ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCES, DEPARTMENT OF EMERGENCY AND CRITICAL CARE MEDICINE

KNOWLEDGE ATTITUDE AND PRACTICE OF DISASTER PREPARDNESS AMONG HEALTH PROFESSIONALS WORKING IN THE ADULT EMERGENCY DEPARTMENT, AT TWO TEACHING HOSPITALS OF ADDIS ABABA, ETHIOPIA

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DECLARATION

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ACRONIUMS AND ABRIVATIONS

AaBET Hospital- Addis Ababa Burn Emergency and Trauma hospital

AAU-Addis Ababa University

AFRO –Africa Region Office

AOR-Adjusted Odd Ratio

AUSOM-Addis Ababa university school of medicine

COR-Crude Odd Ratio

CRED- Centre for Research on the Epidemiology of disasters

DRR-Disaster risk reduction

GDP-Gross domestic product

HP-Health Professional

ISDR-International Strategy for Disaster Reduction

KAP- Knowledge, Attitude, and Practice

PI-Principal Investigator

SD-Standard Deviation

SPHMMC- St. Paul's Hospital Millennium Medical College

SPSS-statistical package social science

TASH- Tikur Anbessa Specialized Hospital

UNDRR-United Nation Disaster Risk Reduction

USAID-United states agency for international development

WHO- World Health Organization

ABSTRACT

Background: Disasters lead to loss of property and disrupted infrastructure, and slow societal development worldwide. Every year, natural and man-made disasters destroy and displace lives, and the frequency of disasters strike has increased over the past 50 years. Despite that, for most national authorities developing culture of preparedness remained a challenge. And very little has so far been done in Ethiopia in the area of disaster preparedness.

Objective: The main aim of this study is to assess the knowledge, attitude, and practice of disaster preparedness among health professionals working in the emergency department, at two institutional teaching hospitals of Addis Ababa.

Methods: A descriptive cross-sectional study was conducted among ED health professionals at two institutional teaching hospitals of Addis Ababa. Data was collected using self-administered questioners. SPSS version 26 was used for data analysis and Bivariate and multivariate analysis was employed.

Result: A total of 197 health professionals included in the analysis. Majority of the participants were staff nurses 143 (72.6%) and the rest were physicians. About 58.6 % of participants were male and the mean age was 29.34 years. A significant proportion of the respondent (70.6%) didn't have disaster management training before and 48.7% of the respondent didn't know their hospital had disaster plan. They have overall low knowledge level (53.3%), positive attitude (91.9%) and inadequate practice (59.4%). Educational level, previously attended disaster training, working hospital and gender was strongly associated with knowledge of the participant at p-value < 0.05. Year of ED work experience, working hospital and previously attended disaster training, was strongly associated with practice of the participants at p- value of < 0.05.

Conclusion: Despite their positive attitude towards disaster and emergency preparedness, health professional's knowledge and practice level seems poor. Based on this finding, it is very essential that the health professionals receive the adequate knowledge and skill necessary to improve outcomes following a disaster.

Key words: Physician, nurses**,** disaster preparedness, Emergency department, Ethiopia

1. INTRODUCTION

1.1 Background

According to the United Nations Office for Disaster Risk Reduction, disaster is any event or situation including those related to biological hazard and pandemics that result in a serious disruption of the functioning of society exceeding the ability of it to respond using its own resources.(1)

Disaster and emergencies are fundamental reflection of normal life. They are the result of the way society structure themselves, socially and economically; the way societies and states interact and the way that relationships between the decision makers are sustained.(2) So far disasters lead to enormous loss of property and infrastructure worldwide. It seriously hampers societal development. The increase in the earth's population and its concentration to cities and coastal areas, have increased our vulnerability to disaster impact. Every year, different types of disaster occur in many areas of the Glop causing distraction of properties and loss of lives, and the frequency of disaster strike has increased over the past 50 years.(3)

According to the emergency event database records in the past twenty year alone about 7,348 disaster events happened worldwide causing approximately US$ 2.97 trillion in economic losses. A total of over 4 billion people affected and huge amount of lives lost.(4)

According to Centre for Research on the Epidemiology of Disasters in the past twenty years (2000–2019) Africa has been affected by dozens of various disaster events. The treat of disaster strike in Africa considerably varies by geographic area and season. Much of central and western Africa has been mostly affected by flood, while the horn of Africa and southern part most affected by drought. Since 2000, Kenya (60 events), Mozambique (55 events), and South Africa (54 events) experienced the highest number of disasters as they regularly face storms, droughts, and flooding.(5)

Coming to Ethiopia; Drought is the single most destructive climate related natural hazard in Ethiopia recurrently affecting almost all part of the country. Drought together with other climate

related disasters seriously compromise economic activity and aggravate existing social problem in the county through it's primarily impact on the agricultural productivity of the country. Estimates suggest that climate change may reduce Ethiopia's GDP up to 10 percent by 2045. According to USAID report; Ethiopia has a high incidence of climate-sensitive diseases. About 70% of Ethiopian populations live in malarial endemic area and up to 20% of death in under 5 children is resulted from malarial outbreak that occurs every 5 to 8 years.(6, 18)

Disaster demands a greater sense of urgency for us as a society to build resilience against it and to prepare well for its occurrence. Policies and actions, by corporations and governments alike, are urgently needed to support disaster risk reduction as well as disaster relief and to mitigate anthropogenic and natural hazards.(3)

Disaster preparedness which corresponds to the knowledge and capacities developed by governments, and response and recovery organizations, communities and people, to effectively anticipate, respond to and recover from the impacts of likely, imminent or current disasters.(7) It requires the contribution of many different areas ranging from training and logistics to health care and institutional capacity building.(7, 8)

At the time of disaster health workers are among the vital part of the society to respond for the damage to human lives. Especially the emergency department is the front line in facing catastrophes; like mass casualty. Nurses and physicians comprise the highest percentage of health and medical Professional workforce. Their integration at every phase of disaster and emergency management is most critical for the community and each individual client. They must understand the national disaster management cycle, different disaster planes and they have to build their confidence to face any disaster event on their respective work place.(9) Various international policies and frame works advocate disaster preparedness plan for hospitals as well.(10) Despite that, for most national authorities developing culture of preparedness remained a challenge. And maintenance of preparedness depends on the knowledge, practice level and capabilities of health care staffs. Different researches showed that most health care practitioners lacked the knowledge and management skills to deal with disasters(8, 9, 10).

It is with this all in mind, that the research was interested to explore mainly the Knowledge, attitude and practice level of health care workers on disaster preparedness and management, primarily in those large institutional teaching hospitals of Addis Ababa.

1.2 Statement of the Problem

With recent occurrence of flooding, conflicts in different area of the country together with the uncontrolled COVID 19 pandemics it has been remarked that disasters are contributing for the significantly rise of nationwide morbidity and mortality in Ethiopia. Researches and publication on disaster preparedness in Ethiopia is scarce and almost nonexistent. Little is still known about the extent of disaster preparedness among emergency department health professionals. And their understanding how preparedness contributes to reduction of risk, morbidity and mortality secondary to disasters is not clearly known. Emergency department plays the most important part in caring the acutely ill and injured patient all the time and during disaster events and mass casualty; their role will further be multiplied. Emergency department must adequately prepare to respond to any disaster situations that may occur in Ethiopia. Inadequate knowledge on the extent of the disaster preparedness in emergency department contributes to limitation for intervention. And there are no known previous studies on knowledge, attitude and practice of disaster preparedness measures among emergency department health professionals.

1.3 Significance of the Study

Determining the KAP of disaster preparedness among emergency department health professionals in Addis Ababa institutional teaching hospitals will permit hospitals and institutions to facilitate interventions to health professionals on identified weaknesses.

Furthermore, the findings of this study might raise further research questions and possibly be used by responsible stakeholders.

