Knowledge and self-expressed competency of the health personnel regarding disaster and its preparedness

Veena. Gretta. Tauro[1,*], Vijetha Kottari[2]

[1]Principal, [2]HOD of Pediatric Nursing, Dept. of Nursing, Masood College of Nursing, Mangaluru, Karnataka, India

***Corresponding Author:**
Email: venatauro@hotmail.com

Abstract

Disasters cause great harm to the existing infrastructure and threaten the future of sustainable development. The occurrence of disasters and related causalities are one of the realities of man's life. The aim of this study is to assess the knowledge and self-expressed competency of the health personnel regarding disaster and its preparedness in selected hospitals, Mangaluru. Objectives of the study are to assess the knowledge regarding disaster and its preparedness among health personnel, to determine the self-expressed competency of health personnel on disaster and its preparedness and to correlate knowledge with self-expressed competency of health personnel on disaster and its preparedness. Descriptive research design was used. Study sample consists of 200 health personnel working in hospitals in Mangaluru, who were available at the time of data collection and who fulfilled the inclusion criteria. The data was collected using self-administered structured knowledge questionnaire and five point self-expressed competency rating scale.

Result: Majority 42 (79.24%) of the doctors had good level of knowledge whereas majority 80 (66.67%) of nurses and 13(48.15%) of paramedical staffs had average knowledge regarding disaster and its preparedness Overall knowledge score was high among doctors with mean percentage of 80.55% with mean and SD of 32.22 ± 2.177. Next highest was among nurses with mean percentage of 67.29% with mean and SD of 26.55 ± 5.272. Least was among paramedical staffs with mean percentage of 66.38% with mean and SD of 28.275 ± 4.516. Regarding level of self-expressed competency among subjects, 47 (88.67%) doctors showed high level of competency, among nurses 55 (45.83%) of them showed high level of competency, among paramedical 7 (25.92%) of them showed high level of competency regarding disaster and its preparedness. There was positive correlation between level of knowledge and self-expressed competency of health personnel regarding disaster and its preparedness. The findings of the study support the need for providing educational and training to improve the knowledge and self-expressed competency of the health personnel regarding disaster and its preparedness.

Keywords: Competency, Disaster, Health personnel, Knowledge, Preparedness.

Introduction

Disasters are not confined to a particular part of the world; they can occur anywhere and at any time. Disasters cause great harm to the existing infrastructure and threaten the future of sustainable development.[1]The occurrences of disasters and related causalities are one of the realities of man's life. Although man cannot prevent the incidence of many unfortunate events, but still can alleviate its consequences by applying safety measures.[2] Disasters can no longer be seen as 'acts of God' or 'acts of nature' over which have little control nor can we leave disasters to be understood by natural scientists. It is high time that we as responsible future citizens of our country think of it and get ourselves prepared for a safer tomorrow. Time and again, we see the terrible toll that natural disasters inflict on vulnerable communities around the world. Over the recent decades there has been an alarming increase in the occurrence of natural disasters and the magnitude of their social, economic and communities have turned back the development clock of the areas by decades.[3] With a world's climate seemingly going through a significant change, the rising of sea levels, natural and manmade disaster becoming more severe and are affecting more people, the world's media brings us more dramatic picture to tell of us every day.[4]

India is vulnerable, in varying degrees, to a large number of disasters. More than 58.6 % of the landmass is prone to earthquakes of moderate to very high intensity; over 40 million hectares (2%) of its land is prone to floods and river erosion, hilly areas are at risk from landslides and avalanches. Moreover, India is also vulnerable to chemical, biological, radiological and nuclear (CBRN) emergencies and other manmade disasters. Disaster risks in India are further compounded by increasing vulnerabilities related to changing demographics and socio-economic conditions, unplanned urbanization, and development within high risk zones, environmental degradation, climate change, geographical hazards, epidemics and pandemics. Clearly, all these contribute to a situation where disasters seriously threaten India's economy, its population and sustainable development.[5]

Disasters cannot be stopped but it's after effects can be minimized if there are appropriate systems, procedures and resources in place to provide prompt effective assistance to disaster victims, thus facilitating relief measures and rehabilitation services. The frequency of disasters has increased the need for disaster preparedness world over.[1]

Aim

To assess the knowledge and self-expressed competency of the health personnel regarding disaster and its preparedness in selected hospitals, Mangaluru.

Objectives of the Study

1. Assess the knowledge regarding disaster and its preparedness among health personnel.
2. To determine the self-expressed competency of health personnel on disaster and its preparedness.
3. To correlate knowledge with self-expressed competency of health personnel on disaster and its preparedness.

Materials and Methods

Descriptive research design was considered for the study. Population for the study was Doctors, nurses and paramedical personnel working in the selected hospitals of Mangaluru. The study was conducted among 200 health personnel's (Doctors, nurses and paramedical personnel) working in hospitals of Mangaluru, who were available at the time of data collection and who fulfilled the inclusion criteria. The samples were selected by Purposive sampling technique. After the approval from the institutional ethical committee permission was obtained from concerned authorities. The data was collected using self-administered Structured Knowledge questionnaire and five point Self-expressed competency rating scale. The tool considered of Section A: which included the baseline Demographic pro-forma, Section B: Structured Knowledge questionnaire with 26 items, Section C: Five point Self-expressed competency rating scale with 13 items.

