need to be prepared for an unusual increase in workload, hence the importance of hospital disaster preparedness. Hospitals must prepare for the possibility of disaster within the facility as a requirement of accreditation and licensure. Healthcare providers have been less inclined to confront the possibility that disruption may occur within the facility itself and undermine their ability to provide care (**Rahman et al., 2018**).

Nurses are frequently the first health care professionals to respond to crises and are expected to also have knowledge in responding to disaster events, they need to be competent in their response. Furthermore, it is also increasingly recognized that disasters have become more frequent and often strike harder than before raising likelihoods for the nursing profession to be involved (**Oktari et al., 2020**).

The nurses' awareness about disaster preparedness can be evaluated through three major domains, core concepts, disaster management phases, and nurses' awareness and training about disaster management, any health care organization can teach nurses a culture of disaster management and preparedness by developing educational curricula, conducting disaster drills, advancing instructions, and raising mindfulness of organization disaster management plans (**Noh et al., 2020**).

Disaster preparedness is the practical state of readiness to respond to any disaster and includes plans or preparations made in advance of any disaster that help individuals and communities in getting ready to either respond or to recover. It aims to achieve a satisfactory level of readiness to respond to any emergent situation (**Badina et al., 2022**).

These measures can be described as logistical readiness to deal with disasters and can be enhanced by having response mechanisms and procedures, developing long- and short-term strategies, media and public awareness, the stocking of standby food and water; the gathering and screening of willing community volunteers or citizens education

and evacuation plan, holding disaster rehearsals and drills, installing smoke detectors, development of hospital disaster plans, and building early warning systems (Dutta & Kumar, 2022).

Emergency department intervention responses start in disaster response phase it is an immediate reaction or relief, or any actions taken immediately following an emergency, including efforts to save lives and to prevent further property damage, with the focus to satisfying the basic needs of the victims until sustainable community has been achieved. It may continue even when the recovery phase can already start. As regards disaster recovery, it is the process of repair and restoration, as it involves restoring, bringing back, rebuilding, and reshaping the impacted zone (Said & Chiang, 2020).

Across a broad spectrum of clinical and community settings and through all phases of a disaster event, nurses working with physicians and other members of the health care team play a significant role in response. Before, during, and after disasters, nurses provide education, community engagement, and health promotion and implement interventions to safeguard the public health. They provide first aid, advanced clinical care, and lifesaving medications; assess and triage victims; allocate scarce resources; and monitor ongoing physical and mental health needs. Nurses also assist with organizational coordination by developing operational response protocols and security measures and performing statistical analysis of individual- and community-level data (Rayner, 2021).

Significance of the study:

Globally, the most common hazardous events are transportation crashes, floods, cyclones/ windstorms, outbreaks, industrial accidents, and earthquakes. Approximately 190 million people are directly affected annually by emergencies due to natural and technological hazards, with over 77 000 deaths. A further 172 million are affected by conflict. From 2012 to 2017, the world health organization recorded more than 1200 outbreaks in 168 countries. In 2018, a further 352 infectious disease events (World Health Organization, 2019).

Historically, Egypt witnessed several types of disastrous events that hit the country till nowadays. Examples of such events include, but not limited to: the earthquake that occurred in 1992, which caused damage to more than 5000 buildings and killed 560 individuals; the massive local attack of locusts' swarms on the southern and western borders of Egypt with Sudan and Libya in 2004; the massive landslide, in Cairo, in 2008; the Alexandria train collision on August 2017, near Khurshid station, in the suburbs of the eastern edge of Alexandria; lastly, the Ramses railway station disaster that occurred on February 2019 (Abd El Rahman & Atalla, 2020).

In light of the (national strategy for disaster risk reduction): Egypt's Vision: 2030 that attention on increasing awareness and education of local communities including the following: raising awareness and public education; formal and non-formal education; training and building capacities in addition to management, provision and exchange of information.

Aim of the study:

This study aims to assess awareness of nursing staff regarding disaster preparedness in the emergency department.

Research questions:

This study will answer the following questions:

1. What is the level of knowledge regarding disaster preparedness among emergency staff nurses?
2. What is the level of practice regarding disaster preparedness among emergency staff nurses?
3. What is the attitude level regarding disaster preparedness among emergency staff nurses?

Subjects and Method

Research design:

A descriptive design was utilized for conducting this study.

The study setting:

The current study will be conducted in the Emergency Department at Dar Al Fouad Hospital – Nasr City branch, Egypt. The Hospital is located at the intersection of El Nasr Road and Youssef Abbas Street. The department of emergency located in the first floor and contains 18 beds and every bed have own monitor distributed in different rooms (three in the resuscitation room, two in the procedures room, ten in the regular treatment room, one in the isolation, and two in the triage room).

