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ORIGINAL RESEARCH

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

Lehulu Tilahun [1]
Birhanu Desu [1]
Mulusew Zeleke [2]
Kirubel Dagnaw [3]
Atsedemariam Andualem [3]

[1]Wollo University, Department of Emergency and Ophthalmic health, Dessie, Ethiopia; [2]Wollo University, Department of Adult Health, Dessie, Ethiopia; [3]Wollo University, Department of Comprehensive Nursing, Dessie, Ethiopia

Introduction: Globally around 1.6 million individuals have died as a result of disasters per year. These disruptive events that happen in the world each day result in damage to individuals, families, and communities.

Methods: An institution-based cross-sectional study was conducted. All frontline health-care providers at the emergency departments of Amhara Regional State Referral Hospitals during the study period were considered as studied subjects. Data were collected through a self-administered technique. Once all essential data were collected, data were coded and entered into epidata manager (v4.6.0.2) statistical software. SPSS version 26 was used to analyze the findings of this paper.

Results: The result of this research study showed that 66.7% were males and 33.3% were females with mean age of respondents being 31.2 ± 5.8. Among respondents, 54% (52.9) % did not have an understanding of disaster preparedness. As a result, the majority of participants, 52 (51%), have inadequate knowledge. Most respondents have adequate attitude (57.8%) and only a few, 12 (11.8%), of respondents were very familiar with regard to disaster and disaster handling preparedness. In multivariate logistic regression, receiving training on the subject (P = 0.000, AOR: 15.109. 95% CI: 3.525–64.769), respondents receiving simulation in the subject of disaster (P = 0.015, AOR: 4.855, 95% CI: 1.366–17.260) and having a direct personal/professional experience of disaster (P = 0.003, AOR: 5.703, 95% CI: 1.825–17.823) were significantly associated.

Conclusion and Recommendation: Disaster handling preparedness, knowledge and familiarity levels were below those expected for emergency department nurses. Capacity building through training, education and simulation is essential.

Keywords: emergency, disaster preparedness, emergency department, nurses

Background

Disaster is defined as a disruptive event which affects the normal survival and causes suffering that exceeds the capacity of a community. Disasters can be classified into different categories, including natural events such as drought, floods, earthquakes, landslides and human-made events such as conflicts, displaced population, industrial accidents and transport accidents.[1–3] These disruptive events

Correspondence: Lehulu Tilahun
Tel +251918126376
Email lehulut333@gmail.com

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happen in the world each day and result in damage at individual, family and community levels.[2] Because of a disaster can cause large-scale damage to the economy of a country there is an absolute need for risk reduction, prevention and mitigation. The World Health Organization (WHO) advises countries to strengthen and put into action methods of disaster preparedness. "Preparedness, Response, Mitigation & Recovery" is based on risk assessment to focus on public health to improve response effectiveness to disruptive events, that in turn contributes to recovery of health issues.[3]

Globally around 1.6 million individuals have died as a result of disasters which makes approximately 65,000 deaths on a yearly basis. Disasters cause a double burden of impact especially for African states, due to their small economies and burden of ill health. African nations also have an increasing impact of communicable diseases. This creates for Ethiopia, and the whole African continent, a vicious cycle for disaster and emergency events.[7] Underdeveloped states are severely affected by disasters as they have a shortage of funding for disaster preparedness and these disruptive events have effects on health aspects, the economy and social infrastructure of the affected region. Disasters can change the face of a developing nation in seconds, wiping out years of development. On the contrary developed nations can more easily restore damage due to disaster as they can mobilize resources. Provision of training and having well-trained health-care providers on disaster handling can have paramount importance. Especially, professional preparedness of emergency health-care providers is vital as these health providers are front-line respondents to the event.[2,5]

