



**KNOWLEDGE, PRACTICE AND ASSOCIATED FACTORS TOWARDS
DISASTER PREPAREDNESS AMONG NURSES WORKING IN THE
EMERGENCY DEPARTMENT OF PUBLIC HOSPITALS IN SIDAMA
REGION, ETHIOPIA, 2023.**

MSc THESIS

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HAWASSA UNIVERSITY, HAWASSA, ETHIOPIA

NOVEMBER, 2023

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**A THESIS SUBMITTED TO
SCHOOL OF NURSING,
COLLEGE OF MEDICINE AND HEALTH SCIENCES, SCHOOL OF
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HAWASSA UNIVERSITY,
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**IN PARTIAL FULFILLMENT OF THE
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ADVISORS' APPROVAL SHEET

SCHOOL OF GRADUATE STUDIES

HAWASSA UNIVERSITY ADVISORS' APPROVAL SHEET

This is to certify that the thesis entitled **“Knowledge, Practice and Associated factors towards Disaster Preparedness Among Nurses Working in the Emergency Department of Public Hospitals in Sidama Region, Ethiopia, 2023** “submitted in partial fulfillment of the requirements for the degree of Masters of Emergency Medicine and Critical Care Nursing, the Graduate Program of the School of Nursing, and has been carried out by Yunuka Marufa, ID. No GPECCNR/0012/14 under our supervision. Therefore, we recommend that the student has fulfilled the requirements and hence hereby can submit the thesis to the department.

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EXAMINERS' APPROVAL SHEET

We, the undersigned, members of the Board of Examiners of the final open defense by Yunuka Marufa have read and evaluated his thesis entitled **“Knowledge, Practice and Associated factors towards Disaster Preparedness Among Nurses Working in the Emergency Department of Public Hospitals in Sidama Region, Ethiopia, 2023.”**and examined the candidate. This is, therefore, to certify that the thesis has been accepted in partial fulfillment of the requirements for the degree.

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ACRONYMS AND ABBREVIATIONS

AOR	Adjusted Odds Ratio
BSc	Bachelor of Science
CI	Confidence Interval
COR	Crude odd ratio
ED	Emergency department
FDRE	Federal Democratic Republic of Ethiopia
MSc	Master of Science
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
SNRS	Sidama National Regional State
SPSS	Statistical Package Social Science
UNDRR	United Nation Disaster Risk Reduction
WHO	World Health Organization

ABSTRACT

Introduction: According to recent researches, nurses in health-care settings who lack sufficient knowledge and practice in disaster preparedness can lose resources, delay treatments, cause patient unhappiness, and have other negative effects. Little is known regarding nurses' knowledge, practice, and associated factors towards disaster preparedness in Ethiopia, particularly in this study area.

Objective: The aim of this study was to assess the knowledge, practice and associated factors toward disaster preparedness among nurses working in emergency department at Public Hospitals in Sidama region, Ethiopia, 2023.

Methods: A facility-based cross-sectional study design was conducted among randomly selected 175 nurses working in the emergency department (ED) from June 15 to July 15, 2023. The collected data was entered into Epi Data Version 4.6 and exported to Statistical Package for Social Science (SPSS) Version 25 for analysis. A logistic regression model was used to assess the strength of the association between the dependent and independent variables. Variables with a p-value <0.05 in the multivariable analysis were considered statistically significant.

Results: A total of 175 nurses working in emergency departments participated in the study. The mean age of the respondents was 29 ± 4 years. From all study participants, around 95 (53%) and 114 (65%) of nurses working in the ED had poor knowledge levels and insufficient practice towards disaster preparedness respectively. In multivariate logistic regression, being male (AOR=2.6 (CI 95% 1.19-5.76 p=0.017), receiving training on subject (AOR=6.42, CI 95% 2.2-15.8, P=0.000), and having experience in disaster management (AOR=2.43, CI 95% 1.02-5.62, p=0.043) were factors significantly associated with the good knowledge of participants, while having disaster guideline (AOR=3.96, CI 95% 1.6-9.5, p=0.002, direct personal or professional exposure to disaster events, receiving training (AOR=4.4, CI 95% 1.7-11.8, p=0.003), and having good knowledge (AOR=3.32, CI 95% 1.7-11.8, p=0.01) were significantly associated with sufficient practices.

Conclusion and recommendation: The current study revealed that more than half of the study participants have poor knowledge and insufficient practice in disaster preparedness. It's advisable to hospitals have to have and distribute disaster guideline in emergency departments, and ongoing professional development training for nurses has to be given to improve the knowledge and practice of nurses working in the emergency department.

Keywords: Disaster Preparedness, Knowledge, Nurses, Practice, Sidama Regional State

1. INTRODUCTION

1.1. Background

Disaster is any occurrence that causes damage, ecological disturbance, loss of human life or decline in health and medical services to require an unusual response from outside the community or area (WHO, 2006).

Disaster can be categorized into natural and man-made: natural disasters occur from natural causes which include volcanic eruptions, earthquakes, droughts, burning, and floods. Man-made disaster includes deforestation, chemical pollution, wars, road /traffic accidents, riots, food poisoning, industrial disaster/ crisis and environmental pollution. Epidemics and pandemics constitute additionally classifications for infectious disasters (Ezhilarasi and Jothy, 2018).

Disaster preparedness is defined as the reserve of knowledge and capacity to effectively respond to disasters(Zhang *et al.*, 2022). Due to the recent global increase in disasters, the World Health Organization (WHO) said that all countries would prepare health care providers for a disaster, regardless of how frequently they experience disasters; yet, the majority of nurses lacked the necessary tool (Ali *et al.*, 2017).

Disaster preparedness and planning for rescue efforts has always been crucial to clinical nursing practice (ANA, 2017). Given that nurses comprise a large portion of healthcare professionals, they are an essential workforce in times of crisis. A nurse's primary responsibilities include tending to the sick and injured, helping people and their families deal with mental and physical problems, and promoting health and wellbeing in the community

Everywhere in the globe, disaster events happen and have an adverse effect on people individually, in families, in groups, and in communities as a whole(Younis, Ahmed and Hussein, 2020).A disaster statistical review of 2016 found that 342 disasters from just natural causes were reported and 564.4 million people were affected. Ethiopia now has 17 million individuals in need of emergency medical care, up from 13 million in the previous years. Of these, around 3 million are internally displaced. This is due to the impacts of conflict, drought and floods. There have been reports of disease outbreaks in five different regions, including cholera and measles, and there is a high prevalence of malaria nationwide(OCHA, 2023), (Tesso(PhD), 2014), (FDRE, 2013). It is essential that nurses be prepared to handle emergency circumstances with effectiveness, given the rising frequency of disasters worldwide (Azizpour, Mehri and Soola, 2022).

The World Health Organization (WHO) and the International Council of Nurses (ICN) released the ICN Framework of Disaster Nursing abilities, which describes the basic skills and knowledge are necessary for the registered nurses to be think competent in disasters management(WHO, 2009).Despite the fact that this report was completed in 2009, it has not been revised and is still applicable as a thorough manual for nurses. During the disaster the first respondent are the nurses, who have enough knowledge and skill related to the disasters and disasters management (Shabbir *et al.*, 2017). However, different researches showed that most nurses lacked the knowledge and management skills to deal with disasters (Ali *et al.*, 2017), (Tilahun, 2020), (L.Tilahun et.al, 2023).

1.2. Statement of the Problem

Disasters and the magnitude of destruction are increasing worldwide (Michotte, 2019). Continuously occurring yet unpredictable disasters remain a serious threat to global public health and property (Labrague *et al.*, 2018),(WHO global status, 2018).

Developing countries including Ethiopia are at high risks due to many factors like population growth, climate change, political instability, technology, road traffic accident, floods periods, earthquake, disease outbreaks, and refugee holding etc., these causes loss of life and other life threatening condition (Llosa and Zodrow, 2011), (WHO, 2019), (Mulatu, 2020).

Nurses constitute the largest number of healthcare providers and have major roles in disaster response and care (Said and Chiang, 2020). The role of nurses during disasters has expanded from simply caring for the sick and injured to development of the ability to react to a disaster in terms of preparedness, mitigation, response, recovery and evaluation. When a disaster strikes, front line nurses can detect threats, provide direct nursing care to patients, manage healthcare teams and facilities, reduce or eliminate injuries and deaths, develop healthcare policies, and work in collaboration with other organizations (Al Harthi *et al.*, 2020), (Labrague *et al.*, 2016), (Azizpour, Mehri and Soola, 2022), (Zhang *et al.*, 2022).