2. LITERATURE REVIEW

2.1 Knowledge about disaster preparedness

On studies conducted among the medical professionals from two selected medical college hospitals in Dhaka city of Bangladesh in 2018, the investigator assesses the knowledge and awareness on disaster management among medical Professionals. Up on their investigation they found that majority of the respondent had poor level of knowledge (only about 30.0% of the respondent had good level of knowledge).(11)

A similar study was conducted in Yemeni using self-reported online and paper surveys in 2018. On this study they detect that most of the respondents overall had insufficient knowledge regarding emergency and disaster preparedness (only 32.0% had good knowledge, 53.5% had fair and 14.5% exhibited poor knowledge). The educational level was a key factor in the knowledge gap amongst respondents regardless of their period of experience (postgraduate staffs were more knowledgeable than graduates, Physicians were better in knowledge than other subgroups of health specialties).(12)

Another cross-sectional study was conducted in emergency departments and health clinics in Selangor, one of the states in Malaysia in 2012. Knowledge, attitude and practice of emergency nurse and community health nurse towards disaster management were assessed. Up on their study they found that; both groups of nurses had similarly inadequate knowledge.(13)

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 ± 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.(9)

Another cross-sectional study conducted in the emergency department at Mansoura emergency hospital on June 04, 2019 with the same aim of assessing nurses' Knowledge and Practice Regarding Preparedness of Disaster Management. On this study about 72.7% of the participants

were having unsatisfactory level of knowledge. Significant positive correlations were found between nurses knowledge and attending previous courses related to disaster preparedness and work experience in the emergency department.(14)

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.(8)

Coming to Ethiopia; an institution based cross-sectional survey was conducted in Jimma Zone, Southwest Ethiopia The Knowledge, experiences and training needs of health professionals about disaster preparedness and response was assessed. Up on their investigation they found that a considerable number of professionals had limited understanding about the concept of disaster and response to certain specific disasters. On composite scale only 29.4% of the respondents believe as they have adequate knowledge about early warning information, preparedness and response to common disasters.(15)

Another hospital based cross-sectional study was conducted involving the healthcare workers at Tikur Anbessa specialized hospital on January, 2018. Knowledge, attitude and Practice of disaster preparedness among Tikur Anbessa Specialized Hospital health care workers were assessed on this study. The authors found that about half (50.8%) of the participant has good knowledge about disaster preparedness and its plan the rest 49.2% has poor knowledge.(10)

2.2 Attitude about disaster preparedness

On a study done in Yemeni in 2018 the investigators assess emergency and disaster management training; knowledge and attitude of Yemeni health professionals. Up on their study they concluded that the respondent's attitude toward disaster management was generally positive. About 84.9% of the respondents need teaching on disaster management. Above all they want to have an emergency plan and highly need to understand their clear role during disaster situation.

Another cross-sectional study conducted at tertiary health care hospital in central Riyadh, Kingdom of Saudi Arabia. On this study 98.4% of participants believed that training is necessary for all healthcare workers justifying that their overall attitude being majorly

positive.(9) Similarly on a study done in Saudi Arabia 252 nurses were examined regarding disaster management and majority of they were found to have positive attitude with overall 78.98% of the study participants having positive attitude towards the issue.(16)

A descriptive, cross-sectional study conducted in Rwanda with the aim of assessing knowledge, attitude and practice of disaster preparedness among Rwanda Red Cross employees. Up on their investigation they found that most of the participants have good level of attitude and 100% of respondents have willingness to provide first aid if disaster strikes.(8)

Similarly studies done in Ethiopia showed that health professionals working in different part of the country generally have positive attitude towards the issue of disaster, even though studies are scarce in the country. On studies done in Jimma Zone, Southwest Ethiopia overall the respondent's attitude towards disaster preparedness was found to be favorably positive. A vast majority (92.8%) reported that they need training on disaster preparedness, management and response.(15) Another Study conducted involving the healthcare workers at Tikur Anbessa specialized hospital showed that about 64.8% of respondents had favorable attitude.(10)

2.3 Practice about disaster preparedness

A study was done in Dhaka city of Bangladesh among the medical professionals from two selected medical college hospitals. They reported that most of the study participants have low level of professional experience (about 64.2% of the participant had less than 11 year of experience) and most of the respondents had not attended any training on disaster management.(11) 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.(12) In contrary to the above studies on a study done at Tertiary health care hospital in central Riyadh, Kingdom of Saudi Arabia on September 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.(9)

Another Comparative study between emergency nurses and community health nurses was conducted in Selangor, one of the states in Malaysia in 2012: with the aim of assessing their knowledge, attitude and practice level towards disaster management. They (emergency nurse and

community health nurse) differ in terms of practice; 50.6% of emergency nurse report adequate practice, while only 30.7% of the community nurses reported adequate practice towards the issue of disaster.(13)

A descriptive, cross-sectional study conducted in Rwanda and published on 2018 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.(8) Another study conducted in the emergency department at Mansoura emergency hospital in Egypt to assess nurses' Knowledge and Practice Regarding Preparedness of disaster management. The result of the study showed that most of the participants have satisfactory level of practice regarding the process of patient admission 100% the participant respond as they have satisfactorily sufficient practice. On the other hand, they have insufficient practice regarding triage care (only 36.4% of the participant report as they have satisfactory practice); utilizing personal protective equipment and infection control measures (all of the participant report as they have insufficient practice). A strong positive correlation was found between attending previous courses related to disaster preparedness & total practice level of the respondents.(14)

In Ethiopia; an institution based cross-sectional survey was conducted in Jimma Zone, Southwest Ethiopia. The investigator found that health professionals on the study area had limited opportunities for training, despite their felt needs and about 20.6% of the participant didn't participate in any form of training 2 years prior to the study.(15) On study conducted involving the healthcare workers at Tikur Anbessa specialized teaching hospital only 8.3% of the participant has good practice on disaster preparedness.(10)

3. OBJECTIVES

3.1. General Objective

- ✓ To assess knowledge, attitude, and practice of disaster preparedness among health professionals working in the emergency department, at two teaching hospitals of Addis Ababa.

3.2. Specific Objectives

- ✓ To assess knowledge of disaster preparedness among health professionals working in the emergency department, at two teaching hospitals of Addis Ababa.
- ✓ To assess attitude, of disaster preparedness among health professionals working in the emergency department, at two teaching hospitals of Addis Ababa.
- ✓ To assess practice of disaster preparedness among health professionals working in the emergency department, at two teaching hospitals of Addis Ababa.
- ✓ To determine the associated factors of knowledge, attitude, and practice of health professionals working in the emergency department, at two teaching hospitals of Addis Ababa.

4. METHODOLOGY

4.1 study design and period

A descriptive cross-sectional study was conducted to meet the study objectives of assessing the knowledge, attitude and practice of disaster preparedness among health professionals working in the emergency department, at two teaching hospitals of Addis Ababa. The study was conducted from March 2021 – August 2021.

4.2 Study area

Ethiopia is the tenth largest country in Africa, covering 1,104,300 square kilometers land area and is the major constituent of the landmass known as the Horn of Africa. Ethiopia is one of oldest African country. Based on the worldometer's elaboration of the latest united nation data Ethiopia is home to close to 116,839,161as of March 2021, which is equivalent to 1.47% of the total world population ranking no 12 by population count. Twenty one percent of the population is urban and the median age of its population is 19.5 year.(17) Agricultural sector contributes about 80% of employment and 90% of export and 43% of the Gross Domestic Product (GDP). Smallholder farmers account for more than 85% of the rural population that relies on agricultural production.(18)

Addis Ababa is the capital city of Ethiopia and a seat for the Africa Union. There are two large institutional teaching hospitals in Addis Ababa; Tikur Anbessa specialized teaching Hospital (TASH) and St. Paul's Hospital Millennium Medical College (SPHMMC)]. These two hospitals are the only institutional hospitals with independent emergency and critical care services.

Tikur Anbessa specialized teaching hospital (TASH) located in Addis Ababa, capital city of Ethiopia, is one of the biggest specialized hospitals in the country. During the Ethiopian millennium the country's 1st 20 bed adult emergency medicine service unit was opened in TASH on October 7, 2009 which was transformed in to an independent emergency department on October 2010 following the launch of academic program. On the same year the three year graduate residency and the two year emergency medicine critical care nursing were officially started. And the department graduated the 1st four emergency medicine specialist on October

2013. Currently the ED is giving service as independent department. The ED is staffed with residents, nurses, senior emergency physicians and guest instructors.(19)

St. Paul's Hospital Millennium Medical College (SPHMMC)] is the other largest institutional specialized teaching hospital in Ethiopia. It was established in 1968 by the late Emperor Haile Selassie in collaboration with the German Evangelical Church, as a source of medical care for underserved populations. And the medical school was opened in 2007. Currently it has over 1300 clinical and non-clinical staff in over 13 departments and is giving service for approximately 200,000 patients annually. The history of emergency and critical care training for emergency physician is not more than 5 years in SPHMMC.(20)

There is also Addis Ababa Burn Emergency and Trauma (AaBET Hospital), a major trauma center in Addis Ababa, Ethiopia. It was established in 2015 as part of St. Paul millennium medical college and it currently provides health care service in specialties namely; orthopedics, neurosurgery, plastic and reconstructive surgery and emergency and critical care. AaBET hospital has approximately 20 - 30,000 annual emergency visits. And it is recognized as one of the largest government based trauma and emergency center in the country.(20)

4.3 Sampling population

All health professionals who are currently working in the emergency department of the two teaching hospitals of Addis Ababa.