Accident and emergency handling is crucial to preparedness and is gained through emergency nursing management. ED nurses should have knowledge on disaster and emergency handling especially on triage and the subject of victim handling. In all countries, ED nurses are expected to enhance disaster and emergency response strategies in their duties. Also, participation of ED nurses in handling of emergency and disaster preparedness enhances their cognition level. ED nurses' readiness in handling disaster is an ongoing process with no interruption as disruptive issues keep on happening. This forces ED nurses' readiness and response to events to be continued until nurses withdraw from the process.[5] Even if accidents are expected to be manageable and preventable, they are still a major public health problem. According to Ethiopia, no matter whether the government plays a big role to avert transport accidents, vehicle-related casualties are increasing and make up nearly half of all traumatic injuries.[8] As per the knowledge of the investigator, papers that assess emergency and disaster handling preparedness are few in the Ethiopian context. This leads to little information on emergency and disaster handling preparedness especially for the responsible professionals working at the Emergency departments of the respective hospitals.

Objectives

- To identify knowledge of frontline health-care nurses with regard to accident and disaster preparedness handling at Amahara Regional State Referral Hospitals.
- To determine attitudes of emergency department nurses to accident and disaster preparedness handling.
- To distinguish level of familiarity of emergency department nurses with accident and disaster preparedness handling.
- To explore related factors of frontline working nurses' accident and disaster preparedness handling.

Materials and Methods

The study was done at Amhara Regional State Referral Hospitals starting from August 2019 to June 2020. Amhara regional state is one among nine regional states in Ethiopia. Bahir dar is its capital city which is located 578km from the center, Addis Ababa to Northwest of Ethiopia. The region has six Referral Hospitals, these being Dessie Referral Hospital, Debrebirhan Referral Hospital, Debremarkos Referral Hospital, Felegehiwot Referral Hospital, Gondar University Referral Hospital and the newly built Tibebe Gion Specialized Referral Hospital. Of these two, Gondar University Referral Hospital and Tibebe Gion Specialized Referral Hospital, are under the management of the Federal Ministry of Education. The other four are under supervision of the Regional Health Bureau.

An institution-based cross-sectional study design was used in the emergency departments of frontline health service providers in Amhara region. All frontline emergency department nurses of Amhara Regional State Referral Hospitals during the study period were considered as the study population. All frontline nurses working in emergency departments (ED) of Amhara Regional State

Referral Hospitals were included in the study. Those who were on maternity, sick, annual, or study leave and those who were recruited as frontline emergency care providers shortly before data collection were excluded from the study. Data was already collected through a self-administered technique. Five data collectors (BSC nurses) and two supervisors were assigned and data were gathered from March to April, 2020.

A cognition, attitude and practice questionnaire as well the Emergency Preparedness Information Questionnaire (EPIQ) adopted from[2] and employed in many papers was used as a data collection tool to run the study with certain modifications.

From the start, a thorough training of data collectors and supervisors was performed to have a common understanding, using the Emergency Preparedness Information Questionnaire (EPIQ). This has been applied to numerous studies as a measuring tool for familiarity of emergency preparedness. The Wisconsin Nurses Association (WNA) permitted use of the EPIQ tool. This tool was applied for nurses at an emergency department in Saudi Arabia,[2] and was incorporated for this finding after certain modifications in our setting. As well, a pre-test was performed on 5% of participants from Boru Meda Hospital before actual data collection. Filled questionnaires were reviewed and checked by the principal investigator and supervisors for completeness and corrective measures were given.

Once all essential data were collected, data were coded and entered into epidata manager (v4.6.0.2) statistical software. Then data were exported to an IBM SPSS version 26 and data were cleaned and analyzed and outputs were displayed using tables and charts. Descriptive findings were done by using frequency and cross tabulation. The significance of explanatory variables was measured by using p value, odds ratio and 95% CI. Further selected variables were assessed through regression.

The study was carried out after gaining an ethical clearance from the Research and Ethical Review office of the College of Medicine and Health Science, Wollo University. Then data were gathered after obtaining permission from the management of respective hospitals. To keep confidentiality of respondents the objective of the study was made clear and participation was only on a voluntary basis and names were not included on the questionnaire.