Subjects:

A convenient sample of (52 nurses) working at the Emergency Department at Dar Al Fouad Hospital – Nasr City branch, Egypt. All nursing staff are accepted to participate in the study from both genders, with different educational levels and working in the previously mentioned setting.

Pilot study:

A pilot study was carried out on (10%) (n= 5 nurses) of the subjects under the study and was included and chosen randomly from the previously mentioned settings and then later included in the sample. To test the applicability, feasibility, practicability, and clarity of the constructed tools. The pilot study also served to estimate the time needed for each subject to fill in the questionnaire. According to the results of the pilot, no omissions of items were performed, so the nurses were included in the study sample.

The tool for data collection:

The data of this study was collected using a structured interview questionnaire divided into four main parts:

Part I: Demographic characteristics of nurses:

It developed by the researcher, it included (12) questions about age, gender, marital status, religion, qualifications, years of study, occupational title, years of experiences in the ER, previous attendance of training courses related to disaster preparedness, working shift, and received information about disaster preparedness.

Part II: Nursing staff's Knowledge regarding disaster preparedness

It was adopted from survey questionnaire - disaster awareness and preparedness (Scribd, 2019). It included (37) questions with three choices (Yes, no, and I don't know). The questionnaire sheet assesses nursing staff's level of knowledge regarding disaster preparedness in the emergency department and includes items such as disaster definition, disaster preparedness definition, disaster planning, disaster cycle, phases of disaster cycle, types of disasters, disaster preparedness related to the community, information related to some disaster situations, disaster drill, and finally emergency plan.

Scoring System:

Knowledge obtained from the studied nurses was checked with a model key answer, zero for a «No or I don't know » answer and one for a «Yes » answer. The total knowledge scores ranged from 0 – 37. The total scores of knowledge were summed up and converted into a percentage score. It was classified into 2 categories:

- **The satisfactory knowledge** if the total score is $\geq 60\%$ (22.2- 37).
- **The unsatisfactory knowledge** if the total score is $<60\%$ (0 – 22.16).

Part III: Nursing staff's reported practices regarding disaster preparedness:

It was adopted from survey questionnaire - disaster awareness and preparedness (Scribd, 2019). It consisted of (48) questions on practices regarding disaster preparedness with two choices (Done, Not Done). That questionnaire sheet includes items such as activation disaster code, using Signal of walki talki Radio wave, using action cards, evacuation processes, model for facing the fire inside the hospital, some disaster situations and response of nurse, and equipment that used in disaster.

Scoring System:

A scoring system to assess nurses' practice; Done answer takes (1), Not Done takes (0). The total reported practice scores ranged from 0 – 48. These scores were summed up and converted into a percentage score.

- **Adequate practice** If the total score $\geq 60\%$ (28.2-48).
- **Inadequate practice** if the total score is $< 60\%$ (0- 28.15).

Part III: Nursing staff's attitude regarding disaster preparedness:

It was adopted from survey questionnaire - disaster awareness and preparedness (Scribd, 2019). It was consisted of (21) items, with three choices (Agree - Disagree - Not sure) on nursing staff's attitude regarding disaster preparedness, that questionnaire sheet includes items such as feelings about disaster occurring, feelings about disaster planning, and the beliefs about training importance for all healthcare team, disaster preparedness plan, drills, and emergency disaster preparedness operational plan.

Scoring System:

A scoring system to assess staff's attitude regarding disaster preparedness; using three Likert scales for easing data collection, agree that take (2), not sure that take (1), and disagree that take (0). These scores were summed up and converted into a percentage score.

- **Negative attitude level** if total score $< 60\%$ ((0 – 26.3).
- **Positive attitude level** If the total score $\geq 60\%$ (26.4 - 44).

Validity:

The study tools were tested for content and face validity by jury test of five experts in the field of Community Health Nursing to evaluate the individual items as well as the entire instrument as being relevant and appropriate to test what they wanted to measure. The face validity of the questionnaire was calculated based on experts' opinion after calculating content validity index (%) of its items and it was 98%.

Tools Reliability:

A specific measure is reliable if its application on the same object of measurement sometimes produces the same results. It was conducted for the developed tool, to achieve the criteria of trustworthiness of the tool reliability. Cronbach Alpha, which is a model of internal consistency, was used in the analysis. To assess reliability, the study tool was tested by the pilot subjects at first session for calculating Cronbach's Alpha (Knowledge questionnaire = 0.857, reported practices questionnaire = 0.927 and Attitude= 0.987. The statistical equation of Cronbach's Alpha

reliability coefficient normally ranges between 0 and 1 higher value (more than 0.7) denotes acceptable reliability (Sürücü & Maslakci, (2020).