4.4 Study population

All nurses, residents and emergency physicians, who are currently working in the emergency departments of these two institutional teaching hospitals of Addis Ababa.

4.5 Eligibility criteria

4.5.1 Inclusion criteria

All nurses, residents and emergency physicians who are currently working in the emergency department, at the two teaching hospitals were included.

4.5.2 Exclusion criteria

Nurses, residents and emergency physicians who left the emergency department at the time of data collection and who are not willing to participate were excluded.

Health professionals with ED work experience of less than one year were excluded since the study mainly assesses the professional's level of practice at least in the past one year. Attaching residents and other contractual workers were also excluded since their ED work experience will be less than one year.

4.6. Sample size determination and procedure

4.6.1. Sample size determination

Convenient sampling technique was employed to include all nurses, residents, and emergency physicians working in the emergency department of the two institutional teaching hospitals at the time of data collection.

4.6.2. Sampling procedure

There are two large institutional teaching hospitals in Addis Ababa; Tikur Anbessa specialized teaching Hospital and St. Paul's Hospital Millennium Medical College (SPHMMC)].This study will be conducted in these two institutional teaching hospitals of Addis Ababa. Since our study is about to include emergency and critical care residents, we select these two large institutional teaching hospitals. They are the only institutions training emergency physicians in Addis Ababa and are the only hospitals which give emergency and critical care service as independent department. Addis Ababa Burn Emergency and Trauma (AaBET Hospital) was also included in our study as it is under SPHMMC, and its emergency and critical care departments run by same emergency physicians and emergency and critical care residents with that of SPHMMC. The emergency department is specifically chosen based on its substantial role during emergency/disaster, as it deals with the situation being front line. And only physicians and nurses were included; it's based on their upfront role in responding to an emergency.

Table 1 List of hospitals that included in the study with number of health professionals

Name of hospital	Number of ED health professionals in the respective hospital emergency department		
	Staff Nurses	Emergency Resident	Emergency Physicians
TASH	58	18	12
SPHMMC	90	34	16
AaBET Hospital	92	Same residents to SPHMMC	Same emergency physicians to SPHMMC
Total	203	52	28
Total number of nurses and physicians	320		

Among all the health professionals listed above all nurses, residents and emergency physicians who were available during the two-month period of data collection were included in the study.

4.6.3 Data collection tools

A standard structured questionnaire was prepared after an in-depth literature review of similar studies and slightly modifies it to the study area. To the knowledge of the principal investigator, the tool was prepared in the English language.

The instrument comprises 4 sections. These are section one; to assess socio-demographic data of respondents, section two; to assess participants' knowledge about disaster and emergency preparedness, section three; focused on participants' attitudes towards disaster /emergency preparedness, section four; focused on the assessment of participants' practices towards disaster/emergency preparedness.

4.7. Pre-test

Pretest in 10% of the sample health professionals was done to assess the content and approach of questionnaires before the actual study. It was done in a different hospital (Yekatit 12 Hospital) and which was not included in the actual study.

4.8. Data collection procedures

Lists of emergency department health professionals were collected from the personnel office of the hospitals and all nurses, residents and emergency physicians working at the emergency

department of the respective hospital were selected and each participant was informed about the purpose of the study and how to answer and what is expected from them was explained on the questionnaire. The self administered questionnaire was distributed to the study participant and then data collectors who were assigned by the principal investigator after appropriate training collect the self-administered questionnaires. Finally, the data was checked by the data collectors for completeness. The principal investigator with the supervisor closely supervises the overall activity during the data collection period.

4.9 Data quality control

To assure the quality of data; questionnaires was pretested prior to the actual study to determine the appropriateness of questionnaires. Based on the pretest result unclear and vague issues on the questionnaires was corrected. At the time of data collection, all data collectors collect the data and recheck it for completeness of the questionnaire then the principal investigator and supervisors made spot-checking and reviewing the completed questionnaires for completeness and consistency. Data was entered to Epi info and SPSS 26 on daily basis by principal investigator after checking for errors and completeness before analysis.

4.10 Data processing and Analysis

Variables were computed and recoded through the transform function of SPSS. Descriptive analysis was done to compute proportions, mean, median, and standard deviations. Simple frequency, tables, and figures were used to present the processed information.

Knowledge of disaster/emergency preparedness was computed from summing up all relevant 13 multiple choice items. A correct and knowledgeable response was scored as “1” and incorrect option response was scored as “0” according to their response. Options were then summed up out of 14 and the mean score was calculated. Finally, those respondents who scored above-mean were labeled as having good knowledge of disaster/emergency preparedness while the lower mean score represents poor knowledge towards disaster/emergency preparedness.

Attitude towards disaster/emergency preparedness was computed by summing up all relevant 17 attitude statements. A score of 1-5 (from very much disagree to very much agree) was given for each positive attitude statement and 5-1 (from very much disagree to very much agree) for each negative attitude statement according to their response and items were then summed up out of

85. Then score above neutral meaning summed up score greater than 51 taken as positive attitude and score 51 and below taken as negative attitude.

The practice towards disaster/emergency preparedness was computed from summing up all relevant 10 multiple-choice items a correct option response was scored as "1" and incorrect option response was scored as "0" and some questions like frequency of disaster training and drill score based on frequency (more frequent activity more score) then summed up out of 18. Then the mean score was calculated. Finally, those respondents who scored above or equal to the mean score were labeled as having adequate practice towards disaster/emergency preparedness while the lower mean score represents inadequate practice towards disaster/emergency preparedness.

A logistic regression was performed to ascertain the effect of the independent variable on the knowledge, attitude and practice of HP. The logistic regression model was statistically significant, omnibus test p-value = .000. The model explained 42.5% (Nagelkerke R squire) of the variance in knowledge, attitude and practice and correctly classifies 70% of the case. All variables with $P < 0.25$ at a 95% confidence level during the bivariate analysis were included in the multivariate analysis to control all possible confounders.

4.11. Study Variables

4.11.1 Independent Variables

- ✓ Organizational factors: disaster management plan, drills/simulation, training
- ✓ Socio-demographic data (gender, age, educational status, year of experience, profession,).

4.11.2 Dependent Variables (outcome)

- ✓ Knowledge of disaster and emergency preparedness
- ✓ Attitude on disaster and emergency preparedness
- ✓ practice on disaster and emergency preparedness

4.12 operational definition

Disaster preparedness plan- an agreed set of arrangements for preparing for, responding to, and recovering from emergencies, and involves the description of responsibilities, management

structures, strategies, and resource and information management with a view of protecting life, property and the environment.

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.

Negative attitude-represents those respondents who have scored less than or equal to the neutral score (sum up score less than or equal to 51) of the attitude statements.

Positive attitude- indicates respondents who have scored greater than the neutral score (sum up score greater than 51) for attitude statements.

Adequate practice- refers to all emergency health professionals, who score more than or equal to the mean score for practice questions.

Inadequate practice- refers to all emergency room health professionals, who score less than the mean score for practice questions.

Drills- means a coordinated, supervised activity usually employed to test specific functions within a single entity.

Emergency exercises- are activities mainly done with the aim of helping health personnel to familiarize themselves with current disaster plan and procedures.

4.13 Ethical consideration

Departmental research review board has evaluated the research proposal and IRB approval letter was obtained from the department of emergency and critical care medicine. After permission is granted, data collection process was started. Confidentiality and privacy was maintained by interviewing and recording data alone and not exposing for and talking about it to another person.

5. RESULT

5.1. Socio-demographic characteristics

A total of 230 health professionals participated in the study out of this 197 participants completely filled the questionnaire and returned it to the data collector timely making a response rate of 83%. Reasons for non-participation includes: staff on leave at the time of data collection, personal reasons, unable to return the questionnaire, and staff being busy during data collection. Majorities (72.6%) of the participants were staff nurses and the rest of the participants were physicians' (emergency physicians and residents).