Results

Description of Study Participants

Socio-demographic Characteristics

From the study respondents 68 (66.7%) were males and 34 (33.3%) were females. The mean age of the participants was 31.2 ± 5.8; 60 (58.8%) of participants were married, 41 (40.2%) were single. The majority of respondents, 39 (38.2%), 32 (31.4%), 17 (16.7%) and 14 (13.7%), had 3–6 years, >9 years, 3–6 years and <3 years of clinical experience, respectively. Among study participants most, 82 (80.4%), had achieved a BSc in comprehensive nurse education. The rest, 9 (8.8%), 8 (7.8%) and 3 (2.9%), had a BSc in emergency and critical care nursing (MPH in epidemiology and EMT), MSC in emergency medicine and critical care nursing level of education, respectively (Table 1 and Figure 1).

Knowledge on Accident and Disaster Handling Preparedness

This study revealed that among respondents with regard to disaster and emergency handling preparedness at ED most, 54 (52.9%), do not have any disaster understanding, 46 (45.1%) understand that disaster is a sudden occurrence of an event. Sixty (58.8%) have disaster awareness while the rest, 42 (41.2%), do not have awareness with regards to disaster in the past five years. Most, 40 (39.2%) and 33 (32.4%), have good and poor rate of current knowledge regarding management situation, respectively.

The majority of respondents, 55 (53.9%), understood hospitals had a key role in disaster handling during disaster/emergencies occurrence, the rest, 47 (46.1%), are not aware of the role of hospitals as that time. Fifty-three (52%) of participants do not know if their hospital has a disaster plan; 32 (31.4%) responded that their hospital does not have a disaster plan. The rest, 17 (16.7%), responded that their hospital has a disaster plan; 66 (64.7%) participants do not know the major components that must be included in a disaster plan and 36 (35.3%) know major components that must be included under a disaster plan.

Most data respondents, 85 (83.3%), never participated in developing a hospital disaster plan. Only 27 (26.5%) have taken training regarding emergency preparedness and 67 (65.7%) do not take training. Most, 77 (75.5%), have

Table 1 Socio-demographic Characteristics of Respondents on Disaster and Emergency Handling Preparedness at Emergency Departments, in Amhara Regional State Referral Hospitals, Ethiopia

Variables		Frequency (n = 102)	Percent (%)
Sex	Male	68	66.7
	Female	34	33.3
	Total	102	100
Marital Status	Single	41	40.2
	Married	60	58.8
	Divorced	1	1.0
	Total	102	100.0
Clinical Experience	<3 years	14	13.7
	3–6 years	39	38.2
	6–9 years	17	16.7
	>9 years	32	31.4
	Total	102	100.0
Highest level of education attained	BSC incomprehensive Nurse	82	80.4
	BSC in ECCN	9	8.8
	MSC in EMCCN	3	2.9
	Others*	8	7.8
	Total	102	100.0

Note: *MPH in epidemiology.
Abbreviation: EMT, emergency medical technician.

not been through simulation training with regard to emergency preparedness. The majority, 74 (72.5%), do not have a direct personal or professional experience of disaster. Only 28 (27.5%) have an experience of disaster.

The mean of knowledge of accident and disaster handling preparedness is 21.41±3.27. As a result, good knowledge of participants regarding accident and disaster handling preparedness was 50 (49%) and poor knowledge was 52 (51%) (Table 2).

Attitude on Accident and Disaster Handling Preparedness

The mean of attitude of accident and disaster handling preparedness is 15.27±3.05. In addition, good attitude of