Ethical Consideration:

The researcher's approval was obtained from the Ethical Committee of the Faculty of Nursing at Helwan University. Then went to the Director of the Dar Al Fouad Hospital and was interviewed with him, read the protocol papers and research tools, then signed with approval, then was transferred to the Director of Nursing, who also signed the approval. Then the researcher was directed to the training unit in the hospital, which coordinated the entry into the emergency and reception department.

The researcher has clarified the objectives and aim of the study to nurses included in the study before starting. Oral consent was obtained from the researcher to assure that all the gathered data was confidential and used for research purposes only. The researcher was assuring maintaining anonymity and confidentiality of the subjects' data included in the study. The studied nurses were informed that they have the right to withdraw from the study at any time.

Field work:

Filed work included the following:

Approval was obtained from the scientific and ethical committee of the Faculty of Nursing at Helwan University, and the study subjects individually gave a verbal agreement to participate in the study. Firstly, the researcher met and introduced himself to the nurses with the studied nurses at the previously mentioned settings, explained the purpose of the study after introducing himself, and assessed individually using the previously mentioned tools. Participants were informed about voluntary participation, the right to withdraw at any stage of data collection, and their identity should be kept confidential. After that, nursing staff's demographics and work data questions, nursing staff's knowledge questionnaire sheet, nursing staff's attitude questionnaire sheet, nursing staff's reported practices questionnaire regarding disaster preparedness in the emergency department, were distributed to all nurses and filled in the presence of the investigator to ensure that the questions were answered completely by the nurse.

The time required to complete the questionnaire was around 30-45 minutes. Data were collected through four months, from the beginning of April 2023 to the end of September 2023. The researcher was available in the study setting three days per week throughout the morning shift from 9:00 AM to 2:00 PM which he interviewed one to two nurses every time according to workload in the emergency department.

Statistical Analysis:

Data collected from the studied nurses was revised, coded, and entered using a Personal Computer (PC). Computerized data entry and statistical analysis were completed using the Statistical Package for Social Sciences (SPSS) version 24. Data were presented using descriptive statistics in the form of frequencies, and percentages. The Chi-square test (X^2) was used for comparisons between qualitative variables. Spearman correlation measures the strength and direction of association between three ranked variables.

Results:

Table (1) shows personal characteristics among the studied nursing personnel, it illustrates that 55.8% aged between 29 < 39 years old with a mean age of **30.76 ± 7.08**. Also, 61.5% of the studied nurses were female. Regarding marital status, 59.6% of them were married. In relation to qualification 71.2% of them had a bachelor's degree. Concerning years of experience in the field of nursing, 61.5% of them was worked for 3–5 years old in ER. Concerning occupational title, 82.7% of the studied nurses were senior nurses, and 76.9% of them were working day and night shifts. Regarding additional training and courses about disaster preparedness, only 25% of them received additional training and courses.

Figure (1): represents the total knowledge level of nurses regarding disaster preparedness, it clarifies that 73.1% of the studied nurses had unsatisfactory level of knowledge regarding disaster preparedness. While 26.9% of them had a satisfactory level, respectively.

Figure (2): represents total reported practice level of nurses regarding disaster preparedness, it clarifies that 67.3% of the studied nurses had inadequate level of practice regarding disaster preparedness. while 32.7% of them had adequate level of practice regarding disaster preparedness, respectively.

Figure (3): represents total attitude level among nurses regarding disaster preparedness, it clarifies that 63.5% of the studied nurses had negative attitude level regarding to disaster preparedness. While 36.5% of them had positive attitude level regarding to disaster preparedness, respectively.

Table (2): illustrates that, there was a positive strong highly statistically significant correlation between total knowledge, practice, and attitude level regarding to disaster preparedness among the studied nurses at $r= 0.597- 0.784$ & $P= 0.000$).

Table (1): Number and percentage distribution of demographic characteristics among the studied nurses, (N=52).

| Demographic data | The studied sample (N=52) | |
|-----------------------------|---------------------------|-------------|
| | No. | % |
| •Age: | | |
| - 18- < 28 | 18 | 34.6 |
| - >29- < 39 | 29 | 55.8 |
| - More than 40 years | 5 | 9.6 |
| Mean ± SD | 30.7692 ± 7.08662 | |
| • Gender | | |
| - Male | 20 | 38.5 |
| - Female | 32 | 61.5 |
| •Marital status | | |
| - Married | 31 | 59.6 |
| - Single | 9 | 17.3 |
| - Widow | 12 | 23.1 |
| •Religion | | |
| - Muslim | 43 | 82.7 |
| - Christian | 9 | 17.3 |
| Qualifications | | |
| - Secondary nursing diploma | 2 | 3.8 |
| - Specialty diploma | 2 | 3.8 |
| - Bachelor | 37 | 71.2 |
| - Master | 6 | 11.5 |