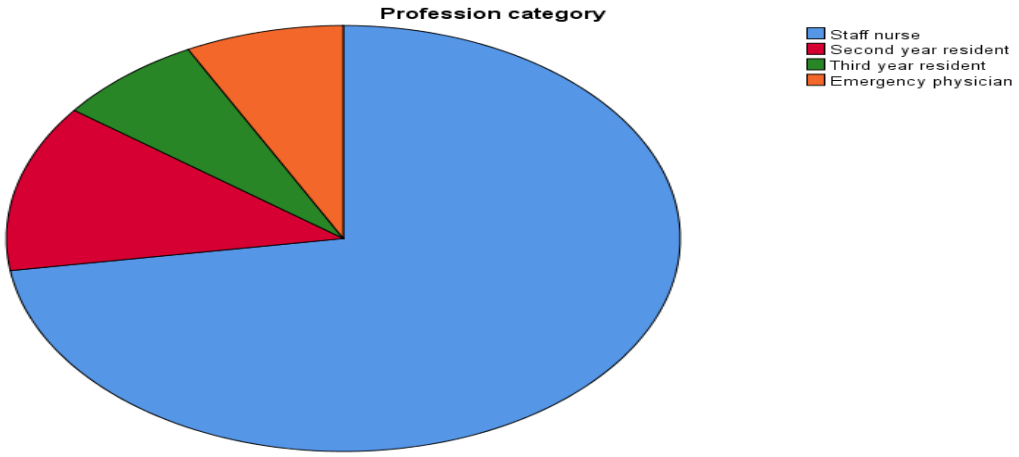

Figure 1 Participants professional category

About 58.7% of the respondents were male and more than half of the participants belong to 25-29 years of age and majority of them have emergency department work experience of 1-2 years (28.9%), only 19.3% of the participant has high ED work experience (5-10 years). about 70.6% of the participant has no disaster management training on their ED stay.

Table 2 Socio-demographic characteristics of participants (n = 197)

Socio-demographic variables		*Male*	*Female*	*Total (n/%)*	*Mean ± S D*
Age category	20 – 24	1	9	10 (5.1)	29.34±3.895
	25 – 29	65	34	99 (50.3)	
	30 – 34	36	27	63 (32)	
	35 – 39	14	9	23 (11.7)	
	≥ 45	0	2	2 (1.0)	
Marital Status	Married	52	40	92 (46.7)	
	Single	64	41	105 (53.3)	
Having children	Yes	42	28	70 (35.5)	
	No	74	53	127 (64.5)	
Working hospital	TASH	41	28	69 (35.0)	
	SPHMMC	51	24	75 (38.1)	
	AaBET Hospital	24	29	53 (26.9)	
Level of education	Specialty certificate	8	7	15 (7.6)	
	Third year resident	12	2	14 (7.1)	
	Second year resident	22	3	25 (12.7)	
	Master	6	10	16 (8.1)	
	Degree	65	55	120 (60.9)	
	Diploma	3	4	7 (3.6)	
ED work experience	1-2 years	38	19	57 (28.9)	3.39 ± 1.140
	2-3 years	34	16	50 (25.4)	
	3-5 years	26	23	49 (24.9)	
	5-10 years	16	22	38 (19.3)	
	>10years	2	1	3 (1.5)	
Disaster training	Yes	37	21	58 (29.4)	
	No	79	60	139 (70.6)	

MGT management, *SD* standard deviation,

5.2. Level of knowledge towards disaster, and emergency preparedness

Even if 29.4% and 50.3% of participants self-reported as having very good and good knowledge respectively; this study showed that more than half of the respondents 105 (53.3%) had poor overall knowledge towards disaster/emergency preparedness. Overall 33.3%, 52% and 56.6% of health professionals have good knowledge in TASH, SPHMMC and AaBET hospital respectively.

Majority of the participants (78.2%) were able to correctly answer the meaning of disaster and 67% of the participants correctly answer the meaning of disaster preparedness. And most of them (91.9%) respond as first aid should be given immediately during disaster and bystanders including Community should give first aid during disaster (72.6%).

Table 3 Knowledge of definition of key disaster terms and sine approach

		Yes/correct answer (n = 197)	*Percentage*
1.	Meaning of disaster	154	78.2
2.	Meaning of disaster preparedness	132	67.0
3.	First aid should be given immediately during disaster	181	91.9
4.	Bystanders including Community should give first aid during disaster	143	72.6

However, about half of the respondents (48.7%) didn't know the availability of disaster plan in their hospital and from those who knew the availability of disaster plans; only 26.4% of respondents knew where to find it. The bulk of respondents (55.3%) have seen or heard disaster drills occurring in the ED in the past year. But when asked if they knew if an alert status is being activated in the hospital almost half of the respondents (45.7%) is unaware of it and 57.9% of the participants didn't know the specific place for evacuation of patients during disaster situation.

Table 4 Knowledge of ED health professional regarding disaster preparedness and planning (n = 197)

		Yes/ knowledgeable	*Percentage*
1.	The hospital has a disaster plan	101	51.3
2.	Knew where to find a copy of the plan in the department	52	26.4
3.	Know what a hospital disaster plan should contain	55	27.9
4.	Know when an alert status for an emergency management plan is activated	107	54.3
5.	know the specific place for evacuation for patients during disastrous event	83	42.1
6.	Know what drills/disaster simulation are	110	55.8
7.	Have seen emergency/disaster drill occurring in the emergency department	109	55.3

Previously attended disaster training was found to be a significant factors for good knowledge (p=0.000). Level of education (p=0.030) and working hospital (p=0.021) were also found to be significant factors affecting knowledge towards disaster and emergency preparedness. Health professionals working in AaBET hospital and SPHMMC has 2.609 times and 2.167 times respectively more knowledge than health professionals working in TASH.

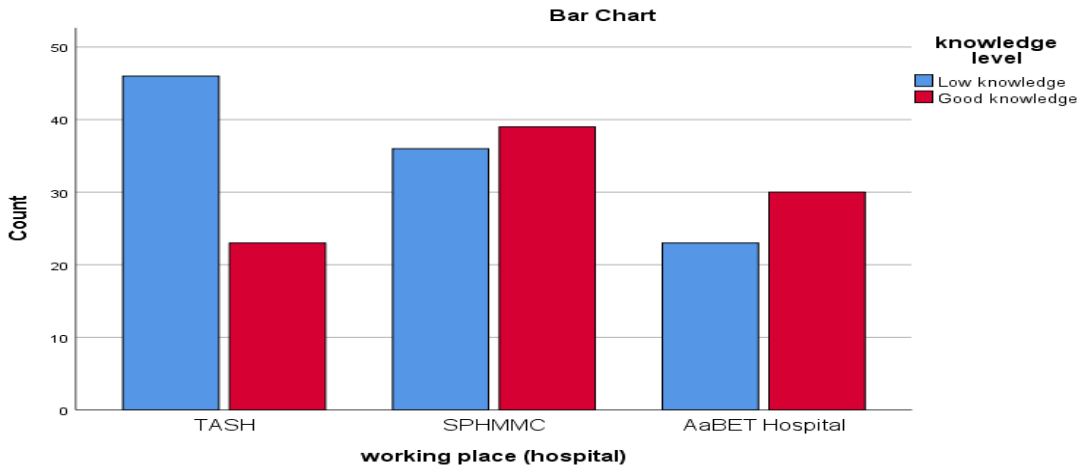

Figure 2 Level of knowledge among participants with in their respective working hospital

Table 5 Level of education versus knowledge level regarding disaster preparedness among study participant (n = 197)

		level of knowledge		
		Low knowledge (n/%)	*Good knowledge (n/%)*	*p-value*
Level of education	Specialty certificate	4 (26.7)	11 (73.3)	0.030
	Master	4 (25.0)	12 (75.0)	
	Third year resident	6 (42.9)	8 (57.1)	
	Second year resident	13 (52.0)	12 (48.0)	
	Degree	74 (61.7)	46 (38.3)	
	Diploma	4 (57.1)	3 (42.9)	

Gender is another variable that has strong association with knowledge level of the participant (p=0.024) (males have 1.952 times better knowledge than females). Similarly participants with adequate practice (p=0.000) are more likely to have good knowledge.