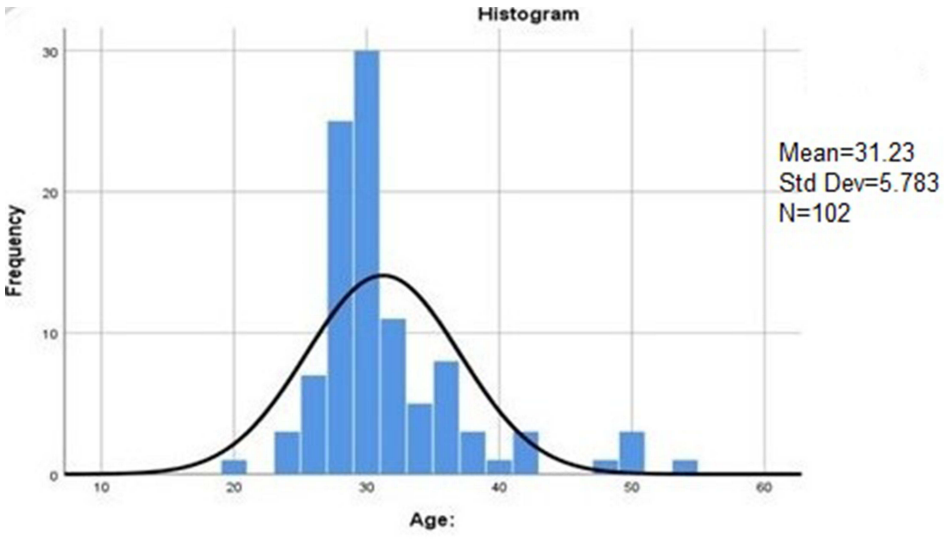

Figure 1 Histogram and frequency polygon for the age of respondents on disaster and emergency handling preparedness at emergency departments, in Amhara Regional State Referral Hospitals, Ethiopia.

Table 2 Knowledge of Respondents on Disaster and Emergency Handling Preparedness at Emergency Departments, in Amhara Regional State Referral Hospitals, Ethiopia

Variables		Frequency	Percent (100%)
Disaster Understanding	Natural/sudden occurrence of event like Covid-19	1	1.0
	Not understand	54	52.9
	Some awareness	1	1.0
	Sudden occurrence of event	46	45.1
	Total	102	100.0
Have you awareness of Disaster within the past five years?	Yes	60	58.8
	No	42	41.2
	Total	102	100.0
Rate your current knowledge regarding the management situations	Excellent	4	3.9
	Good	40	39.2
	Fair	25	24.5
	Poor	33	32.4
	Total	102	100.0
Are you aware of the role of hospitals during disasters/emergencies?	Yes	55	53.9
	No	47	46.1
	Total	102	100.0
Does your hospital has a disaster plan?	Yes	17	16.7
	No	32	31.4
	Do not know	53	52.0
	Total	102	100.0
Do you know the major components/issues that must be included in a disaster plan?	Yes	36	35.3
	No	66	64.7
	Total	102	100.0
Have you participated in developing/reviewing the hospital disaster plan?	Yes	17	16.7
	No	85	83.3
	Total	102	100.0
Have you received information or training regarding emergency preparedness?	Yes	27	26.5
	No	67	65.7
	Do not remember	8	7.8
	Total	102	100.0
Do you think you need additional training in disaster preparedness and response?	Yes	67	65.7
	No	35	34.3
	Total	102	100.0
Have you had simulation training in relation to emergency preparedness in the past 2 years?	Yes	25	24.5
	No	77	75.5
	Total	102	100.0
Have you prepared to handle emergency situations in your emergency department?	Yes	48	47.1
	No	52	51.0
	Total	102	100.0
Have you had direct personal or professional experience of an emergency or disease?	Yes	28	27.5
	No	74	72.5
	Total	102	100.0

(*Continued*)

Table 2 (Continued).

Variables		Frequency	Percent (100%)
Has your ED experienced an emergency or disaster recently?	Yes	26	24.5
	No	76	74.5
	Total	102	100.0
Mean±SD = 21.41±3.27			