Disaster preparedness and response planning have always been an important aspect of clinical nursing practice (ANA, 2017).In order to be prepared, nurses in general must possess enough knowledge and skills to minimize the impact and negative consequences of disaster on a community, such as traumas, injuries, spread of diseases, stress, and psychological distress (WHO,2009),(Uhm *et al.*, 2019). Preparedness, knowledge and practice of front-line respondents such as nurses, are essential to providing quality care, minimizing additional complications and mortality (Brinjee *et al.*, 2021), (Osman, 2016).

As many studies conducted in globe reported that most nurses are inadequately prepared for disaster response, and their knowledge and skills are not sufficient for an optimal response to disasters (Martono *et al.*, 2019), (Ali *et al.*, 2017). Furthermore studies showed that nurses in different parts of the countries had inadequate knowledge and practice required for disaster dealing in appropriate way (Ali *et al.*, 2017), (Azizpour, Mehri and Soola, 2022). The studies conducted in Yemen, Pakistan, Iraq and Saudi Arabia on nurses that Knowledge and practice towards disaster preparedness was poor (Younis,*et al.*, 2020) , (Abdelalim and Ibrahim, 2014), (Naser, 2018).

Reasons of inadequate knowledge and skills of the nurses were: due to lack of opportunities of drill practices, unavailability of informative content related to disaster preparedness on the work

place (disaster plan and guidelines), lack of experience, and unsatisfactory syllabus in diploma and graduation level and unavailability of training related to disaster handling(Li *et al.*, 2017), (Al-zahrani *et al.*, 2021), (Pourvakhshoori *et al.*, 2017), (Abdul Hussien *et.*, 2022).

A study done on nurses ‘who were working at emergency unit KAP towards mass causality preparedness at one referral hospital in Rwanda showed that there was inadequate knowledge (61.8%),and practice (78%) (UZAMUHOZA, 2017). Coming to Ethiopia; studies conducted on knowledge and practice of health professionals working in emergency units towards disaster and emergency preparedness in South Gondar Zone hospital were poor knowledge (51.7%) and insufficient practice (75.5%).

Inadequate knowledge and practice on the extent of the disaster preparedness among nurses in health care setting leads to loss of resources, delays in treatments, dissatisfaction and contributes to adverse consequences (Azizpour, Mehri and Soola, 2022). If front-line nurses fail to act as first responders during the disaster response phase, secondary disasters may happen (Uhm *et al.*, 2019), (Osman, 2016).

Little is known regarding nurses’ knowledge, practice, and associated factors towards disaster preparedness in Ethiopia, particularly in this study area. The purpose of this study is to assess the knowledge, practice and associated factors towards disaster preparedness among Nurses working in the emergency department at Public Hospitals in Sidama Regional States.

1.3. Significance of study

During disaster situations, nurses are expected to apply triage, provide caring for the sick and injured, infection control, contingency planning to prevent further damage, mass immunization, mass evacuation and treatment for mass casualties at the point of need. Therefore, this research result provides information about the knowledge, practice and associated factors of nurses working at the emergency department towards disaster preparedness in Sidama region, Ethiopia.

The study result identifies the weakness, and strength of nurses who are working at the emergency department towards disaster preparedness. It helps if any nurses recognize a lack of knowledge and deficit practice in disaster preparedness.

The finding may help policymakers, administrators, nurse educators, and other concerned bodies identify factors that affect the knowledge and practice of disaster preparedness and work on it.

Furthermore, future researchers will use the study's findings as reference material.

2. OBJECTIVES

2.1 General objective

- To assess knowledge, practice and associated factors of disaster preparedness among nurses working in the emergency department of Public Hospitals in Sidama region, Ethiopia, 2023

2.2 Specific objectives

- To assess the knowledge towards disaster preparedness among nurses working in the emergency department of public hospitals in Sidama region, Ethiopia, 2023
- To assess the practice towards disaster preparedness among nurses working in the emergency department at public hospitals of Sidama region, Ethiopia, 2023
- To identify the factors associated with the knowledge and practice of nurses working in the emergency department at public hospitals of Sidama region, Ethiopia, 2023

3. LITERATURE REVIEW

3.1 Knowledge to disaster preparedness

On studies conducted among the nurses' knowledge towards disaster preparedness from selected primary health care setting in Al-Hilla, Iraq in 2021, Up on their investigation they found that majority of the respondent had adequate level of knowledge (about 60.0% of the respondent had good level of knowledge) (Abdul Hussien et, 2022).

A study conducted at Saudi Arabia among nurses reported that, the knowledge level regarding disaster preparedness among two third of the study sample fallen of the category between 13-25 degree out of 47 degree with mean score of 21.2 ± 6.0 that means they have poor level of knowledge (Abdelghany Ibrahim, 2014). A similar study was conducted in Yemen on emergency and disaster management showed that 32% of Yemeni health professionals did not have good knowledge and 53.5% had fair knowledge of disaster management (Naser, 2018)

On study conducted at Tertiary health care hospital in central Riyadh, Kingdom of Saudi Arabia on September 2018. Knowledge, attitudes, and practices towards disaster and emergency preparedness were assessed among all emergency department physicians and nurses. Up on their investigation they found out that the level of knowledge was satisfactory with the mean \pm standard deviation (SD) score of 6.2 ± 2.5 out of 8 (Nofal et al., 2018). Another cross-sectional study was conducted in Nigeria showed that almost a half of respondents 47.8% have good knowledge of emergency planning and preparedness and 15.1% of participants with poor knowledge about disaster preparedness and planning (Adenekan, Balogun and Inem, 2016).

A descriptive, cross-sectional study was conducted in Rwanda in 2018 to assess the Knowledge, attitude and practice of disaster preparedness among Rwanda Red Cross employees. They found that most of the participants were having inadequate level of knowledge about disaster preparedness; 57.1% of respondents do not know how frequent drills were performed in Rwanda Red Cross (Michotte, 2019). A study done on nurses 'who were working at emergency unit KAP towards mass causality preparedness at one referral hospital in Rwanda showed that there was a significant relationship between the level of practice and objectively assessed knowledge (at $P < 0.001$) (UZAMUHOZA, 2017).

Coming to Ethiopia; an institutional based cross-sectional study design conducted in South Gondar Zone hospital, Ethiopia, 2020. The knowledge, attitude and practice of health professionals working in emergency units towards disaster and emergency preparedness were assessed. Up on their investigation they found that most of the participants were having inadequate level of knowledge about disaster preparedness; 51.7 % (Sheganew Fetene Tassew et

al. 2022). Another hospital based cross-sectional study was conducted involving the healthcare workers at Tikur Anbessa specialized hospital on January, 2018 reported that study respondents had good knowledge toward disaster handling (50.8%) (Habte *et al.*, 2018).

3.2 Practice about disaster preparedness

A study was done in Mecca, Saudi Arabia among the emergency nurses from four selected public hospitals reported that only 34% had attended training in the past 6–12 months, 23% attended it in the past 12–24 months, and 43% attended such training over 2 years ago (Alzaharani and Kyratsis, 2017). Similarly on studies done in Yemeni 58.9% of respondents had not participated in any exercise in emergency and disaster preparedness and most of the study participants had not attended any training on disaster management (Naser, 2018). The investigator found that 58.7% of the participants have a clinical experience of more than 5 years. Approximately (81%) participants reported the conduct of disaster drill at their hospital (Nofal *et al.*, 2018).

A study done in India showed that 100% of respondents said that disaster training should be part of education; few respondents knew that drills are practiced in their institution less than 10% and no one was aware of the type of drills done. Most of respondents didn't know about updates of disaster plan estimated to 94.2%, 73.5% have never faced a disaster and 97.7% were no in disaster management team (Singhal *et al.*, 2016).

A descriptive, cross-sectional study conducted in Rwanda and published on 2019 to assess Knowledge, attitude and practice of disaster preparedness among Rwanda Red Cross employee. They justified as there is lack of minimum training in disaster preparedness for Rwanda Red Cross employees (58.6% of respondents didn't have any training in disaster management). More than half of the respondents (58.6%) do not have any experience in disaster preparedness (Michotte, 2019).