Out of variables that entered to multiple logistic regression; previously attended disaster training, gender, working place, and level of practice had significantly associated with the level of knowledge towards disaster/emergency preparedness at p-value< 0.05. (Table 2)

Table 6 Bivariate and multiple logistic regression analysis showing predictors of knowledge levels (good vs. low) (n = 197)

Independent Variable	*Good knowledge (NO/%)*	*Bivariate*		*Multivariate*	
		COR(95%CI)	*p-value*	*AOR(95%CI)*	*p- value*
Gender			.024		.014
Male	62 (53.4)	1.952 (1.093-3.486)		2.777 (1.230-6.270)	
Female	30 (37.0)	1		1	
Working hospital			.021		.035
TASH	23 (33.3)	0.5		1	
SPHMMC	39 (52.0)	2.167 (1.103- 4.256)		2.814 (1.085-7.294)	
AaBET	30 (56.6)	2.609 (1.246-5.460)		3.634 (1.25-10.566)	
Level of education			.030		.152
Specialty certificate	11 (73.3)	3.667 (.557-24.132)		4.595 (.379-55.698)	
Third year resident	8 (57.1)	1.778 (.284-11.120)		2.445 (.210-28.401)	
Second year resident	12 (48.0)	1.231 (.227-6.671)		1.531 (.164-14.294)	
Master	12 (75.0)	4.000 (.612-26.123)		8.364 (.679-103.012)	
Degree	46 (38.3)	.829 (.177-3.872)		1.188 (.168-8.419)	
Diploma	3 (42.9)	1		1	
Disaster training			.000		.010
Yes	45 (77.6)	6.776 (3.331-13.784)		3.210 (1.324-7.782)	
No	47 (33.8)	1		1	
Practice level			.000		.002
Adequate	58 (72.5)	6.436 (3.419-12.115)		3.506 (1.561-7.872)	
Inadequate	34 (29.1)	1		1	

AOR adjusted Odd Ratio, *CI* confidence Interval, *COR* crude Odd Ratio, *MGT* management

5.3. Attitude towards disaster, and emergency preparedness

In this study most of the participants believe that the emergency department need to be adequately prepared to manage any type of disaster event (38.6% very much agree, 36.0% agree), that hospitals should asses the importance of vulnerability (37.6% very much agree, 44.2% agree) and most of them need to know about disaster plans (51.3% very much agree, 35.0% agree).

Majority of the participants felt that training is necessary for all emergency department health professionals on how to manage patients during disaster event (54.8% very much agree, 29.9% agree) and more than 85% of physicians (emergency physicians and emergency residents) and 74.2% of staff nurses needs disaster management training to be part of education in Addis Ababa teaching hospitals.

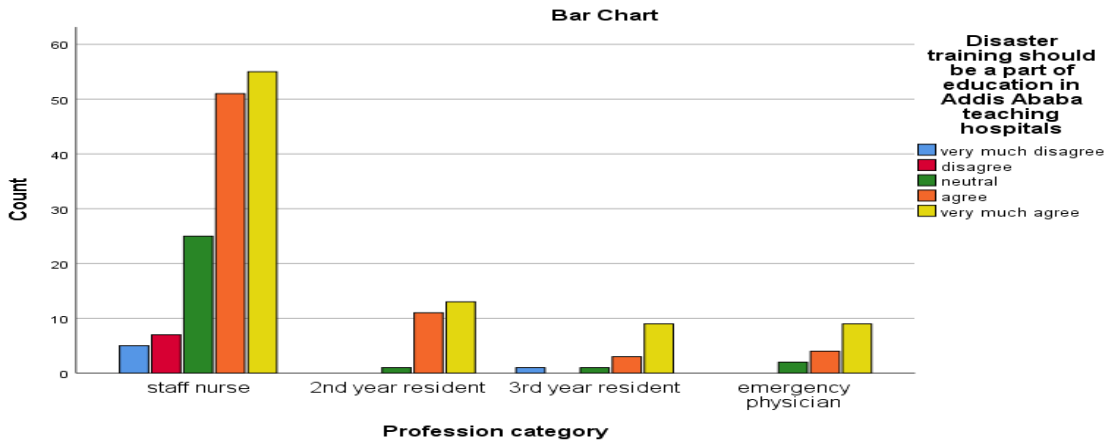

Figure 3 Professionals category versus their need disaster training to be part of education in Addis Ababa teaching hospital

Surprisingly only two thirds (62.4%) of the participants believes that disasters are likely to happen in our hospital. About 24.9% of the respondents do not think disaster can happen in our hospital and the rest (12.7%) were neutral about it.

Table 7 Attitudes of participants

Independent variable	*Very much disagree*	*Disagree*	*Neutral*	*Agree*	*Very much agree*
No %					
1. The emergency department should be adequately prepared should a disaster occur	15 (7.6)	18 (9.1)	17 (8.6)	71 (36)	76 (38.6)
2. Drills should be conducted in the emergency department	12 (6.1)	17 (8.6)	14 (7.1)	94 (47.7)	60 (30.5)
3. Training is necessary for all health Professional	12 (6.1)	9 (4.6)	9 (4.6)	59 (29.9)	108 (54.8)
4. Disaster simulations should occur frequently in the ED	4 (2.0)	22 (11.2)	25 (12.7)	92 (46.7)	54 (27.4)
5. The hospital should have disaster plans	8 (4.1)	11 (5.6)	15 (7.6)	74 (37.6)	89 (45.2)
6. Hospital should asses the importance of vulnerability	5 (2.5)	10 (5.1)	21 (10.7)	87 (44.2)	74 (37.6)
7. The hospital is unlikely to be affected by disasters	68 (34.5)	55 (27.9)	25 (12.7)	42 (21.3)	7 (3.6)
8. Disaster planning is only for the hospital's administrative	72 (36.5)	66 (33.5)	19 (9.6)	29 (14.7)	11 (5.6)
9. Disaster management is for nurses and doctors only	77 (39.1)	81 (41.1)	7 (3.6)	23 (11.7)	9 (4.6)
10. Disasters are unlikely to happen in our hospital	70 (35.5)	53 (26.9)	21 (10.7)	45 (22.8)	8 (4.1)
11. I need to know about disasters and disaster plans	5 (2.5)	5 (2.5)	17 (8.6)	69 (35.0)	101 (51.3)
12. Disaster training should be a part of education in Addis Ababa teaching hospitals	6 (3.0)	7 (3.6)	29 (14.7)	69 (35.0)	86 (43.7)

About 73.1% of the respondents (15.2% very much agrees and 57.9% agree) would be willing to report for duty when the hospital encounters infectious disease outbreak as a disaster. Among this respondent, 3rd year resident had the highest proportion (92.6%) followed by emergency physicians (86.6%) who would be willing to do so.

Generally this study showed that overall 91.9% of the participants had positive attitude towards disaster/emergency preparedness while only 8.1% of respondents had a negative attitude.

Table 8 Willingness to report in the events of infectious disease outbreak

Independent variable	*Very much disagree*	*Disagree*	*Neutral*	*Agree*	*Very much agree*
1. I am willing to work even if I am at risk of contracting the disease	10 (5.1)	13 (6.6)	30 (15.2)	114 (57.9)	30 (15.2)
2. I am confident that the hospital will offer me adequate protective measures	27 (13.7)	59 (29.9)	34 (17.3)	65 (33.0)	12 (6.1)
3. I am afraid that if I do not come to work, I will lose my job	19 (9.6)	56 (28.4)	54 (27.4)	48 (24.4)	20 (10.2)
4. I will not report for duty because I am afraid of falling ill	38 (19.3)	98 (49.7)	32 (16.2)	21 (10.7)	8 (4.1)
5. I will not report for duty because I am afraid of spreading the disease to my family and friends	41 (20.8)	92 (46.7)	34 (17.3)	21 (10.7)	9 (4.6)

In this study males had 2.582 times more positive attitude compared to females (p=0.078) and health professionals with good knowledge has 2.839 times more favorably positive attitude than health professionals with poor knowledge (p=0.080). Similarly being single is also associated with positive attitude (p=0.193)

Table 9 Bivariate and multiple logistic regression analysis showing predictors of attitudes of participants (positive vs. negative) (n= 197)

Independent Variable	*Positive attitude (No/%)*	*Bivariate*		*Multivariate*	
		COR (95% CI)	*p-value*	*AOR (95% CI)*	*P-value*
Gender			0.078		0.163
Male	110 (94.8)	2.582 (.899-7.417)		2.156 (.732-6.351)	
Female	71 (87.7)	1		1	
Marital Status			0.193		0.177
Single	99 (94.3)	2.012 (.702-5.771)		2.097 (.716-6.139)	
Married	82 (89.1)	1		1	
Knowledge level			0.080		0.107
Good	88 (95.7)	2.839 (.882-9.133)		2.671 (.809-8.825)	
Low	93 (88.6)	1		1	

AOR adjusted Odd Ratio, *CI* confidence Interval, *COR* crude Odd Ratio

5.4. Level of practice towards disaster, and emergency preparedness

In this study more than half of the participants (61.4%) have faced a real disaster in their emergency stay; despite that of the high prevalence of disaster event, the health professionals didn't get the expected adequate disaster training and simulation in their emergency department. Only one third (31.5%) of the health professionals participated in an emergency drill in the past one year, the rest two third (68.5%) of the participants have not participated in any form of emergency drill. Among the health professionals who had participated in disaster drill most (24.9%) drilled once and 6.6% of them drilled two times in the past one year. Similarly majority (81.7%) 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 most (13.6 %) of them took training only once in their ED stays.