participants regarding accident and disaster handling preparedness was 59 (57.8%) and poor attitude was 43 (42.2%). From all respondents 19 (18.6%) agreed that they do not need knowledge about emergency operational plans and 72 (70.6%) disagreed on it. Regarding management to be adequately prepared during disaster occurrence most 50 (49%) agreed, 44 (43.1%) disagreed; 24 (23.5%) of respondents believe that disaster management and planning is for a few people in the hospital, but most 60 (58.8%) disagreed. The majority, 82 (80.4%), of data respondents agreed that disaster planning is a must for all people in the health-care setting while only 15 (14.7%) disagreed. Most, 76 (74.5%), believe that potential hazards likely to cause disaster must be identified and dealt with but 13 (12.7%) did not agree on this issue. The majority, 95 (93.1%), of data respondents agreed that training is necessary for emergency health-care workers with regard to disasters while only 6 (5.9%) disagreed. Seventy-eight (76.5%) participants believed that emergency (disaster) operational plans need to be updated regularly but 13 (12.7%) disagreed; 14 (13.7%) do not agreed that disasters are likely to happen in our care setting but most, 71 (69.6%), believe that a disaster may occur in their hospital setting. Thirty-five (34.3%) of respondents believe that disaster management is limited to ED staff and 58 (56.9%) disagreed. Fifty-six (54.9%) of respondents agreed that disaster simulation/drills should be conducted frequently in the hospital and 35 (34.3%) disagreed that simulation should be done frequently in a hospital setting (Table 3).

Disaster Familiarity on Accident and Disaster Handling Preparedness

Of the respondents 12 (11.8%) are very familiar, 41 (40.2%) are somewhat familiar, 26 (25.5%) are neutral with regard to emergency preparedness terms and activities. In relation to ICS, 10 (9.8%) are very familiar, 30 (29.4%) are somewhat familiar, 24 (23.5%) are neutral. Of the participants 33 (32.4%) are somewhat familiar and 20 (19.6%) are not familiar with disaster communication. Only 14 (13.7%) are very familiar with accessing critical resources in disaster, 30 (29.4%) are somewhat familiar with accessing critical resources. With isolation and quarantine 35 (34.3%) are somewhat familiar and 16 (15.7%) are not familiar with the issue; 28 (27.5%) are very familiar, while 34 (33.3%) are somewhat familiar with psychological issues of disaster. In relation to epidemiology and surveillance of disaster, 20 (19.6%) are very familiar, 29 (28.4%) are somewhat familiar.

The mean level of familiarity of accident and disaster handling preparedness was 19.41±6.55 (Table 4).

Contributing Factors of Accident and Disaster Handling Preparedness

In bivariate logistic regression, contributing factors that were associated with accident and disaster handling preparedness through disaster knowledge, attitude and familiarity among respondents were age, sex, marital status, training on the area, simulation in the area, participation in developing a disaster plan and direct personal/professional experience of disaster. Accident and disaster handling preparedness is three times more affected with those aged 20–30years (P = 0.032, OR: 2.60, 95% CI: 1.084–6.234). On the other hand, accident and disaster handling preparedness was 68% less likely associated with being male gender (P = 0.009, OR: 0.317, 95% CI: 0.134–0.749). As well, being unmarried (P = 0.049, OR: 0.440, 95% CI: 0.194–0.998) is 56% less associated with emergency and disaster handling preparedness. In addition those who received training are 13 times more likely to be prepared for disasters and accidents (P = 0.000, OR: 13.429, 95% CI: 3.703–48.696). In a similar way, those participating in disaster plan development were 10 times more likely to have accident and disaster handling preparedness (P = 0.004, OR: 9.730, 95% CI: 2.093-45-224). Having had disaster simulation was 6

Table 3 Attitude of Respondents on Disaster and Emergency Handling Preparedness at Emergency Departments, in Amhara Regional State Referral Hospitals, Ethiopia