| | | |
|---|----|-------------|
| - PHD | 5 | 9.6 |
| Years of experience in the Emergency department | | |
| - Less than 1 year | 2 | 3.8 |
| - 1 – 2 | 16 | 30.8 |
| - 3 – 5 | 32 | 61.5 |
| - More than 5 years | 2 | 3.8 |
| Have you received any information regarding disaster preparedness? | | |
| - Yes | 52 | 100 |
| If yes Source of information | | |
| - Academic study | 10 | 19.2 |
| - Mass Media | 35 | 67.3 |
| - Magazine / Journals / Books / Website / radio | 3 | 5.8 |
| - continuing nursing education programs / workshop /seminar / conference | 4 | 7.7 |
| Occupational title | | |
| - Junior nurse | 3 | 5.8 |
| - Senior nurse | 43 | 82.7 |
| - Nurse in charge | 4 | 7.7 |
| - Associate professor or professor | 2 | 3.8 |
| Working shift | | |
| - Day shift | 6 | 11.5 |
| - Night shift | 6 | 11.5 |
| - Day and night shift | 40 | 76.9 |
| Additional Training and courses about Disaster preparedness | | |
| - No | 39 | 75.0 |
| - Yes | 13 | 25.0 |
| If yes specify: | | |
| - One time | 10 | 19.2 |
| - Two time | 3 | 5.8 |

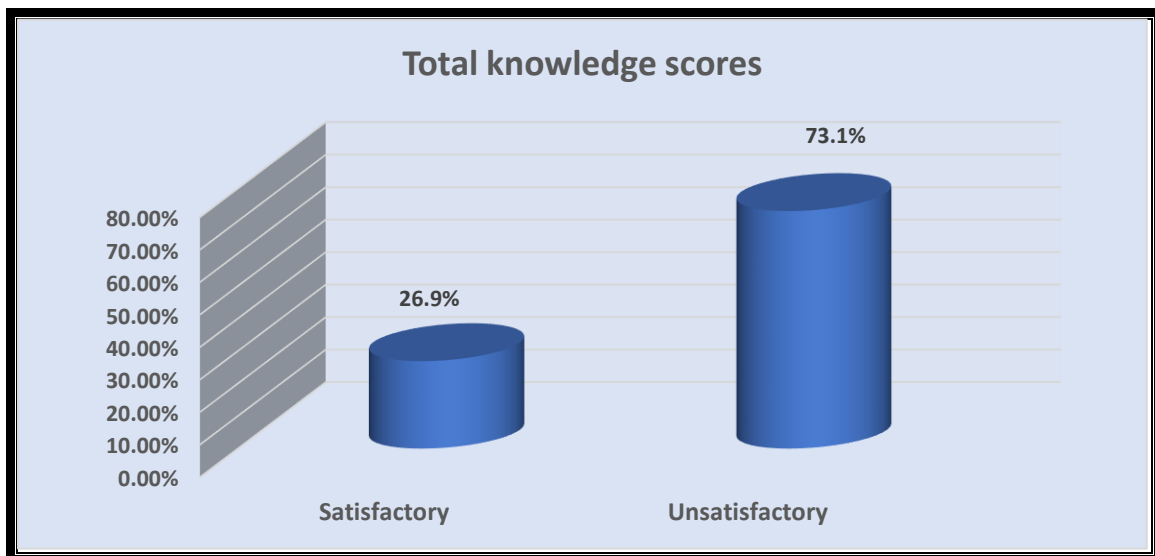


Figure (1): Percentage of total knowledge level of nurses regarding disaster preparedness, (N=52).