In Ethiopia; a hospitals based cross-sectional survey was conducted in Amhara regional state Ethiopia. It is found that 25(24.5%) of participants have adequate practice on the contrary 75(75.5%) of respondents have inadequate practice. Also, 40(39.2%) respondents need training on first aid and treatment principles, 37(36.3%) need training on disaster preparedness and 31(30.4%) need training on basic principles of disaster response (Tilahun, 2020). On study conducted involving the health-care workers at Black lion specialized teaching hospital only 8.3% of the participant has good practice on disaster preparedness (Habte, Addisie and Azazh, 2018).

3.3 Factors associated with disaster preparedness

3.3.1 Socio-demographic characteristics

According to a study conducted in Malaysia, Nurses who have a degree of undergraduate education have a positive correlation with the high level of nurses' knowledge and skills in disaster management (Ahayalimudin, 2016). In other studies it was also found that nurses who worked more than 5 years in health institutions will have more knowledge and skills in disaster management (Nofal et al., 2018). The clinical experience (years of work) of nurses was also conveyed to be an important factor that had a positive correlation in increasing knowledge and skills in providing nurse care to patients in Post-Tsunami Aceh (Gede et al., 2020).

A study conducted at South Gondar Zone hospitals, Ethiopia reported that, participants within age between 31-40 years were, two times more knowledgeable than participants within age groups of 30 years. Knowledge, attitude, and practice of health professionals working in emergency units towards disaster and emergency preparedness in South Gondar Zone hospitals, Ethiopia, 2020 (Sheganew Fetene Tassew et, 2022).

3.3.2 Health care facility related factors

Study conducted in Malaysia among emergency nurses towards disaster preparedness states that those who attended training were more likely to have adequate knowledge($P<0.05$, $AOR=3.807$, $95\% \text{ CI}=1.584-9.153$) and practice($P=0.001$, $AOR=4.145$, $95\% \text{ CI}=1.804- 9.525$) (Ahayalimudin, Ismail and Saiboon, 2012).

Organizational factors such as presence of guideline in disaster preparedness; as well as availability of trainings for nurses working in emergency department are associated with good practice. The provision of disaster simulations and ongoing training by hospitals provides a positive contribution to improving the main competencies of emergency room nurses in responding when a disaster occur (Park & Kim, 2017).

On study conducted at Tertiary health care hospital in central Riyadh, Kingdom of Saudi Arabia on September 2018. Knowledge, attitudes, and practices towards disaster and emergency preparedness were assessed among all emergency department physicians and nurses. Up on their investigation they found out that the level of knowledge was satisfactory with the mean \pm standard deviation (SD) score of 6.2 ± 2.5 out of 8. On this study both previously attended disaster drill and more than 5 year of clinical experience ($p=0.000$) was found to be a significant factors for good knowledge (Nofal et al., 2018). The paper reveals that through Multivariate analysis, variables that are significantly associated with practice of disaster preparedness are training

performed in a hospital set up and having adequate knowledge towards disaster preparedness(Melkie Ambaw, 2020).

3.3.3 Individual related factors

Nurses involved in responding to disasters have a positive and significant correlation with the improvement of their knowledge and skills in future disaster management, while those who have never been exposed to disasters in their area have less knowledge about the dangers of other disaster (Ahayalimudin, 2012).

An institution-based cross-sectional study conducted on Emergency and Disaster Handling Preparedness Among Front Line Health Service Providing Nurses and Associated Factors at Emergency Department, at Amhara Regional State Referral Hospitals, Ethiopia reported that participants having a direct personal/professional experience of disaster were 6 times more likely associated with disaster preparedness (P = 0.003, AOR: 5.703, 95% CI: (1.825–17.823) (L.Tilahun et.al, 2023).

3.4. Conceptual framework

This conceptual framework is adapted and modified after reviewing different literature (Melkie Ambaw, 2020), (Gede et al., 2020), (L.Tilahun et.al, 2023), (Nofal et al., 2018), (Sheganew Fetene Tassew et, 2022), (Al-zahrani et al., 2021), (Ahayalimudin et al., 2012).

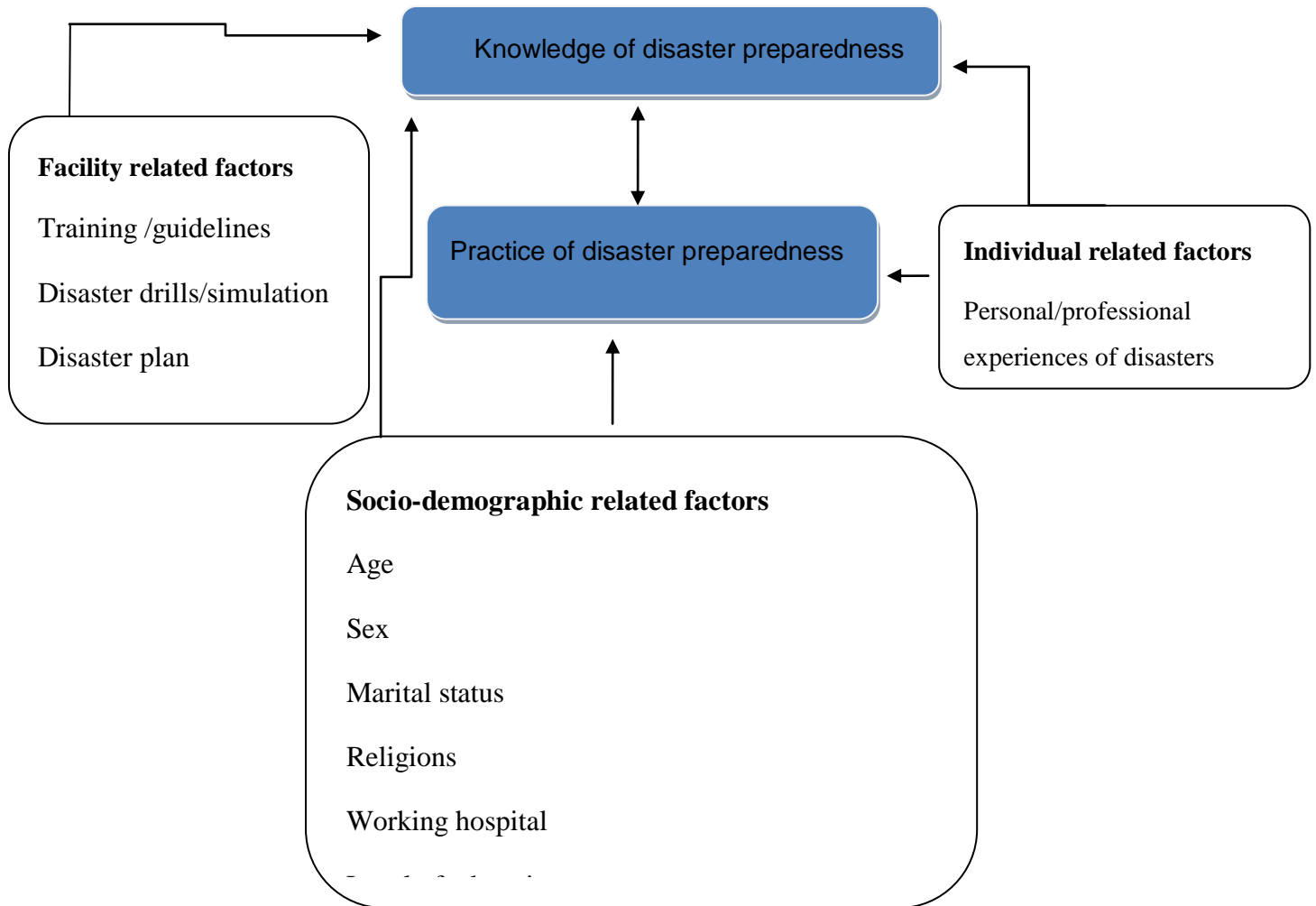


Figure 1: Conceptual-frameworks for Nurses Knowledge and Practice regarding Disaster preparedness in emergency department of public hospitals in SNRS, Ethiopia, 2023.

4. METHODS AND MATERIALS

4.1. Study setting and period

This study was conducted in selected public hospitals in the Sidama region from June 15/2023 to July 15/2023. Sidama National Regional State is one of 12 regions found in Ethiopia and is located 273 kilometers from Addis Ababa, the capital of the country. It is located in the southern part of the country and Hawassa city is the administrative city of the region. The region is bordered in the north and east by the Oromia region and in the south and west by Oromia and south regions. According to the 2007 Ethiopian Central statistical agency report estimation, the total population of the region was 4,369,214(Federal Democratic Republic of Ethiopia Population Census Commission, 2007). According to the unpublished regional health bureau report of 2022, the region has a tertiary hospital, 5 general hospitals and 15 primary hospitals. Regarding human resources for health reports, 334 nurses are working in emergency department at public hospitals in the Sidama region.