Table 10 Frequency of participation in disaster management training and drill in the past 1 year with in their working hospital among ED health professionals (n = 197)

		TASH (n/%)	*SPHMMC (n/%)*	*AaBET (n/%)*
Practiced disaster/emergency drill in the past one year	Yes	4 (5.8%)	30 (40.0%)	28 (52.8%)
	No	65 (94.2%)	45 (60.0%)	25 (47.2%)
Frequency of disaster drill	Drilled two times	0 (0.0)	8 (10.7)	5 (9.4)
	Drilled once	4 (5.8)	22 (29.3)	23 (43.4)
	Not drilled	65 (94.2)	45 (60)	25 (47.2)
Participated in an ongoing disaster MGT training	Yes	4 (5.8)	19 (25.3)	13 (24.5)
	No	65 (94.2)	56 (74.7)	40 (75.5)
Frequency of disaster MGT training in the past one year	Trained three times	0 (0.0)	1 (1.3)	0 (0.0)
	Trained two times	1 (1.4)	5 (6.7)	2 (3.8)
	Trained once	3 (4.3)	13 (17.3)	11 (20.8)
	Not trained	65 (94.2)	56 (74.7)	40 (75.5)

Only 10.7% of the participants knew as the disaster plan is being periodically updated by authority among these respondent most of them (7.1%) mentioned as the disaster plan is being updated annually and the rest (89.3%) of the participants didn't know whether the disaster plan is being updated or not. And only (37.6%) have an experience in working as disaster management team member.

This study showed that overall 59.4% of the participants had inadequate practice towards disaster/emergency preparedness while only 40.6% of respondents had adequate practice. Overall 23.2%, 44%, and 58.5% of health professionals have adequate practice in TASH, SPHMMC and AaBET hospital respectively.

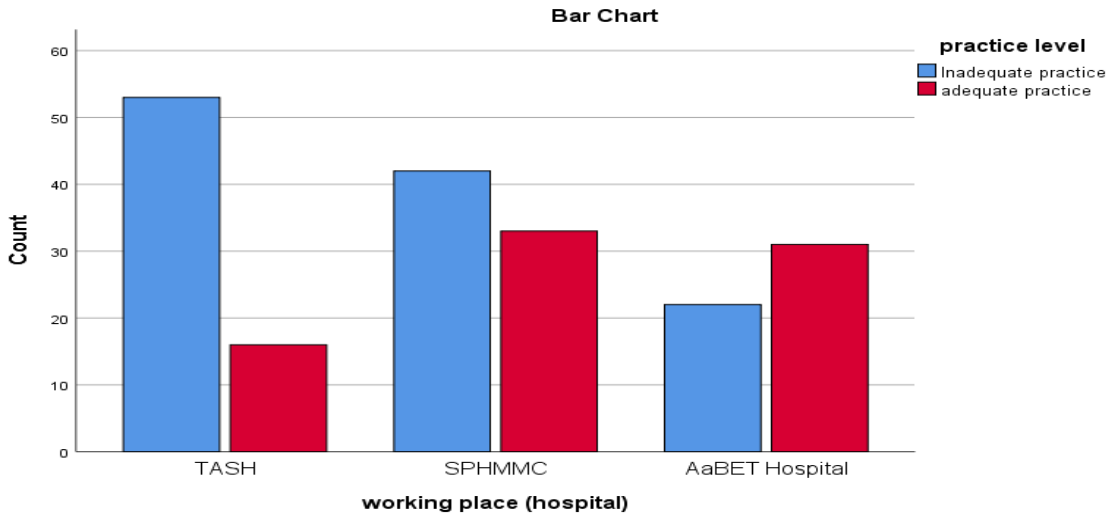

Figure 4 Practice levels of participants versus their working hospital

Table 11 Practices of participants towards disaster Preparedness and Plans of the hospital

	Yes /practiced	*Percentage*
1. Practiced or drilled on what to do in an emergency/ disaster situation in the past 1 year	62	31.5
2. Participated in an ongoing disaster MGT training in the hospital	36	18.3
3. Seen or heard the disaster plan being periodically updated by authority	21	10.7
4. Faced/respond to a real disaster in the emergency department (by their ED stay)	121	61.4
5. Have been a worker for disaster management team	74	37.6
6. Taken first aid training such as; basic life support in the past one year	127	64.5
7. Believed as having sufficient practice to manage emergency/disaster	90	45.7

MGT management, *ED* emergency department

Previously attended disaster training was found to be a significant factors for adequate practice of the participants (p=0.000). Working experience (p=0.019) and working hospital (p=0.000) were also found to be major predictor of practice level towards disaster and emergency

preparedness. Health professionals working in AaBET hospital and SPHMMC have 4.668 times and 2.603 times respectively more practice score than health professionals working in TASH. Level of knowledge is also strongly associated with practice of participants (p=0.000)

Out of variables that entered to multiple logistic regression; previously attended disaster training, working place, and level of knowledge had significantly associated with the level of practice towards disaster/emergency preparedness at p-value< 0.05. (table5.7)

Table 12 Bivariate and multiple logistic regression analysis showing predictors of practice of participants (adequate vs. inadequate) (n= 197)

Independent Variable	*Adequate practice (No/%)*	*Bivariate*		*Multivariate*	
		COR (95% CI)	*p-value*	*AOR (95% CI)*	*P-value*
Working hospital			.000		.000
TASH	16 (23.2)	1		1	
SPHMMC	33 (44.0)	2.603 (1.265-5.355)		5.099 (1.708-15.228)	
AaBET	31 (58.5)	4.668 (2.136-10200)		8.460 (2.805-25.515)	
Profession			.068		.168
Staff nurse	55 (38.5)	1		1	
Second year resident	7 (28.0)	.622 (.244-1.586)		.830 (.072-9.618)	
Third year resident	9 (64.3)	2.880 (.917-9.041)		9.592 (.759-121.215)	
Emergency physician	9 (60.0)	2.400 (.810-7.114)		1.907 (.164-22.222)	
Experience in ED			.019		.333
1-2 years	13 (22.8)	1		1	
2-3 years	21 (42.0)	2.451 (1.063-5.652)		1.947 (.620-6.114)	
3-5 years	24 (49.0)	3.249 (1.410-7.486)		2.919 (.851-10.015)	
5-10 years	21 (55.3)	4.18 (1.717-10.179)		3.799 (.973-14.828)	
>10years	1 (33.3)	1.692 (.142-20.186)		.891 (.023-35.032)	
Disaster training			.000		.000
Yes	44 (75.9)	8.992 (4.419-18.310)		6.281 (2.442-16.154)	
No	36 (25.9)	1		1	
Knowledge			.000		.003
Good	58 (63.0)	6.436 (3.419-12.115)		3.347 (1.517-7.385)	
Low	22 (21.0)	1		1	

AOR adjusted Odd Ratio, *CI* confidence Interval, *COR* crude Odd Ratio, *MGT* management

6. DISCUSSION

As disasters are a frequent occurrence, there is a global need for all healthcare workers to be aware and prepared in advance for their management. The emergency department health professionals are among the front liners at the time of disaster. As so in order to contribute to save lives and promote health under such difficult situations, they need to have the right competencies, must understand the national disaster management cycle, different disaster planes and they have to build their confidence to face any disaster event on their respective work place.

The results of this study describe existing baseline levels of knowledge, attitudes and practices of health professionals working in the emergency department of two teaching hospitals of Addis Ababa.