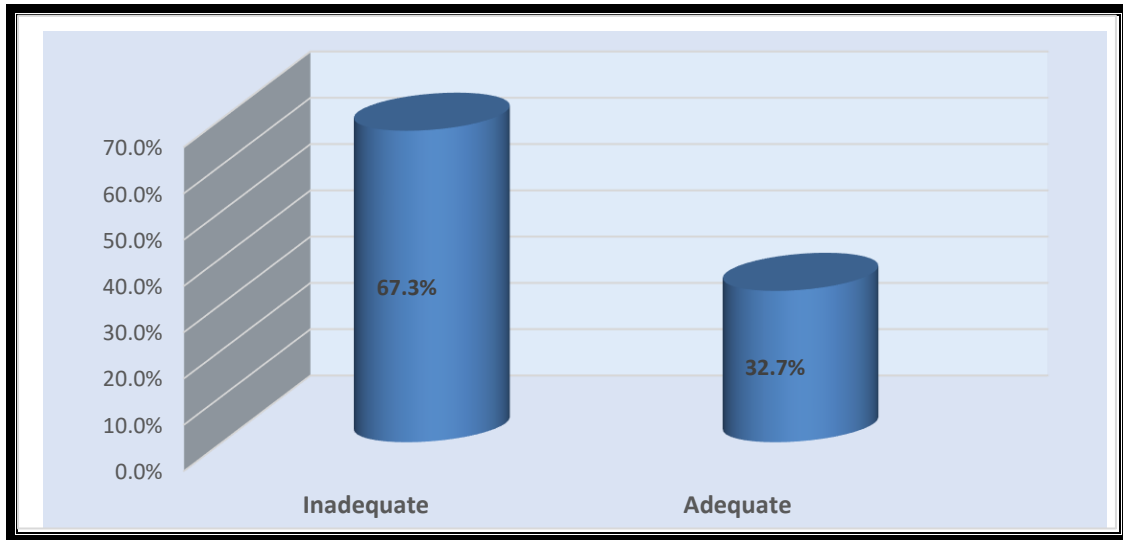


Figure (2): Percentage of total reported practice level of nurses regarding disaster preparedness, (N=52).

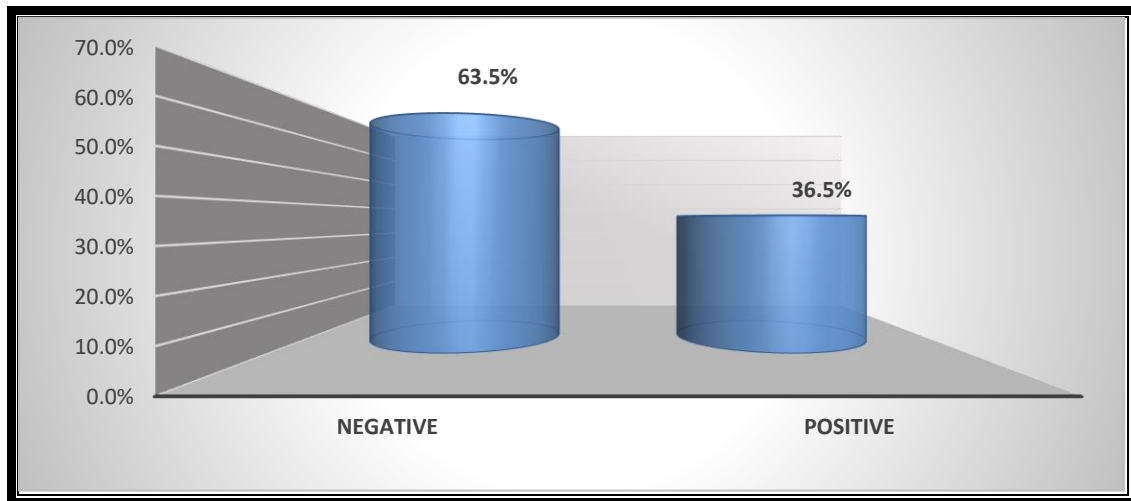


Figure (3): Percentage of total attitude level of nurses regarding disaster preparedness, (N=52).

Table (2): Correlation between total knowledge level, total reported practice level, and total attitude level of the studied nurses regarding disaster preparedness, (N=52).

| Variables | Total knowledge level | |
|---------------------------------|-----------------------|-------|
| | r | P |
| ➤ Total reported practice level | 0.597 | 0.000 |
| ➤ Total attitude level | 0.784 | 0.000 |

*Significant (P<0.05)

r= Pearson Correlation Coefficient

Discussion:

Nurses, who play a key role in disasters, should be sufficiently prepared and have good knowledge in responding to disasters to reduce the negative consequences on the population affected by disasters as disasters increase globally. Local and international initiatives are in place to adequately prepare nurses and other healthcare workers to respond

effectively to disasters through extensive disaster training, disaster drills and exercises, and the provision of disaster management courses with the expectation that nurses should be able to deliver adequate nursing care to the communities affected by disasters (Aykan et al., 2022).

Part (I): Demographic characteristics of the studied nurses:

The study results illustrated that more than half aged of between $25 < 39$ years old with a mean age of 30.76 ± 7.08 . This indicated that the studied nurses were mature enough and tolerated the work responsibility.

This finding goes on the same line with Janizadeh et al., (2023) who investigated disaster preparedness: knowledge, attitude, and practice of hospital staff and found that about the majority of the study nurses aged was less than 40 years, the mean age of the participants was 33.42 ± 8.04

This result contradicted with study by Abd ElAziz et al., (2021) who study Effect of Nursing Educational Program on Nurses' Knowledge and Practices regarding Pandemic Covid-19 in Isolation Unit in Egypt and found more than half of them were under the age of 24 years old.

In relation to gender, about two-third of the studied nurses were female. **From the researcher point of view**, this may be due to the greater fraction of the nurses in Egypt was female and may also related to the studying of nursing in Egyptian universities were exclusive for females only till few years ago. this reflects the ratio of male and female enrollment in nursing colleges at the majority of Egyptian universities and emphasizes the feminine nature of the nursing profession.