4.2. Study design

Facility-based cross-sectional study design was used.

4.3. Population

4.3.1 Source of population

All nurses who are working in the ED at public hospitals in Sidama region.

4.3.2 Study population

Randomly selected nurses working in the emergency departments at selected public hospitals in Sidama region

4.4. Eligibility Criteria

4.4.1 Inclusion Criteria

All nurses who are working in the emergency departments at selected public hospitals in Sidama region

4.4.2. Exclusion Criteria

Nurses who are on sick leave, maternity and annual leave at the time of data collection

4.5. Sample Size Determination and Procedure

4.5.1 Sample Size Determination

The sample size calculated using a single population proportion formula. The estimated proportion was taken from the study conducted at Tikur Anbessa specialized teaching hospital reported that 50.8% and 8.3% for good knowledge and practice respectively (Habte, Addisie and Azazh, 2018).

The average of the two variables i.e., 30% will be taken for computation.

With a 95 % confidence level, a precision of 5%, p-value 30%, $Z_{\alpha/2} = 1.96$, $d=0.05$ and 10% non-response rate, the sample size calculated using the formula;

Sample size (n)

$$= \frac{Z^2 \alpha / 2 p (1-p)}{d^2}$$

$$(1.96)^2 [0.3(1-0.3)] / (0.05)^2$$

$$= 0.8067 / 0.0025$$

$$= 322$$

So the sample size will be 322

Using the population correction formula for the sample size of less than 10,000

$$N_f = N_0 / [1 + (N_0 - 1) / N] \quad N_f = \text{Desired sample size}$$

N_0 = sample size by calculated formula

$$N = 334, N_0 = 322 \quad N = \text{Size of the population}$$

$$= 322 / [1 + (322 - 1) / 334]$$

$= 322 / 1.96 = 164$ so the final sample size will be 180 when after taking 10% non-respondent rate

4.6. Sampling technique and procedures

In the study area, there are twenty-one hospitals in general (15 primary hospitals, 5 general hospitals, and 1 tertiary hospital) and there were 334 nurses working at ED in all public hospitals, 78 in tertiary, 96 generals and 160 were primary hospital nurses. The 11 hospitals were selected by simple random sampling and since HUCSH is the only tertiary hospital in the region, it was selected purposely. According to this, 1 tertiary hospital, 3 general hospitals (Bona, Leku and Yirgalem) hospitals, and 8 primary hospitals (Yirba, Dore, Aletawondo, Wondogenet, Tula, Motitefura, Aletacuko and Bursa) were included in this study.

The 225 subjects working in emergency department in selected hospitals were distributed to level of hospital and total sample size was proportionally allocated to the selected hospitals and study subjects were selected by SRS techniques using a lottery method.

Table 1: List of hospitals that included in the study with number of ED nurse's staff

Level of hospitals	Number of ED nurses	Proportional allocated nurses
Primary	89	86
Tula	13	12
Yirba	8	8
Wondogenet	9	9
Aletawondo	14	13
Cuko	13	13
Dore	11	10
Furra	11	11
Bursa	10	10
General	58	52
Bona	18	16
Leku	16	14
Yirgalem	24	22
Tertiary (HUCSH)	78	42

4.7 Study Variables

4.7.1 Independent Variable

Socio-demographic data (gender, age, religion, marital status, level of educational and year of experiences), facility and personal related factors (Training, Participation in developing disaster plan, and working place)

4.7.2 Dependent Variables (outcome)

Knowledge of disaster preparedness

Practice of disaster preparedness

4.8. Operational Definition

Good knowledge- refers to respondents who have scored more than or equal to the mean score for knowledge questions.

Poor knowledge- refers to respondents who have scored less than the mean score for knowledge questions.

Sufficient practice- refers to all emergency department nurses, who have scored more than or equal to the mean score for practice questions.

Insufficient practice- refers to all emergency department nurses, who have scored less than the mean score for practice questions.

4.9. Data collection instrument and procedure

A self-administered structured questionnaire was used to collect data from study participants. The questionnaire was adapted from literature considering the study area and situation (L.Tilahun et.al, 2023), (Sheganew Fetene Tassew et, 2022), (Shabbir et al., 2017), (Younis, Ahmed and Hussein, 2020), (Abdelghany Ibrahim, 2014).

The questionnaire was prepared in the English version and contains four parts which include socio-demographic characteristics, facility characteristics, knowledge of disaster preparedness and practice of disaster preparedness. For most of the knowledge items, participants were asked to choose the correct answer based on the nature of the items, and for some questions were asked to respond 'yes or no.' Seventeen items used were to assess knowledge of disaster preparedness and to calculate knowledge score, 1 and 0 points were given to correct and incorrect answers respectively. The same methods were used for 10 items of the practice questions.

The data was collected by four BSc nurses having experience in data collection. Two MSc supervisors supervised all activities in the data collection.

4.10. Data Quality Assurance

Data collectors have provided one-day training on the data collection tool and each section of the questionnaire was provided to ensure that both data collectors and supervisors had the correct understanding of the data collection procedure.

Before the actual data collection, the questionnaire was pre-tested on 10% emergency department nurses from Daye general hospital which was not to be included in the actual study. Based on the findings from the pretest, some ambiguous questions and logical order were corrected. An ongoing formative checkup for completeness and consistency of responses was made by the supervisors daily. Data cleaning and adjustments were conducted to avoid errors in the labeling or order of the variables of interest.

4.11. Data processing and analysis

After data collection, Data were entered into Epi Data Manager Version 4.6 and exported to SPSS version 25 software for analysis. The outcome variable was good or poor; those who were good coded as "1" and those who were poor coded as "0". In the binary logistic regression, both binary and multivariable analyses were carried out. The assumption for binary logistic regression was checked. Multi-collinearity was checked to see the linear correlation among the independent variables by using the variance inflation factor and tolerance (t), (Variance inflation factor (VIF) for all variables was less than 1.8 and no variable has tolerance (T) <0.5. The Hosmer-Lemeshow statistic was done for model fitness and was not significant (p-value >0.05) and the Omnibus test was significant (p-value = 0.000) for both knowledge and practice which indicates that the model was fitted. Variables with a p-value $p < 0.25$ in the crude analysis were the candidate for multivariable logistic regression and those with a p-value <0.05 in the multivariable analysis were considered as having a statistically significant association. Adjusted Odds Ratio along with 95% CI was estimated to identify factors affecting knowledge and practice nurses toward disaster preparedness. Then simple frequencies, summary measures, tables, and figures were used to present the information.

4.12. Ethical considerations

Ethical clearance was obtained from the Institutional review board of Hawassa University, College of Medicine and Health Sciences (Ref. number, IRB-316/15). Sidama region public health institute wrote a letter of permission to each institution and before starting actual data collection institution permission was obtained from each hospital. The goal of the study was explained to the study subjects. At the time of data collection, verbal and written consent was taken to confirm whether they are willing to participate. Those not willing to participate were

given the right to do so. Confidentiality of responses was also being ensured throughout the research process

4.13. Dissemination and utilization of results

The findings of this study were presented to Hawassa University; the College of Health Science, and the school of nursing. Additionally, findings will be disseminated to the Sidama region health bureau through soft-copy and hard copy. The findings also will be disseminated to local health planners and other relevant stakeholders at Hawassa city and the Sidama regional health office in the area to enable them to consider recommendations during their planning and policy-making process. At last, attempts will be made to publish in a peer-reviewed journal

5. RESULTS

5.1. Socio-demographic characteristics of the study participants

A total of 180 nurses working in ED were included for this study, 175 of them responded for the questionnaire; giving a response rate of 97.2%. More than half, 133(76%) were in the age group 22-31 and the mean (+SD) age of respondents was 29(+4.1). Among the respondents, 97(55.4%) were male. In terms of education, 121(69.1%) of respondents had a bachelor's degree.

Table 2: Socio-demographic characteristics of the nurses working in ED in public hospitals of the Sidama region, 2023 (n=175).