Attitude Variables		Frequency	Percent (%)
I do not need knowledge about emergency (disaster) operational plans	Agree	19	18.6
	Disagree	72	70.6
	Unsure	11	10.8
	Total	102	100.0
Management should be adequately prepared during disaster occurrence	Agree	50	49.0
	Disagree	44	43.1
	Unsure	8	7.8
	Total	102	100.0
Disaster management and planning is for few people in the hospital	Agree	24	23.5
	Disagree	60	58.8
	Unsure	18	17.6
	Total	102	100.0
Disaster planning is a must for all people in the health-care setting	Agree	82	80.4
	Disagree	15	14.7
	Unsure	5	4.9
	Total	102	100.0
Potential hazards likely to cause disaster must be identified and dealt with	Agree	76	74.5
	Disagree	13	12.7
	Unsure	13	12.7
	Total	102	100.0
Training is necessary for emergency health-care workers with regards to disasters	Agree	95	93.1
	Disagree	6	5.9
	Unsure	1	1.0
	Total	102	100.0
Emergency (disaster) operational plans need to be updated regularly.	Agree	78	76.5
	Disagree	13	12.7
	Unsure	11	10.8
	Total	102	100.0
Disasters are likely to happen in our care setting.	Agree	71	69.6
	Disagree	14	13.7
	Unsure	17	16.7
	Total	102	100.0
Disaster management is limited to Emergency department staff	Agree	35	34.3
	Disagree	58	56.9
	Unsure	9	8.8
	Total	102	100.0
Disaster simulation/drills should be conducted frequently in the hospital	Agree	56	54.9
	Disagree	35	34.3
	Unsure	11	10.8
	Total	102	100.0
Mean±SD = 15.27±3.05			

times more linked with preparedness in disaster handling (P = 0.002, OR: 5.625, 95% CI: 1.911–16.559). Finally, those having direct personal/professional experience of disaster were 4 times more likely associated with accident and disaster handling preparedness (P = 0.004, OR: 4.161, 95% CI: 1.574–11.000).

Table 4 Disaster Familiarity of Respondents on Disaster and Emergency Handling Preparedness at Emergency Departments, in Amhara Regional State Referral Hospitals, Ethiopia

Disaster Familiarity Variables		Frequency	Percent (%)
Emergency preparedness terms and activities	Very familiar	12	11.8
	Somewhat familiar	41	40.2
	Neutral	26	25.5
	Somewhat not familiar	14	13.7
	Not familiar	9	8.8
	Total	102	100.0
Incident Command System (ICS) and your role with in it.	Very familiar	10	9.8
	Somewhat familiar	30	29.4
	Neutral	24	23.5
	Somewhat not familiar	23	22.5
	Not familiar	15	14.7
	Total	102	100.0
Disaster communication/Connectivity	Very familiar	9	8.8
	Somewhat familiar	33	32.4
	Neutral	31	30.4
	Somewhat not familiar	9	8.8
	Not familiar	20	19.6
	Total	102	100.0
Accessing critical resources in disaster	Very familiar	14	13.7
	Somewhat familiar	30	29.4
	Neutral	28	27.5
	Somewhat not familiar	11	10.8
	Not familiar	19	18.6
	Total	102	100.0
	Not familiar	9	8.8
	Total	102	100.0
Isolation procedure/Quarantine process.	Very familiar	18	17.6
	Somewhat familiar	35	34.3
	Neutral	23	22.5
	Somewhat not familiar	10	9.8
	Not familiar	16	15.7
	Total	102	100.0
	Total	102	100.0
Psychological issues	Very familiar	28	27.5
	Somewhat familiar	34	33.3
	Neutral	24	23.5
	Somewhat not familiar	8	7.8
	Not familiar	8	7.8
	Total	102	100.0
Epidemiology and surveillance	Very familiar	20	19.6
	Somewhat familiar	29	28.4
	Neutral	26	25.5
	Somewhat not familiar	11	10.8
	Not familiar	16	15.7
	Total	102	100.0
Mean±SD = 19.41±6.55			

In multivariate logistic regression, variables that were significantly associated with accident and disaster handling preparedness with both P value and odds ratio are training received on the subject, simulation on the subject, and direct personal and professional experience of disaster. Accident and disaster handling preparedness was 15 times more likely affected in those receiving training in the subject than those not (P = 0.000, AOR: 15.109. 95% CI: 3.525–64.769). In similar manner, those respondents receiving simulation in the area of disaster were 5 times more likely to have disaster handling preparedness (P = 0.015, AOR: 4.855, 95% CI: 1.366–17.260). At last, 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) (Table 5).