The finding from the current study was agrees with a study conducted by Martono et al., (2019) who study Indonesian nurses' perception of disaster management preparedness and found more than two-third of the studied nursing personnel were female. This finding is in identical line with Brewer et al., (2020) who study a feasibility study on disaster preparedness in regional and rural emergency departments in New South Wales: Nurses self-assessment of knowledge, skills, and preparation for disaster management, and found majority identified as female.

Regarding marital status, more than half of them were married while less than one quadrant of them were single. In relation to education level, more than two-thirds of them had a bachelor's degree while the minority had a secondary nursing diploma and specialty diploma. This result come in the line with Younis et al., (2022) who conducted study entitled "Nurses' Knowledge, Attitude and Practice Towards Preparedness of Disaster Management in Emergency of Mosul Teaching Hospitals" who found there was almost of participants were married. This finding is in identical line with Elgazzar, (2021) who study Knowledge of triage and its correlated actors among Emergency Department Nurses and found more than two-third of females and more half of the study nurses were married, and more than two-third of the study nurses had a bachelor's level of education.

In relation to education level, more than two-thirds of the participants had bachelor's degree while the minority had a secondary nursing diploma and specialty diploma. This result come in the line with Mirzaei et al., (2020) who study the effect of disaster management training program on knowledge, attitude, and practice of hospital staffs in natural disasters, and reported that the majority of participants had bachelor's degree.

Concerning years of experience in the field of nursing, more than two thirds of them was worked for 3–5 years old. The clinical experience of the participants matters a lot to handle any kind of emergency in disaster. This result come in the line with Rahman et al., (2018) who study knowledge and awareness on disaster management among medical professionals of a selected public and private medical college hospital in Dhaka city of Bangladesh and found two-third of the study participants had less than 11 years of professional experience. This result contradicted with study by Arshad et al., (2022) who assess awareness of bio-medical waste management among different cadres of healthcare worker and

found more than half the clinical experience of most of the participants who were working in the hospital less than one year.

Regarding to receiving any information regarding disaster preparedness, all the nurses received information regarding it, more than two thirds of them received information from Mass Media, while the minority received information from CNE programs / workshop /seminar / conference. This result come in the line with **Bhandari & Takahashi, (2022)** who study Knowledge, attitude, practice, and perceived barriers of natural disaster preparedness among Nepalese immigrants residing in Japan. And reported that more than half of the respondents mentioned that the social networking sites including Facebook, Twitter, YouTube and some smart phone applications like Viber and Line are a good medium for receiving information regarding disaster preparedness.

Concerning occupational title majority of the studied nursing were senior nurse, about three quadrants of them were working day and night shift. **Regarding additional training** and courses about disaster preparedness, only one quadrant of them received additional training and courses with of them received one time.

As well, the study finding was in the same vein with the study result conducted by **Liou et al., (2020)** who study relationships between disaster nursing competence, anticipatory disaster stress and motivation for disaster engagement from eight hospitals in southern Taiwan, and found the rates of attending in-service education, disaster field rescue, and care management of disaster aftermaths among hospital nurses were not high.

On other hand, the study finding was incongruent with the study result conducted by **Han & Chun, (2021)** who study validation of the disaster preparedness evaluation tool for nurses and found two-third of the participants attended disaster education and drills. **From the researcher point of view**, this might be due to the majority of participants were female which they married and didn't have the time to take courses about disaster preparedness and updated themselves.

Part (II): Nurses' knowledge Level regarding Disaster Preparedness

Regarding the total level of knowledge of disaster preparedness among the studied nurses, the present study clarifies that about three quarters of the studied nurses had unsatisfactory level of knowledge regarding disaster preparedness. Moreover, more than one quadrant of them had a satisfactory level of knowledge regarding disaster preparedness.

The finding from the current study was agrees with a study conducted at Egypt by **Hassan et al., (2019)** who study the Effect of internal disaster management intervention program on nursing staff knowledge and skills at Tanta Emergency Hospital, Tanta University., and found majority of nursing staff had poor knowledge, while post program, more than two-thirds of nursing staff had good level of knowledge with statistical significant improvement on nursing staff levels about internal disaster management.

As well the study finding was consistent with the study result carried by **Al-Qbelat et al., (2022)** who study effect of educational program on knowledge, skills, and personal preparedness for disasters among emergency nurses who are working in emergency rooms in the private and government health sectors in Jordan, they found pre-intervention knowledge, skills, and personal preparedness level was moderate level.