Variables	Category	Frequency	percentage
Sex of respondent	Male	97	55.4%
	Female	78	44.6%
Age	22-31	133	76.0%
	32-41	40	22.9%
	>42	2	1.1%
Religion of respondent	Orthodox	50	28.6%
	Muslim	13	7.4%
	Protestant	92	52.6%
	Others*	20	11.4%
Marital status	Married	97	55.4%
	Single	78	44.6%
Level of education	Diploma nurse	50	28.6%
	Degree nurse	121	69.1%
	Masters nurse	4	2.3%
ED work experiences of respondent in year	less than 1	68	38.9%
	1-2 years	55	31.4%
	2-3	29	16.6%
	3-5	23	13.1%

*Others=Apostolic, Jehovah Witness.

5.2. Facility-related characteristics of study participants

Majority participants, 121 (69.1%), responded that their hospital does not have a disaster guideline. Only 55(31.4%) have taken training related to disaster preparedness. Ninety (51.4%) of the respondents do not have direct personal or professional experiences of disaster events while the rest, 85(48.6%) have direct personal or professional experiences of disaster events. (See Table 3)

Table 3: Facility-related characteristics of emergency department nurses who participated in the study in public Hospitals of Sidama region, Ethiopia, 2023 (n=175)

Variables	Category	Frequency	Percentage
Level of hospital	Primary	81	46.3%
	General	52	29.7%
	Tertiary	42	24.0%
ED work experiences in year	Less than 1	68	38.9%
	1-2	55	31.4%
	2-3	29	16.6%
	3-5	23	13.1%
	5-10	0	0%
Disaster guideline	Yes	54	30.9%
	No	121	69.1%
ED experienced a disaster management	Yes	58	33.1%
	No	117	66.9%
Training	Yes	55	31.4%
	No	120	68.6%
Direct personal experiences of disaster events	Yes	85	48.6%
	No	90	51.4%

5.3. Respondents' knowledge towards disaster preparedness

According to W.H.O definition, most of the participants (65.7%) were able to correctly answer the meaning of disaster and 61.1% of the participants correctly answer the meaning of disaster preparedness. And two-third of them (74.3%) responds as first aid should be given immediately. Even if 108(61.7%) of respondents self-reported as having good knowledge; this study revealed that more than half of the respondents 93 (53%) had poor knowledge towards disaster preparedness.

Table 4: Knowledge of definition of key disaster terms and scene approach of the study participants (n=175)

Variable	Category	Frequency	percent
A disaster is an imbalance between the demands that caused by an events and an available resources.	Correct	115	65.7%
	Incorrect	60	34.3%
Phase of disaster management include exercises and drills?	Correct	107	61.1%
	Incorrect	68	38.9%
A disaster can occur either from natural or man-made causes	Correct	116	66.3%
	Incorrect	59	33.7%
When should be first aid given during disaster?	At hospital	45	25.7%
	Immediately	130	74.3%
Have you participated in developing or reviewing the hospitals disaster plan?	Yes	43	24.6%
	No	135	75.4%
How do you rate your current knowledge in managing disaster event?	Good	108	61.7%
	Poor	67	38.3%

According to the results, 49.7% of participants were aware of the drills, but 50.3% were didn't know what the drills are. More than two-third (77.7%) of the participants didn't know the specific place for evacuation of patients during disaster situation. The major component that must be included in a disaster plan was not understood by 127 (77.7%) of data respondents, but only 22.3% participants were know what must be included in it. (*See Table 5*)

Table 5: Frequency distribution of nurses' knowledge score towards disaster preparedness working in emergency department of the selected Public hospitals in Sidama, Ethiopia, 2023 (n=175).

Variables	Category	Frequency	Percent%
Do you know what drills/disaster simulation are?	Yes	87	49.7%
	No	88	50.3%
Do you know the specific place for evacuation for patient during disaster event?	Yes	39	22.3%
	No	136	77.7%
Do you know the major component/issues that must be included in a disaster plan?	Yes	48	27.4%
	No	127	72.6%
Section of incident command system is responsible for appropriate documentation of time, expense and claims?	Correct	74	42.3%
	Incorrect	101	57.7%
During disaster responsible person for leading the response effort is?	Correct	83	47.4%
	Incorrect	92	52.6%
Have you prepared to handle disaster situation in your emergency department?	Yes	69	39.4%
	No	106	60.6%
A disaster planning is to prepare to what might be needed to be done, how to be done, before and after disaster.	Yes	105	60%
	No	70	40%

The mean score for knowledge was 8.42 with standard deviation of 3.5. Study participants who scored less than the mean value were regarded as poor knowledge, whereas participants who scored more than the mean value were regarded as good knowledge. From the number of 175 participants, 93(53.1%) had poor Knowledge and 82(46.9%) had good knowledge about disaster preparedness.

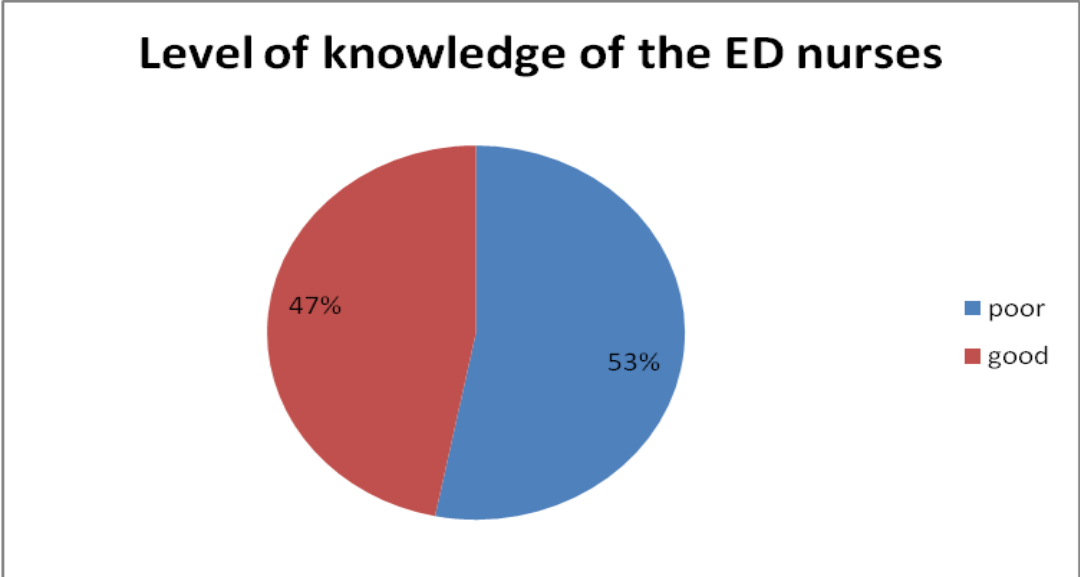


Figure 2: The overall knowledge of the respondents on disaster preparedness

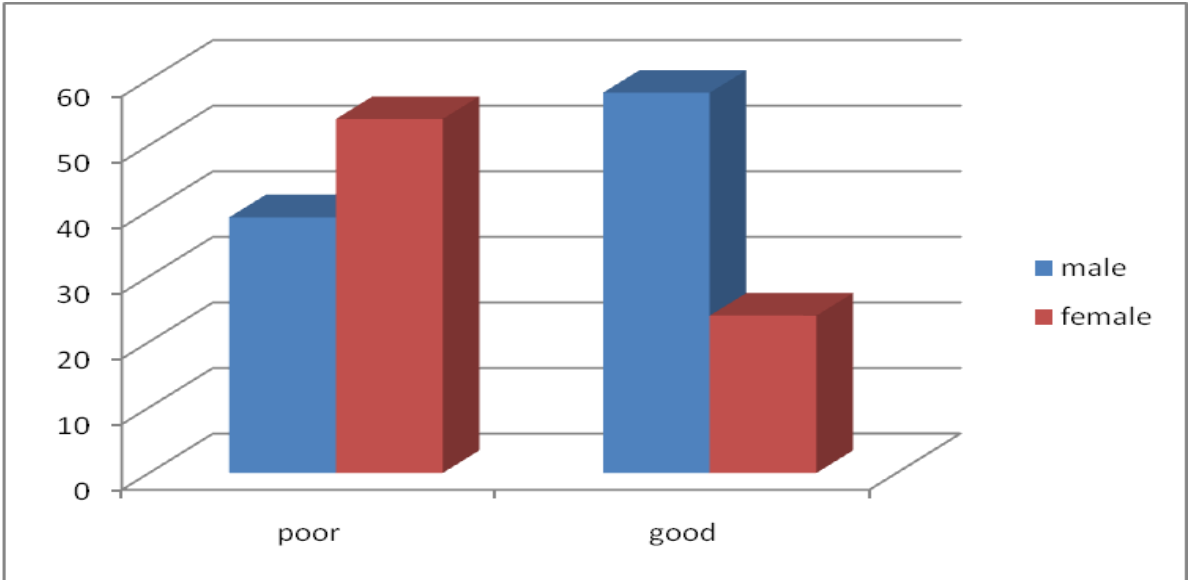


Figure 3: Knowledge level versus sex of respondents

5.4. Respondents' practice of disaster preparedness

This results show that 92.6% of respondents did not participate that a disaster drill is done in their hospital and majority of participants (77.1%) did not know about the practice of disaster preparedness training. Most of respondents estimated to 61.2% have faced a disaster in ED. More than the half, 104 (59.4%) of the respondent didn't know about update of disaster plan regularly. The 44.6% participants self-reported that their disaster preparedness practices were insufficient, while 55.4% responded that their disaster preparedness practices were sufficient.