Discussion

The results of this study showed that 66.7% were males and 33.3% were females with mean age of respondents being 31.2 ± 5.8. The knowledge level showed a mean ± SD of 21.41±3.27. This finding was supported by a study performed at Saudi Arabia, which revealed that mean age of respondents were 26.36±1.82 and cognition level was 21.2± 6.0.[20]

The study found that 50 (49%) of participants have good knowledge regarding accident and disaster handling preparedness while 52 (51%) have poor knowledge. That indicates inadequate knowledge of these study participants regarding accident and disaster handling preparedness. Our paper finding is similarly supported from studies done in Malaysia and Tehran in which participants'

Table 5 Result of Risk Estimate on Disaster and Emergency Handling Preparedness at Emergency Department, in Amhara Regional State Referral Hospitals, Ethiopia, 2020

	Disaster Knowledge			Odds Ratio			
		Yes	No	P value	COR (95% CI)	P value	AOR (95% CI)
Disaster Knowledge							
Training in the area	Yes No	3 47	24 28	0.000*	13.429 (3.703–48.696)	0.000**	15.109 (3.525–64.769)
Participation in developing disaster plan	Yes No	37 48	15 2	0.004*	9.730 (2.093–45.224)	0.224	3.224 (0.489–21.262)
Simulation received on the subject	Yes No	32 45	20 32	0.002*	5.625 (1.911–16.559)	0.015**	4.855 (1.366–17.260)
Direct personal/professional experience of disaster	Yes No	31 43	21 7	0.004*	4.161 (1.574–11.000)	0.003**	5.703 (1.825–17.823)
Disaster attitude							
		Yes	No				
Age	20–30 31–53	33 26	33 10	0.032*	2.60 (1.084–6.234)	0.052	2.465 (0.991–6.13)
Training in the area	Yes No	21 38	6 37	0.018*	3.408 (1.236–9.394)	0.252	0.503 (0.155–1.631)
Participation in developing disaster plan	Yes No	15 44	2 41	0.013*	0.143 (0.031–0.664)	0.167	0.345 (0.077–1.558)
Disaster familiarity							
		Yes	No				
Sex	Male Female	43 12	25 22	0.009*	0.317 (0.134–0.749)	0.048	0.384 (0.148–0.992)
Marital status	Single Married	27 28	14 33	0.049*	0.440 (0.194–0.998)	0.370	0.657 (0.263–1.645)

Notes: *Variables significantly associated through bivariate analysis in both P value and CI. **Variables significantly associated through multivariate analysis in both P value and CI.
Abbreviations: COR, crude odds ratio; AOR, adjusted odds ratio; CI, confidence interval.

cognition levels were adequate only when the respondents were educated, trained and had simulation drills on the subject of accident and disaster handling preparedness. In a similar manner results at Onandjokwe Lutheran Hospital, Northern Namibia indicated that 42.9% of participants have a fair cognition level in relation to disaster events in their working environment. As well, at Italian hospitals only 45% of responders knew about an emergency plan for disasters, which strengthens our result.[4,6,8,12]

On the contrary our finding was greater than a study done with Yemen health professionals, which depicted that total cognition level was 32.0% which was inadequate in relation to disaster and emergency handling. The main reason that our paper result was higher might be because our study participants involved mainly health professionals working at emergency department/ED, unlike Yemen, since they included other department health professionals in addition to ED staff. It is assumed that health professionals working specific to ED are comparably knowledgeable regards to disaster due to the nature of their working environment as well as their level of training.[13]

On the other hand, this result showed an inadequate knowledge in relation to disaster readiness that was higher than in a study done at Johannesburg hospital ED staff (38.2%). The possible explanation for this might be due to 20% of respondents in the Johannesburg study had undergone training in the subject.[19]