This study result is consistent with a study done by **Elshall & Shokry, (2021)**, who reported less knowledge in some areas of disaster preparedness and a lack of adequate training and education, which affected the subjects' confidence in themselves when it came to some specific large situation of all internship nursing students who enrolled in the internship year 2019/2020 at the clinically trained units in Menoufia Governorate Hospitals, Egypt (Menoufia University Hospital and Shebin Elkom Teaching Hospital). While this study finding was inconsistent with **Husna et al., (2020)** who

has studied the tabletop exercise enhance knowledge and attitude in preparing disaster drills in a faculty of nursing of a public university in Banda Aceh, Indonesia, and revealed that among a sample of nursing students, a high percentage of subjects had moderately adequate knowledge.

Moreover, the study finding was in accordance with the study result with **AlHarastani et al., (2020)** who studied "Emergency and Disaster Preparedness at a Tertiary Medical City" and reported that the participants' levels of knowledge and overall familiarity toward emergency and disaster preparedness were satisfactory.

From the researcher's point of view, the possible explanation for these results could be that disaster preparedness topics were not thoroughly integrated into the nursing curriculum. Additionally, there may have been a lack of continuous learning opportunities, insufficient explanation of nursing implications, and inadequate coverage of the nursing role in disaster preparedness. The researcher' point of views is supported by **Al-Qbelat et al., (2022)** who mentioned that continuous nursing education has a significant correlation with increasing knowledge, improving skills, and personal preparedness for disasters among nurses which leads to a decrease in mortality rate and enhances the quality of care.

The researcher's point of views is supported by **Cariaso-Sugay et al., (2021)** who study nurse leaders' knowledge and confidence managing disasters in the acute care hospitals within the John Muir Health system in Northern California. Those who reported the results indicated significant improvement in perceived knowledge and confidence in disaster management after the intervention. Qualitative responses from project participants highlighted the need to annualize educational opportunities to sustain knowledge and consistently review emergency management operations plans. This quality improvement project provided an approach to educating nurse leaders in disaster management to promote resilience, support of employees, and optimal patient outcomes during disasters.

Part (III): Nurses' reported practice Level regarding Disaster Preparedness:

In relation to total reported practice level of disaster preparedness, it clarifies that more than two-thirds of the studied nurses had inadequate level of practice regarding disaster preparedness. Moreover, more than one third of them had adequate level of practice regarding disaster preparedness.

This result come in the line with **Bhandari & Takahashi, (2022)** who study Knowledge, attitude, practice, and perceived barriers of natural disaster preparedness among Nepalese immigrants residing in Japan. And reported that most of the participants had a poor practice of disaster preparedness.

In the same line, result finding was compatible with **Munasinghe & Matsui, (2019)** who examining disaster preparedness at Matara District General Hospital in Sri Lanka and found Sri Lanka's health sector had not adequately updated the basic knowledge and skills of doctors and nurses for local emergency responses. Emergency Standard Operation Procedures were still in the draft stage.

From the researchers' point of view, the reasons for lack of nurses' reported practice regarding disaster preparedness might be related to the fact that gap in nursing practice is increased due to poor understanding, ignorance, lack of time, simply or lack of training and inadequacy of adherence to evidence-based guidelines, so there is a various need for disaster preparedness policy and current practical guidelines.

The researcher' point of views is supported by **Mirzaei et al., (2020)** who study the effect of disaster management training program on knowledge, attitude, and practice of hospital staffs in natural disasters at a hospital in Yazd City, Iran, and reported that training is an effective way of preparing the personnel for proper disaster response and reducing the undesirable effects of disasters. It also increases the knowledge of personnel for planning and determining their tasks in plans. Moreover, since nursing personnel have a particularly important role in coordinating and helping the

injured people in disasters, related training and planning are recommended to prepare them for giving appropriate responses to such situations.

Part (IV): Nurses' Attitude Level Regarding Disaster Preparedness

In relation to total attitude level regarding disaster preparedness among the nurses, it clarifies that more than two-third of the studied nurses had negative attitude level regarding to disaster preparedness. Moreover, more than one third of them had a positive attitude level regarding disaster preparedness.

As well, the study result in accordance with the study result conducted with **Elzagh et al., (2021)** which studied developing a disaster management plan and implementing educational program at emergency Unit at Minia University Hospital, documented that the majority of the participants had negative attitude level regarding to disaster preparedness, and revealed that there was a highly statistically significant difference between study subjects before and after the implementation of the program. This result can be attributed to the fact that the study subject had a high awareness level of disaster preparedness after the implementation of the program.

On the other hand, this result not in the line with **Janizadeh et al., (2023)** who study disaster preparedness: knowledge, attitude, and practice of hospital staff at Shiraz University of Medical Sciences and reported the majority of participants of hospital staff had good attitudes toward disaster preparedness.