Table 6: Frequency distribution of nurses' practice towards disaster preparedness working in emergency department of the selected public hospitals in Sidama, Ethiopia, 2023 (n=175).

Practice questions	Responses	Frequency	Percent
In the past one year have you practiced or drilled on what to do in disaster situation?	Yes	13	7.4%
	No	162	92.6%
Have you participated in ongoing disaster management training in your working hospital?	Yes	40	22.9%
	No	135	77.1%
Have you seen or heard the disaster plan being periodically Updated by authority?	Yes	71	40.6%
	No	104	59.4%
Have you ever faced any disaster in your emergency stay?	Yes	107	61.1%
	No	68	38.9%
Have you ever been a worker for disaster management team?	Yes	21	12.0%
	No	154	88.0%
Have you taken first aid training such as; Basic Life Support in the past one year?	Yes	92	52.6%
	No	83	47.4%
Do you believe that your practice is sufficient for managing disaster event?	Yes	97	55.4%
	No	78	44.6%

Table 7: Frequency of participation in disaster management training and drill in the past 1 year with in their working hospital among ED nurses in Sidama, Ethiopia, 2023 (n = 175).

Practice questions	Response	Frequency	Percent
In the past one year have you practiced or drilled on what to do in disaster situation?	Yes	13	7.4%
	No	162	92.6%
How many drills have you undergone per year?	Not drilled	162	92.0%
	Drilled once	13	8.0%
	Drilled twice	0	0.0%
Have you participated in ongoing disaster management training in your working hospital?	Yes	40	22.9%
	No	135	77.1%
How often disaster management training are provided to you within a year	Not trained	135	77.1%
	trained once	40	22.9%
	trained twice	0	0.0%

Ninety-two (92.6%) of the participants have not participated in any form of disaster drill, but the rest (7.4%) of the nurses, participated in a disaster drill in the past one year. Among the nurses who had participated in disaster drill all were drilled once. More than half a percent, (77.1%) of the participants didn't participate in ongoing disaster management training in their hospital. Among those who had involved in an ongoing disaster management training almost all (22.9%) of them took training only once in their Emergency department stays. (*See Table 7*)

The mean score of practice questioners answered incorrectly by study respondents were 65%. From total of study participants around 114(65%) more than half of Nurses working in ED had insufficient practice while the remaining 61(35%) score more than or equal to the mean termed as sufficient practice (*Figure 4*)

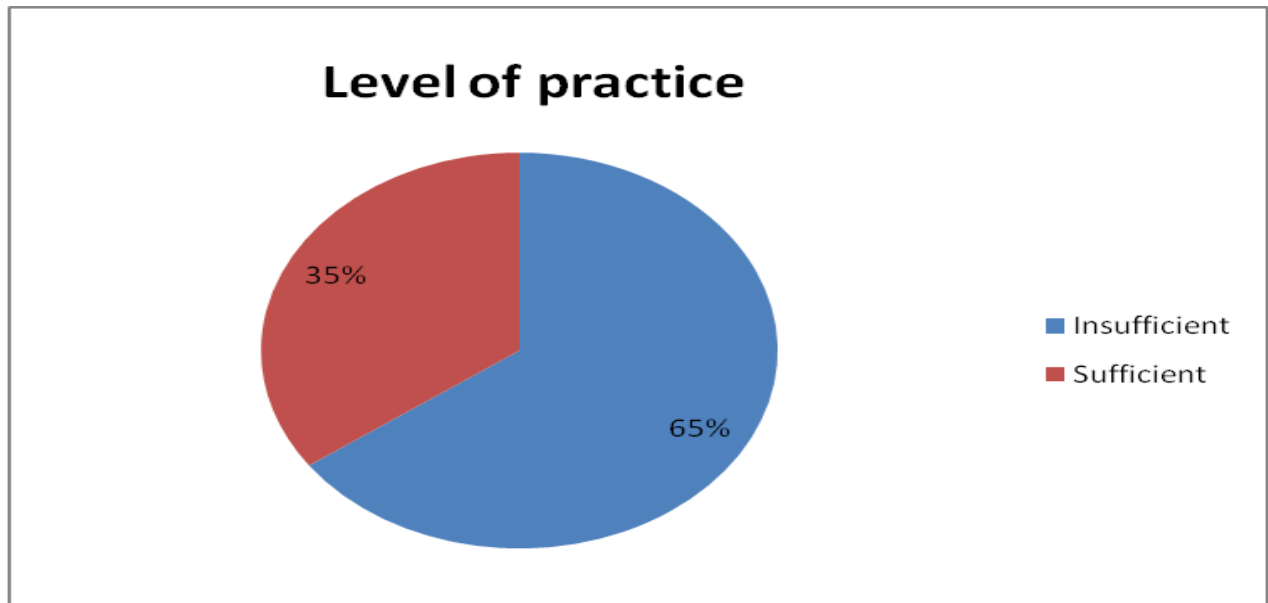


Figure 4: The overall practice of the respondents on disaster preparedness

5.5 Factors associated with nurse’s knowledge and practice towards disaster preparedness

5.5.1 Factors associated with nurse’s knowledge towards disaster preparedness

Before proceeding with the regression analysis, the assumptions of logistic regression and model fitness were checked using different methods. A total of eleven variables were used for crude analysis: socio-demographic variables (Age, Gender, Religion, Marital status, Level of education and Emergency department work experience) and Five personal and facility-related variables (Training, Hospital a disaster guideline, Direct personal or professional experienced of disaster, Emergency department experience of disaster event as well as the respondent’s practice level were analyzed for associations with level of respondents’ knowledge using binary logistic regression analysis. Out of the variables that entered to multiple logistic regressions (at p-value less than 25%), about four variables were significantly associated with the level of knowledge towards disaster preparedness at p-value less than 5%.

Table 8: Factors associated with nurses' knowledge towards disaster preparedness working in ED of the selected public hospitals in Sidama region, Ethiopia, 2023 (n=175).

		Knowledge		Bivariate	Multivariate	
Variables	category	Good	Poor	COR(95% CI)	AOR(95% CI)	P-value
Gender	Male	58	39	3.3(1.78-6.2)*	2.6(1.19-5.76)	.017
	Female	24	54		1	
Emergency department work experiences of in year	< 1 years	20	48			0.09
	1-2 years	27	28	2.3(1.1-4.8)	1.5(0.58-4.04)	
	2-3	16	13	2.9(1.2-7.2)	2.14(0.67-6.8)	
	3-5	19	4	11(3.4-37.7)	5.7(1.4-23.2)	
Disaster guideline	Yes	31	23	1.85(0.96-3.54)*	0.8(0.38-2.53)	0.98
	No	51	70		1	
DP or professional exposure of disaster events	Yes	61	24	8.3(4.2-16.4)*	1.7(0.67-4.8)	0.24
	No	21	69		1	
ED experienced a disaster recently	Yes	37	21	2.8(1.46-5.4)*	2.4(1.02-5.62)	.043
	No	45	72		1	
Training	Yes	60	15	14(6.78-29.6)*	6.4(2.2-15.8)	.000
	No	22	78		1	
Practice level	Insufficient	33	81		1	
	Sufficient	49	12	10(4.7-21.2)*	3.4(1.4-8.2)	.006

Note: statistically significant "*" p -value<0.25, COR=Crude Odd Ratio, AOR=Adjusted Odd Ratio; CI= Confidence Interval, 1=References groups

In this study, being male were 2.6 times more likely good knowledge for disaster preparedness than those who were female nurses (AOR=2.6(CI 95% 1.19-5.76 p=0.017). Those nurses whose emergency department had previous experiences of disaster management were 2.4 times more likely good knowledge than that of nurses whose emergency department had no previous experiences of disaster events (AOR=2.43, CI 95% 1.02-5.62, p=0.043).