The research finding of this paper showed that a good attitude of participants regarding accident and disaster handling preparedness was shown by 59 (57.8%) and a poor attitude was shown by 43 (42.2%). This shows that there is a relatively inadequate attitude regarding disaster handling preparedness. An appropriate attitude of emergency medical personnel was found to be due to training linked with preparedness. However 60% of respondents disagreed that disaster management and planning is for a few people in the hospital. Also, 56% of participants agreed that disaster simulation should be conducted frequently in the hospital. As well, 82% of them responded that disaster planning is necessary for all people in a health-care setting. This is supported by a study done in Saudi Arabia in which 57.9%, 73.4%, and 82.2% of respondents agreed on these subjects, respectively.[2,14]

The finding of this paper was that 11.8% of respondents were very familiar for emergency preparedness terms and activities. That is lower than a study in Saudi Arabia (37.2%). This might be due to the duration of clinical experience at Saudi Arabia where 76.2% had worked for 3–6 years, while in our study only 39% of all respondents had that level of experience.[2]

Finally the paper shows that in multivariate regression analysis, variables that were significantly associated with accident and disaster handling preparedness with both p value and odds ratio are training received in the subject, simulation received in the subject, and direct personal and professional experience of disaster. This strengthens earlier studies as training, education, simulation undoubtedly increase disaster preparedness of respondents at hospitals.[5,6,11]

Conclusion

As a conclusion, the study revealed that from the study respondents most (66.7%) were males. The mean age of the participants was 31.2 ± 5.8. This paper revealed that among respondents with regards to disaster and emergency handling preparedness at ED most (52.9%) have no understanding of disaster protocols. As a result, the majority (51%) of participants have inadequate knowledge with regard to accident and disaster handling preparedness.

The research finding of this paper was that most of participants have an adequate attitude (57.8%) with regards to accident and disaster handling preparedness. Also, 56% of participants agreed that disaster simulation should be conducted frequently in the hospital. As well, 82% of them respond as disaster planning is a necessity for all people in a health-care setting.

In addition, the finding of this paper was that only a few (11.8%) of respondents were very familiar with emergency preparedness terms and activities. Similarly, this paper tells us in multivariate logistic regression, variables that were significantly associated with the outcome variable with both p value and odds ratio are training received in the subject, simulation received, and direct personal and professional experience of disaster.

Recommendation

As per the finding of this research, even though the attitude level of respondents towards accident and disaster handling preparedness is better, respondents' knowledge and familiarity level towards disaster is below that expected. So, we recommend the regional health bureau of Amhara Region should give attention on staff capacity building especially for those nurses working in emergency departments, which mainly help to cope with increasing disasters.

The hospitals should facilitate training and education supported with simulation, mainly for frontline/emergency department nursing health professionals in collaboration with the regional health office, universities and other respected agencies. In a similar manner, emergency department staff are expected to give attention to disaster protocols and assume that any disaster and emergency events can occur in their working department at any time, so that they can adjustin terms of confidence, cognition and in equipment readiness. Finally, since there are few studies done on disaster handling preparedness in the Ethiopian context, we recommend for interested researchers to find out more in this area.

Limitation of the Study

The main limitation of the study was not taking a large sample size due to the study population.

Abbreviations

WHO, World Health Organization; ED, emergency department; WNA, Wisconsin Nurses Association; EPIQ, Emergency Preparedness Information Questionnaire.

Data Sharing Statement

Data are already available from the corresponding author and we can provide if need arises.

Ethical Approval and Consent

The proposed study was conducted after the approval of research and ethical review office of Wollo University. Formal written permission was obtained from the management of each regional hospital. All respondents were already informed of the purpose of the study, benefits and disadvantages for participating before commencing data collection. Also a written consent was first obtained from study respondents before conducting data collection. Confidentiality was assured by not indicating personal identifiers of respondents.

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Author Contributions

LT brought the original idea. LT, KD, MZ and AA drafted and revised the work. BD, LT, and KD supervised data collection. LT, MZ and AA analyzed and interpreted the finding. LT, KD, and BD wrote the manuscript. All authors made substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; took part in drafting the article or revising it critically for important intellectual content; agreed to submit to the current journal; gave final approval of the version to be published; and agree to be accountable for all aspects of the work.

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Disclosure

The authors declare that they don't have competing interests.

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