From the researchers' point of view, the reasons of nurses had negative attitude level regarding disaster preparedness might be related to lack of teaching and training on preparedness to disaster, lack of positive reinforcement disaster preparedness learning, not encouragement the study subject to express their opinions about the preparedness of emergency unit to confront disaster.

The researcher' point of views is supported by the result finding was compatible with a cross-sectional study research published in Pakistan by **Gillani et al., (2020)** who evaluated of disaster medicine preparedness among healthcare profession students of healthcare professional students in universities in Pakistan and reported that integrating disaster preparedness in training make graduates student able to improve disaster preparedness attitude.

Also, the researcher' point of views is supported by **Nejadshafiee et al. (2020)** indicated that health care professional education and training had a limited focus on the preparation of health professionals for disaster. **Nejadshafiee et al. (2020)** also stated that disaster education and training for health professionals may boost the level of disaster preparedness and help to make Emergency Medical Services (EMS) professionals confident in their abilities to respond effectively in such devastating events.

Part (V): Relation and correlational findings between variables under the study.

Concerning correlation between knowledge and practice and attitude regarding to disaster preparedness among the studied nurses, it clarifies that, there was a positive strong highly statistically significant correlation between total knowledge and attitude regarding to disaster preparedness among the studied nurses.

As well, the study result in accordance with the study result conducted with **Abu Hasheesh, (2023)** who study Jordanian nurses' perceived disaster preparedness: factors influencing successful planning and reported that there was a positive association between knowledge and attitude.

This finding goes on the same line with **Brinjee et al., (2021)** who conducted study to identify the disaster nursing training and education needs for nurses in Taif City, Saudi Arabia, and reported that there was a positive strong highly statistically significant correlation between total knowledge and attitude regarding to disaster preparedness among the studied nurses.

On the same vein, the study finding was in a harmony with **Mohammed et al., (2020)** who assess nursing staff preparedness during critical situations at pediatric emergency units at children hospital affiliated to Ain Shams University Hospitals and Al-Matarya educational Hospital, and revealed that, positive correlation between total knowledge and attitude of the studied nurses with statistically significant differences $p=0.04$, positive correlation between total knowledge and practice of the studied nurses ($r=0.74$) with statistically significant differences $p=0.02$ and positive correlation between total practice and attitude of the studied nurses regarding emergency preparedness during critical situations ($r=0.69$) with statistically significant differences $p=0.03$.

From the researchers' point of view, this means that increased knowledge affects the nurses' attitudes regarding disasters, and as nurses' knowledge increases, they will understand disasters better and try to remove existing obstacles. Nurses must have enough information and knowledge and be prepared to demonstrate the disaster response. Nurses require sufficient knowledge and skills through operational maneuvers and continuing education to achieve the appropriate attitude regarding disaster preparedness.

This result not in the same line with **Mirzaei et al., (2020)** who study the effect of disaster management training program on knowledge, attitude, and practice of hospital staffs in natural disasters from different wards at a hospital in Yazd City, Iran, and reported that the increase in attitude did not lead to a much change in the performance of nurses, although the change in performance was statistically significant.

In summary; the findings of the present study revealed that there is a need to focus on the development of nursing staff knowledge, practice and attitude regarding preparedness during critical situations at pediatric emergency units, so the effort should be directed towards enhancing performance among nurses. The nurses must have access to up dated information, learning resources and continuous educational opportunities.

Conclusion:

Based on the results of the current study, it can be concluded that:

The results of the present study revealed that, about three quarters of the studied nurses had unsatisfactory level of knowledge regarding to disaster preparedness, more than two-third of the studied nurses had inadequate level of practice, and more than two-third of the studied nurses had negative attitude level regarding to disaster preparedness. In addition, there was a positive strong highly statistically significant correlation between total knowledge, reported practice, and attitude regarding disaster preparedness among the studied nurses.

Recommendation

In the light of results of this study, the following recommendations were suggested:

- Providing in-service educational training programs and upgrading courses based on evidence-based guidelines based on nurses' needs to improve their knowledge and practice related to disaster preparedness in both Arabic and English languages.
- A simplified and comprehensive educational guideline, booklets, and websites in Arabic about disaster preparedness and the role of nurses in disaster preparedness.
- Availability of updated learning facilities (books, journals, and protocols) recommended for the nurses in emergency department for refreshment of their knowledge.

At the practical level:

- Conduction of periodic training sessions to improve practices is an effective way of preparing the personnel for proper disaster response and reducing the undesirable effects of disasters to improve nurses' level of performance.
- Drill training is recommended and every member of staff, e.g., head nurses and staff nurses, should know their roles, responsibilities, and their function during a drill.
- Training programs are highly recommended should be made regarding the emergency management and disaster preparedness by the management committee.

At the research level:

- Further study is needed to apply the guidelines with larger sample size.

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