The output of multivariate logistic regression showed that those nurses with training related to disaster preparedness had 6.4 times good knowledge from nurses had not training (AOR=6.42, CI 95% 2.2-15.8, P=0.000). In this study, having sufficient practice has a statistically significant relationship with nurses who had good knowledge for disaster preparedness and the nurses who had sufficient practice for disaster preparedness were 3.46 times more likely good knowledge as compared to those who had insufficient practices (AOR=3.46, CI 95% 1.43-8.2, P=0.006). *See Table 8).*

5.5.2 Factors associated with nurse's practice toward disaster preparedness

Out of variables that entered to multiple logistic regressions:

The nurses who had good knowledge towards disaster preparedness were 3.3 times more likely to practice disaster preparedness when compared to who had poor knowledge level of disaster preparedness (AOR=3.32, CI 95% 1.7-11.8, p=0.01). this results show that ED nurses who had receiving training related to disaster preparedness were 4.4 times more likely to have sufficient practice than their counterparts (AOR=4.4, CI 95% 1.7-11.8, p=0.003). Nurses working in hospital with a disaster guideline had around 4 times more practice score regarding disaster preparedness than nurses working in hospital without disaster guideline (AOR=3.96, CI 95% 1.6-9.5, p=0.002).

Finally, nurses who had direct personal or professional experiences of disaster events were found to have 3.7 more satisfactory practices than their counterparts regarding to disaster preparedness (AOR=3.74, CI 95% 1.44-9.5, p=0.008). (*See Table 9)*

Table 9: Factors associated with nurses' practice towards disaster preparedness working in emergency department of the selected public hospitals in Sidama, Ethiopia, 2023 (n=175).

		Binary logistic regression analysis				
		Level of practice		Bivariate	Multivariate	
Variables	Category	Sufficient	Insufficient	COR(95% CI)	AOR(95% CI)	P-value
Sex of respondent	Male	43	54	2.6(1.36-5.1)	1.7(0.63-4.6)	0.28
	Female	18	60		1	
ED work experiences of respondent in year	Less than 1	11	57		1	0.4
	1-2 years	23	32	3.7(1.6-8.6)	2(0.6-5.9)	
	2-3	12	17	3.6(1.37-9.7)	1.1(0.3-4.2)	
	3-5	15	8	9.7(3.3-28)	2.8(0.6-12)	
Have hospital disaster guideline of respondent	Yes	30	24	3.6(1.8-7.1)	3.9(1.6-9.5)**	0.002
	No	31	90		1	
Direct personal/ professional experiences of disaster events	Yes	51	34	12(5.4-26)	3.7(1.4-9.7)**	0.008
	No	10	80		1	
Emergency department experienced a disaster recently	Yes	27	31	2.1(1.1-4.0)	0.67(0.25-1.8)	0.4
	No	34	83		1	
Training related to disaster preparedness?	Yes	49	26	13.8(6.4-30)	4.4(1.7-11.8)**	0.003
	No	12	88		1	
Knowledge level	Poor	12	81		1	0.01
	Good	49	33	10(4.7-21.2)	3.3(1.3-8.5)**	

Note: statistically significant" ***"at p-value<0.05, COR=Crude Odd Ratio, AOR=Adjusted Odd Ratio; CI= Confidence Interval, 1=References group

6. DISCUSSION

Inadequate knowledge and practice on the extent of the disaster preparedness among nurses in health care setting leads to loss of resources, delays in treatments, dissatisfaction and contributes to adverse consequences (Azizpour, Mehri and Soola, 2022). Little is known regarding nurses' knowledge, practice, and associated factors towards disaster preparedness in Ethiopia, particularly in this study area. Therefore, the aim of this study is to assess the knowledge, practice and associated factors towards disaster preparedness among Nurses working in the emergency department at Public Hospitals in Sidama Region, Ethiopia.

According to this study report, two thirds of the nurses working in ED were between the ages of 22 and 31. This finding is almost in line with conducted in Saudi Arabia (Abdelghany Ibrahim, 2014), who reported that most of the nurses were between 25 and 31 years old. The current study's findings about the gender of nurses revealed that more than half study participants(55.4%) of the nurses were male, This finding agreed with (Abdul Hussen et, 2022) , who explained that over fifty percent of the participants were male, and the current finding was not in line with (Khalil NS1*, Ahmed Atia SM2, 2019),who stated that more than half of the participants were female.

6.1. Knowledge towards disaster preparedness

In this study, an overall 47% of the study participants had good knowledge of disaster preparedness while 53% of participants were having good knowledge. The present finding is similarly supported from studies done in Malaysia(40.9%) had adequate overall knowledge and Tehran in which participants' cognitive reach an appropriate level only after the respondent received instruction, training, and simulation exercises on catastrophe handling readiness (Ahayalimudin, Ismail and Saiboon, 2012). On the contrary, this finding is higher than the study conducted in Yemen health-care providers(32%) which was insufficient in relation to disaster preparedness (Naser, 2018). The main reason why the result was higher might be because current study participants were nurses working at emergency department, unlike Yemen, since they included other department health professionals in addition to emergency department staff. It is assumed that health care professionals working specific to emergency department are comparably knowledgeable regards to disaster due to the nature of their working environment as well as their level of training.

But study done in Addis Ababa, Ethiopia had (50.8 %) was slightly higher than what is found in present study, so variation might be due to study setting, increased work experience which invites to increases the likelihood of participating in disaster-related training and exercises,

which also has a significant impact on knowledge level (Habte, Addisie and Azazh, 2018). In addition to this, physician participants (general practitioner, residents, and specialists) were accounting for the higher proportion unlike this study that all of participants were nurses, so physicians are expected to have better knowledge than nurses.

This finding is further supported by studies done in Lahore, Pakistan where the author conclude that there was inadequate level of knowledge of nurses regarding disaster preparedness in Tertiary Health Care Hospitals of Lahore (Ali *et al.*, 2017). The findings of the present study are lower than those of investigations conducted at tertiary hospital in central Riyadh, kingdom of Saudi Arabia in 2018 the level of knowledge of the emergency department staffs were good (Nofal *et al.*, 2018). This variation might be brought due to the difference in the study setting, study participants, and availability of frequently training as well as having more than five year experiences in the emergency department health care professionals.

In this study previously attended disaster training was found to be a significant factor for good knowledge (AOR=6.42, CI 95% 2.2-15.8, P=0.000). There are studies supporting current finding worldwide like in studies done in international Islamic university of Malaysia where more disaster related education and training positively affects the knowledge level of the health professionals (Shabbir *et al.*, 2017), (Ahayalimudin, Ismail and Saiboon, 2012). In our study being male of participants was also found to positively affect the level of knowledge. This is due to the fact that the majority of nurses who participated were men and that a higher percentage of men participated in disaster training. Nurses who have a sufficient practice also have a good knowledge of disaster preparedness (AOR=3.32, CI 95% 1.7-11.8, p=0.01). This finding has some chicken egg dilemma that knowledge may be a predictor for practice or practice may be a predictor for knowledge of disaster preparedness.

6.2. Practice related Disaster preparedness

Regarding the practice level of the nurses working in the emergency department, most of the participant found to have insufficient practice. Only 35% of the participants have sufficient practice towards disaster preparedness. The study conducted in China, the similar results was found that shows the level of their practices were very negative regarding the disasters preparedness(Singhal *et al.*, 2016).

In this study more than half of the participants (61.2%) have faced a real disaster in their emergency stay. Despite the increased frequency of disaster events, the nurses in their emergency department did not receive the necessary disaster training and simulation.