6.1. Knowledge about disaster preparedness

The findings indicate that there is a low overall knowledge of the emergency department health professionals on disaster preparedness; only 46.8% of participants were having good overall knowledge. The lowest knowledge score was obtained in TASH (33.3%) while SPHMMC and AaBET hospital scores 52% and 56.6% respectively. This finding is directly related with the provision of disaster related training and occurrences of disaster drill in the emergence department. Almost all of the health professionals working in TASH didn't practiced disaster drill and relatively lower percentage of health professionals in TASH have previous disaster management training. This finding clearly shows the urgent need of the disaster committee to work on disaster related training and conducting drill to improve knowledge level of the emergency department health professionals and TASH needing more attention.

There are many studies conducted worldwide with similar result of low overall knowledge of health professionals regarding disaster preparedness. Like in study done in TASH in 2018 on all health professionals excluding the emergency department, the participants were having poor over all knowledge, only 50.8% of them were having good overall knowledge.(10) But on this study the overall knowledge of the participants was slightly higher than what is found in our study and it can be explained by the fact that the emergency department is relatively young and with most of the staff having work experience of less than 2 year. With increased work experience in the hospital the chance of involving in disaster related exercises and training will be high which will

positively affect the knowledge level. In addition to this, physician participants (general practitioner, residents, and specialists) were accounting for the higher proportion unlike our study where majority of participants were staff nurses, and physicians are expected to have better knowledge than nurses. Our finding is further supported by studies done in UP-Philippine where the author conclude that there was low level of knowledge of the DEM staff on disaster planning and emergency preparedness.(21) In contrary to our finding on studies done at tertiary hospital in central Riyadh, kingdom of Saudi Arabia in 2018 the level of knowledge of the emergency department physician and nurses was found to be satisfactory scoring mean of 6.2 out of 8. On this study most of the participants were having big work experience (more than 5 years) in the emergency department and training was also being given frequently for their emergency department staffs.(9)

In the present study majority of the participants (78.2%) were able to correctly answer the meaning of disaster and most (67%) of the participants correctly answer the meaning of disaster preparedness. However, the disaster plan was not seen by most of its stuff members, about 2/3 of the participants didn't see the disaster plan and half of the participant didn't even know the presence of the disaster plan in the department. This might be due to lack of appropriate guidance and training of staff specifically concerning the occurrence of disaster. Similarly on studies done in UP-Philippine most of the staff fairly answer the definition of disaster and disaster preparedness but only few had seen the disaster plan.(21)

This study also reveals that most of the staff members didn't know the specific place for evacuation of patients during disastrous event (57.9% didn't know it). This finding is in parallel with studies done in Addis Ababa health bureau hospitals in 2020 where about half of the participant didn't have any clue to the place for evacuation of patients.(22) In contrary to this in studies done in UP-Philippine many participants knew where to evacuate the patient and the staff because the evacuation plan was posted along the hallway of the emergency department.(21)

In our study previously attended disaster training was found to be a significant factor for good knowledge. There are studies supporting our 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.(13)

Level of education is the other variable which has a strong association with the level of knowledge of participants. Specialists, emergency residents and master holder participants were having better knowledge level than the other subgroup of health professionals. This finding goes in line with studies done in Yemeni, where the educational level was a key factor in the level of knowledge amongst respondents regardless of their period of experience (postgraduate staffs were more knowledgeable than graduates, Physicians were better in knowledge than other subgroups of health specialties).(12) However unlike our study in studies done in Saudi Arabia in 2018 emergency department work experience was the associated factor for high level of knowledge of health professionals rather than disaster management training and educational level.(9) but Saudi Arabia health professionals were involve in frequent disaster training in addition to their big work experience and there high level of knowledge might not be explained only with their work experience.

In our study gender of participants was also found to positively affect the level of knowledge. This is because of most of the physician participants were male and among the participants involving in disaster training male were accounting higher proportion.

6.2. Attitude about disaster preparedness

The present study found out that the emergency health professionals have excellent attitude towards disaster/emergency preparedness. About 91.9% of participants have positive overall attitude. The overall attitude was comparable among the entire three included hospitals emergency department. Health professional working in TASH scores overall attitude of 91.3%, SPHMMC 93.3% and AaBET hospital scores 90.6%.

In this study about three fourth of the participants believe that the emergency department needs to be adequately prepared to manage any type of disaster event, that hospitals should asses the importance of vulnerability (more than 80% has positive attitude about it) and more than 85% of participants need to know about disaster plan.

This result goes in line with the finding of many different study conducted worldwide like in studies done in Jimma Zone, Southwest Ethiopia overall the respondent's attitude towards disaster preparedness was found to be favorably positive. A vast majority (92.8%) reported that they need training on disaster preparedness, management and response.(15) In another studies

conducted in Yemeni in 2018 Yemeni health professional's attitude toward disaster management was generally positive. About 84.9% of the respondents need teaching on disaster management. Above all they want to have an emergency plan and highly need to understand their clear role during disaster situation.(12) However our finding was significantly higher than the finding of a study conducted in TASH in 2018, only 64.8% participants was having positive attitude and study conducted in Addis Ababa health bureau hospital (only 55.1% of participants had positive attitude).(10) The possible reason for this disparity might be due to the fact that the emergency department are facing real disaster event more frequently and better understand the importance of disaster/emergency preparedness.

Disaster planning not only required the encouragement and facilitation of nurses and physicians to become involved in emergency planning, but also the willingness of them to contribute their expertise to such plans. But the present study revealed that around one third of the participants agreed that disaster planning is for few people. This may be partly due to some notion that planning is for top management hospital officials only.

Our result also showed that only two thirds (62.4%) of the participants believes that disasters are likely to happen in our hospital. In contrary to this finding in studies done in Johannesburg hospital most of the participants believe that disasters are likely to happen in their hospital.(23) This difference might be because of there has been a disaster in two hospitals around Johannesburg, at around the time of the study period so that participants believe become largely positive about the occurrence of disaster in their hospital as well. The disaster committee may have to work on improving the attitude of ED staff to be realistic with an expectation that their hospital is ready to handle any disaster.

This study result also showed that the level of attitude towards disaster preparedness had an association with the level of knowledge. Participants with good knowledge had about two times positive attitude than their counter part. This finding goes in line with the finding of the study done in Malaysia where the highest percentage of nurses who had a positive attitude regarding emergency management plan had good awareness.

6.3. Practice about disaster preparedness

Regarding the practice level of the ED health professionals most of the participant found to have inadequate practice. Only 40.6% of the participants have adequate practice towards disaster/emergency preparedness. With similar reason stated above in the knowledge section, there was a significant discrepancy to the practice level of participants among the study hospital. TASH (23.2%), SPHMMC (44%) and AaBET (58.5%) of health professionals have adequate practice. As it is illustrated above in the knowledge section this finding is directly related with the provision of disaster related training and occurrences of disaster drill in the emergence department.

In this study more than half of the participants have faced a real disaster in their emergency stay. Despite that of the high prevalence of disaster event, the health professionals didn't get the expected adequate disaster training and simulation in their emergency department. Only one third (31.5%) of the health professionals participated in an emergency drill in the past one year, the rest two third (68.5%) of the participants have not participated in any form of emergency drill. Similarly majority (81.7%) of the participants didn't participate in ongoing disaster management training in their hospital. This is actually the unsolved big problem worldwide. The realty of occurrence of disaster is there but many sectors and authorities are not paying the equivalent attention to the issue and appropriate exercise and training regarding emergency and disaster preparedness are not being delivered for the primary responder of the 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.(12) And another study done in Rwanda, among the Rwanda Red Cross employees the authors 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.(8) However as a humanitarian organization Rwanda Red Cross employees have better exposure in disaster related exercise and training compared to our result.

As it is conducted among the front line health professionals, 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.(10) 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. This may be an avenue to further improve the practice level of the emergency departments by promoting disaster related exercises and training.

In our study previously attended disaster training was found to be a significant factor for adequate practice of the participants. 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 courses related to disaster preparedness & total practice level of the emergency nurses on disaster preparedness.(16) 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.(13)

Moreover, health professionals who had good knowledge towards disaster preparedness were around three times more likely to practice disaster /emergency preparedness when compared to their counterparts. This finding was comparable with the finding of a study done in Addis Ababa health bureau hospital.

7. LIMITATIONS

The study does not include the administrative staff and other supportive stuffs and not all the health professionals were able to participate due to the reason stated. The other limitation is as a self administered questionnaire, the data is open to response bias.