The ninety-two percent (92.6%) of the participants have not participated in any form of disaster drill and the rest (7.4%) of the nurses, participated in a disaster drill in the past one year. Among the respondents who had participated in disaster drill all were drilled once. Similarly, majority (77.1%) of the participants didn't participate in ongoing disaster management training in their hospital. Among those who had involved in an ongoing disaster management training, almost all (22.9%) of them took training only once in their emergency department stays. Actually, this is the world's most significant unsolved problem. On one parallel studies done in Yemeni 58.9% of respondents had not participated in any exercise in emergency and disaster preparedness and most of the study participants had not attended any training on disaster management (Naser, 2018). And another study done in Lahore, Pakistan among the nurses justified as there is lack of minimum training in disaster preparedness, 70.5% participants were respond negatively that there were no any ongoing training in the hospital(Shabbir *et al.*, 2017). However as a humanitarian organization Rwanda Red Cross employees have better exposure in disaster related exercise and training compared to present result (Michotte,2019).

As it is conducted among the front line nurses, the present study finding showed a clear superiority to the findings on studies conducted in TASH in 2018 among non-emergency health professional; which showed that only 8.3% of the participant had good practice on disaster preparedness (Habte, Addisie and Azazh, 2018). This shows that the emergency department is getting relatively better attention by authorities and disaster committee so that some disaster related training and drill are being provided.

In current study, previously attended disaster training was found to be a significant factor for adequate practice of the participants (AOR=4.4, CI 95% 1.7-11.8, p=0.003). This result goes in line with studies done in the emergency department at Mansoura emergency hospital in Egypt, strong positive correlation was found between attending previous training related to disaster preparedness & total practice level of the emergency nurses on disaster preparedness (Khalil NS1*, Ahmed Atia SM2, 2019).

In another parallel study conducted in Selangor, one of the states in Malaysia; attending disaster related education/training was found to be a strong predictor of the practice level in both emergency nurse and community health nurse(Ahayalimudin, Ismail and Saiboon, 2012). Moreover, ED nurses who had good knowledge towards disaster preparedness were around three times more likely to had sufficient practice disaster preparedness when compared to their counterparts (AOR=3.32, CI 95% 1.7-11.8, p=0.01). This finding was comparable with the finding of a study done in Addis Ababa health bureau hospital (Melkie Ambaw, 2020).

7. Strength and Limitations of the study

7.1 Strength of the study

- ✓ Data was primary and it was accurate and updated information
- ✓ Identified as being cross sectional was good representative of study population ■

7.2. Limitations of the study

- ✓ The study does not include the administrative staff and other health professionals.
- ✓ The data was collected by using a self-administered questionnaire and due to this; there could be a recall bias and social desirability bias of the respondents.

8. CONCLUSION AND RECOMMENDATION

8.1. Conclusion

As a conclusion, the study revealed that from study respondents, majority (55.4%) were male. The mean (+SD) age of respondents was 29 (+4.1). In addition, the finding of this paper indicates that among study participants, only (31.4%) have taken training related to disaster preparedness. Therefore, majority of the study participants have poor knowledge (53%) and insufficient practice (65%) towards disaster preparedness. Based on the present study it can be concluded that the participants have a poor over all knowledge and practices. As results, there should be still need to do work on it in regard to ongoing training, plans should be periodically updated, and performance of drills should be done. Similarly, this finding tells us on multivariate logistic regression with p value and odd ratio; being male, receiving training, and experience in disaster management were factors significantly associated with the good knowledge of participants towards disaster preparedness, while hospitals with disaster guidelines, direct personal or professional exposure to disaster events, disaster-related training, and the good knowledge of the participants towards disaster preparedness were significantly associated with sufficient practices among participants.

8.2. Recommendations

Based on the findings of this study the following recommendations are forwarded to concerned bodies.

Regional health bureau of Sidama Region:

- ✓ Should give attention on nurses to enhance capacity building especially for those nurses working in emergency departments, which mainly help to cope with increasing disasters.

Public hospitals of Sidama region:

- ✓ It's recommended to provide training primarily for nursing professionals working in emergency departments, in cooperation with universities, the regional health office, and other reputable organizations.
- ✓ Disaster guidelines should be placed in every hospital where nurses easily access them
- ✓ Disaster plans and drills should be made and held on a regular basis.

For nurses working in emergency department:

- ✓ It's advisable to know about disaster plan, their role and their responsibility during drills
- ✓ Nurses better to enhance their knowledge and practice on disaster training by taking various online courses and reading guidelines.

For researchers

- ✓ Since this study included nurses only further exploratory studies including program planners, other health professionals, hospital managers and using observational method should be done.

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10. ANNEX

ANNEX I: CONSENT FORM

My name is Yunuka Marufaa post graduate Emergency Medicine and Critical Care Nursing Student at Hawassa University. The assessment of Knowledge and Practice of Disaster Preparedness among Nurses Working in Emergency Department at selected Public hospitals in Sidama Region, Ethiopia, 2023.

The aim of this study is to assess Knowledge and Practice of Disaster Preparedness among Nurses. I believe that this research result will possibly initiate the hospitals and health institutions to facilitate interventions to nurses on identified weaknesses and greatly help in the improvement of our preparedness level for the occurrence of any disaster event inside or outside of the hospital. The information you provide is confidential and is used only for the purpose of this study.

Your selection to participate in this study is because you are a key person in disaster and disaster preparedness in this department. I wish to request you to kindly allow me to take some of your time to answer this questionnaire. If you agree to participate in the study, I shall issue you with a questionnaire with semi-structured questions. Totally you have the right not to answer the question or withdraw at any time if you are not comfortable.

If you have any question and confusion regarding the questions, you have the right to ask me at any point or you can contact me on the following address.

Email address: yunukamarufa623@gmail.com and phone number. +251924669238

Are you willing to participate? 1. Yes 2. No

Data collector: _____

Signature: _____

Date: _____

2.1 Knowledge regarding disaster preparedness among study participants

201. What phase of disaster management includes exercises and drills?

1) Mitigation 2) Preparedness 3) Recovery 4) Response

202. During a disaster, the person responsible for leading the response effort is the incident:

1) Chief 2) Commander 3) Director 4) Officer

203. Which section of the Incident Command system (ICS) is responsible for appropriate documentation of time, expense, and claims?

1) Finance 2) Logistics 3) Operation 4) Planning

204. You are working as a triage nurse during a disaster situation. Based on the triage color code tags placed on each of the wounded, which tags color represents the wounded who have the highest priority of being treated first? 1) Green 2) Yellow 3) Red 4) Black

S.N	Questions	Responses	
205	A disaster is an imbalance between the demands that caused by an events and an available resources.	1. True	2. False
206	A disaster can occur either from natural or man-made causes	1.Tue	2.False
207	Do you know Incident Command System (ICS) and your role within it?	1. Yes	2. No
208	Do you know what drills/disaster simulation are?	1.Yes	2.No
209	Do you know the specific place for evacuation for patients during disastrous event?	1.Yes	2. No
210	When should be first aid given during disaster?	1. immediately	2. Only in the hospital setting
211	Triage is a term used in disasters to assess injured patients to prioritize	1. True	2. False

	care.		
212	Do you know the major component/issues that must be included in a disaster plan?	1. Yes	2. No
213	Have you participated in developing/ reviewing the hospital the hospital disaster plan?	1. Yes	2. No
214	Have you had direct personal or professional experiences a disaster?	1. Yes	2. No
215	A disaster planning is to prepare to what might be needed to be done, how to be done, before and after disaster	1. True	2. False
216	Have you prepared to handle disaster situation in your emergency department?	1. Yes	2.No
217	How do you rate your current knowledge and practice in managing disaster event?	1.Good	2. Poor

3.1 Practice regarding disaster preparedness among the study participants

301	In the past one year have you practiced or drilled on what to do in disaster situation?	1) Yes	2) No (<i>Please skip the next question 303</i>)
302	How many drills have you undergone per year? (<i>Please state on the provided space</i>)	
303	Have you participated in ongoing disaster management training in your working hospital?	1) Yes	2) No (<i>please skip the next question 305</i>)
304	How often disaster management training are provided to you within a year? (<i>Please state on the provided space</i>)	
305	Have you seen or heard the disaster plan being periodically Updated by authority?	1) Yes	2) No (<i>Please skip the next question 307</i>)
306	If yes, how often the disaster plan is being updated by authority within a year? (<i>Please state on the provided space</i>)	
307	Have you ever faced any disaster in your emergency stay?	1) Yes	2) No
308	Have you ever been a worker for disaster management team?	1) Yes	2) No
309	Have you taken first aid training such as; Basic Life Support in the past one year?	1) Yes	2) No
310	Do you believe that your practice is sufficient for managing disaster event?	1) Yes	2) No