8. CONCLUSION

The study implies that the emergency department health professionals who will be expected to play a significant role in the management of patients should sudden disaster strikes, are relatively unprepared to respond to a major disaster.

Despite their excellently positive attitude towards disaster and emergency preparedness their knowledge and practice level seems poor. Particularly health professional working in TASH scores the lowest regarding both practice and knowledge level. Based on this finding, it is very essential that the health professionals receive the adequate knowledge and skill necessary to improve outcomes following a disaster. The study revealed the urgent need of disaster related training and educational programs to all health professionals and need of the frequent conduct of disaster drill in the respective emergency department and TASH needing more attention.

Future research related to this study should include more hospital staff participants, like the administrative staff, a stronger study methodology, to include a probable analysis or control groups, in order to give more scientific rigor to the study results.

9. RECOMMENDATION

Based on the finding of the current study the following recommendations are made:

We recommend the federal ministry of health and ministry of education

- To incorporate some educational program and training related to disaster/emergency preparedness to all health curriculums.

We recommend the respective hospital emergency department

- To undergo an induction course related to disaster/emergency preparedness and make the newly starting residents and staffs familiarize some of the contents of disaster plan and its function. And to continuously update the health professionals on the functioning of the disaster plan.
- To enhance more continual ongoing disaster and emergency related training opportunities for health professionals as well as familiarizing health professionals to disaster/emergency preparedness through different exercises (workshops, tabletop), and, drills.
- Put into place a disaster preparedness plan and make it visible to the employees;

We recommend the emergency department health professionals

- To know about disaster plan, their role and their responsibility during drill.

10. RESULT DISSEMINATION PLAN

The study result will be submitted to Addis Ababa University (AAU), SPHMMC, and emergency medicine department head of TASH in hard and soft copy. It might also be presented on conferences meetings and also be submitted to journals for possible publication.

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14. ANNEX

ANNEX I: CONSENT FORM

Hello participant,

I am Dr Yonas Nakachew (MD, emergency and critical care final year resident) currently working on a research project on "knowledge, attitude and practice of health professionals working in the emergency department towards disaster and emergency preparedness at two institutional teaching hospitals of Addis Ababa, Ethiopia" as a partial fulfillment of my post graduate specialization training in Emergency and Critical care medicine.

Purpose of the study:

I believe that this research result will possibly initiate the hospitals and health institutions to facilitate interventions to health professionals 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.

Participation is voluntarily

You are under no obligation to participate in this study.

If you Consent to Participate in the study please sign below:

I have been informed of the nature of the study being undertaken and the potential risks explained to me. I have been reassured that I may choose to discontinue my involvement in the study at any stage without any explanation or consequences. I have also been reassured that my personal details and the information I will relay will be kept confidential. I confirm that all my concerns about my participation in the study have been adequately addressed by the investigator and the investigator has asked me questions to ascertain my comprehension of the information provided.

Participant's Signature…….Date…….

I confirm that I have clearly explained to the participant the nature of the study and the contents of this consent form in detail and the participant has decided to participate voluntarily.

Investigator Signature……Date……...

Tel; 0910349985

Thank you very much for your time!

ANNEX II: QUESTIONAIRE

PART 1: Socio-Demographics Information

1. Age: ___
2. Sex:
   a) Male___ b) Female___
3. Religion
   a) Orthodox c) Protestant
   b) Muslim d) Other ……
4. Marital Status:
   a) Married___ b) Single___
   c) Divorced/separated/Widowed___
5. Do you have children?
   a) Yes b) No
6. Working place (hospital):
   a) TASH___ c) AaBET Hospital___
   b) SPHMMC___
7. Profession category:
   a) Staff Nurse ___
   b) 2nd year resident ___ d) Emergency physician___
   c) 3rd year resident ___
8. Level of education:
   a) Specialty certificate___ c) 2nd year resident f) Diploma
   b) 3rd year resident d) Master
   e) Degree
9. ED work experience (in year)
   a) <1 year___ d) 3-5 years___
   b) 1-2 years___ e) 5-10 years___
   c) 2-3 years___ f) >10years_
10. Did you have disaster management training before?
   a) Yes___
   b) No___

2.1 Knowledge regarding disaster among study participants

1. What is a disaster? (Only one answer)

A. An evaluation of the probability of occurrence and the magnitude of the consequence of any given hazard, i.e. how likely is a hazard and what consequence will it have?
B. A serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental loss which exceed the ability of the affected community or society to cope using its own resources.
C. A possible treat of source of exposure to injury, harm or loss.

2. What is disaster preparedness? (Only one answer)

A. Actions taken in anticipation of an emergency to facilitate a rapid, effective and appropriate response to the situation.
B. System of procedure, checks, audits and corrective action to ensure that all testing, sampling, analysis, monitoring and other technical and reporting activities are of the highest achievable quality.
C. The process through which activities are under taken at the most appropriate level and with the most valuable execution.

SN	Question	Response		
3	Do you know that your hospital has an emergency/disaster plan	a) Yes	b) I don't know (***Please skip the next question***)	
3.1	Do you know where to find a copy of the plan in the department?	a) Yes	b) No	
4	Do you know what a hospital disaster plan should contain	a) Yes	b) No (***Please skip the next question***)	
4.1	List some of the contents of hospital disaster plan ***(Please state on the provided space)***	…… ……		
5	Do you know when an alert status for an emergency management plan is activated in your hospital?	a) Yes	b) No	
6	Do you know the specific place for evacuation for patients during disastrous event?	a) Yes	b) No	
7	Do you know what drills/disaster simulation are?	a) Yes	b) No (***Please skip the next question***)	
8	Have you seen any emergency/disaster drill occurring in your emergency department?	a) Yes	b) No	
9	When should be first aid given during disaster?	a) Immediately	b) Only in the hospital setting	
10	Who should give first aid during disaster?	a) Only Health care worker	b) Bystanders including Community	
11	How do you rate your current knowledge and skill in managing emergencies/disaster event	a) Very good	b) Good	c) Poor

2.2 Attitude regarding disaster preparedness among the study participants

Attitude variables	very much disagree	Disagree	Neutral	Agree	Very much Agree
1. The emergency department should adequately prepared to manage any type of disaster emergency in which there is a sudden arrival of patients					
2. Drills/disaster simulation should be conducted in the emergency department					
3. emergency department health professionals need training and education on how to manage patients during disasters					
4. Disaster simulations should occur frequently in the emergency department					
5. The hospital should have disaster plans, to manage situations in which there is a sudden large influx of patients.					
6. hospital should asses the importance of vulnerability					
7. The hospital is unlikely to be affected by disasters					
8. Disaster planning is only for the hospital's administrative staff and heads of departments					
9. Disaster management is for nurses and doctors only					
10. Disasters are unlikely to happen in our hospital					
11. I need to know about disasters and disaster plans.					
12. Disaster training should be a part of education in Addis Ababa teaching hospitals?					

Willingness to report in the events of infectious disease outbreak					
Statements	Response				
	Very much disagree	Disagree	Neutral	Agree	Very much agree
13. I am willing to work even if I am at risk of contracting the disease					
14. I am confident that the hospital will offer me adequate protective measures to reduce the risk of transmitting the disease.					
15. I am afraid that if I do not come to work, I will lose my job					
16. I will not report for duty because I am afraid of falling ill.					
17. I will not report for duty because I am afraid of spreading the disease to my family and friends					

2.3 Practice regarding disaster preparedness among the study participants

SN	Variables	Response	
1	In the past one year have you practiced or drilled on what to do in an emergency/ disaster situation?	a) Yes	b) No **(*Please skip the next question*)**
1.1	How many drills have you undergone or part already? ***(Please state on the provided space)***	……	
2	Have you participated in ongoing disaster management training in your working hospital?	a) Yes	b) No ***(please skip the next question)***
2.1	How often disaster management training are provided to you within a year? ***(Please state on the provided space)***	……	
3	Have you seen or heard the disaster plan being periodically Updated by authority?	a) Yes	b) No **(*Please skip the next question*)**
3.1	If yes, how often the disaster plan is being updated by authority within a year? ***(Please state on the provided space)***	……	
4	Have you ever faced any disaster in your emergency stay?	a) Yes	b) No
5	Have you ever been a worker for disaster management team?	a) Yes	b) No
6	Have you taken first aid training such as; Basic Life Support in the past one year?	a) Yes	b) No
7	Do you believe that your practice is sufficient for managing emergencies /disaster event?	a) Yes	b) No