Results and Discussion

The results revealed the following findings:

Table 1: Frequency and percentage distribution of demographic variables as per age, gender, professional qualification and place of health personnel

	Doctors (n=53)		Nurses (n= 120)		Para medicals (n=27)		Total (n=200)	
	f	%	f	%	f	%	f	%
Age in years								
20 - 25	0	0	69	57.5	3	11.11	72	36
26 - 30	17	32.07	33	27.5	8	29.62	58	29
31 - 35	14	26.42	9	7.5	8	29.62	31	15.5
36 – 40	14	26.42	0	0	5	18.52	19	9.5
41 – 45	8	15.09	9	7.5	3	11.11	20	10
46 – 50	0	0	0	0	0	0	0	0
51 and above	0	0	0	0	0	0	0	0
Gender								
Male	27	50.94	25	20.83	19	70.37	72	36
Female	26	49.06	95	79.17	8	29.63	58	29
Transgender	0	0	0	0	0	0	31	15.5
Professional Qualification								
GNM	0	O	56	46.60	0	0	56	28
B.Sc / PBBSc Nursing	0	0	64	53.33	0	0	64	32
M.Sc Nursing	0	0	0	0	0	0	0	0
Ph.D Nursing	0	0	0	0	0	0	0	0
MBBS	40	75.47	0	0	0	0	40	20
M.D	13	24.52	0	0	0	0	13	6.5
Diploma courses in medical field	0	0	0	0	0	0	0	
Paramedical	0	0	0	0	27	100	27	13.5
Place of residence								
Urban	53	100	72	60	18	66.67	143	71.5
Rural	0	0	48	40	9	33.33	57	28.5

Table 2: Frequency and percentage distribution of demographic variables as per formal training in disaster management, participation in a disaster drill, participation in a real world disaster.

	Doctors (n=53)		Nurses (n= 120)		Para medicals (n=27)		Total (n=200)	
	f	%	f	%	f	%	f	%
Formal training in disaster management in past two years?								
Yes	53	100	48	40	6	22.22	107	53.5
No	0	0	72	60	21	77.78	93	46.5
Actively participated in a disaster drill?								
Yes	19	35.84	53	44.16	0	0	72	36
No	34	64.15	67	55.83	27	100	128	64
Actively participated in a real world disaster response?								
Yes	0	0	27	22.5	0	0	27	13.5
No	53	100	93	77.5	27	100	173	86.5

Table 3: Frequency and percentage distribution of level of knowledge regarding disaster and its preparedness among health personnel

Level of knowledge	Range of scores	Doctors (n=53)		Nurses (n= 120)		Para medicals (n=27)		Total (n=200)	
		f	%	f	%	f	%	f	%
Poor	1 -20	0	0	11	9.17	8	29.63	19	9.5
Average	21-30	11	27.5	80	66.67	13	48.15	104	52
Good	31-40	42	79.24	29	24.16	6	22.22	77	38.5

Data presented in Table 3 showed overall level of knowledge among health personnel on disaster and its preparedness, most 104 (52%) had average knowledge, 77 (38.5%) had good knowledge and least 19 (9.5%) had poor knowledge.

Among doctors, nurses and paramedical staffs, majority 42 (79.24%) of the doctors had good knowledge whereas majority 80 (66.67%) of nurses and 13(48.15%) of paramedical staffs had average knowledge regarding disaster and its preparedness. None of the doctors had poor knowledge, 11 (9.17%) of nurses and 8 (29.63%) paramedical staffs had poor knowledge.

Table 4: Area wise mean, standard deviation and mean percentage of knowledge regarding disaster and its preparedness among health personnel

S.No	Areas	Max possible sore	Doctors (n=53)		Nurses (n= 120)		Para medicals (n=27)			Total (n=200)
			Mean ± SD	Mean %	Mean ± SD	Mean %	Mean ± SD	Mean%	Mean ± SD	Mean%
1.	Types Of Disaster	8	7.188 ± 1.083	89.85	6.158 ± 1.522	76.97	5.88 ± 1.44	73.5	6.395 ± 1.489	79.93
2.	Related to earthquake	6	4.716 ± 0.918	78.6	4.817 ± 1.024	80.02	3.92 ± 0.857	65.33	4.67 ± 1.020	77.83
3.	Related to flood	5	4.33 ± 0.5118	86.6	4.033 ± 1.040	80.66	4.03±0.922	80.6	4.115 ± 0.922	82.3
4.	Related to landslide	4	2.79 ± 0.997	69.75	2.1 ± 1.306	52.5	2.70 ± 1.29	67.5	2.36 ± 1.27	59.00
5.	Related to bomb explosion	5	3.943 ± 0.833	78.86	3.016 ± 0.695	60.32	3.52 ± 1.287	70.36	3.33 ± 0.927	66.6
6.	Role of a health personnel	12	9.24 ± 1.68	77.0	6.791 ± 1.217	56.59	6.48 ± 2.96	54.00	7.4 ± 2.015	61.66
	overall	40	32.22 ± 2.177	80.55	26.916 ± 4.030	67.29	26.55 ± 5.272	66.38	28.275 ± 4.516	70.68

The data represented in table 4 shows the Overall knowledge score was high among doctors with mean percentage of 80.55% with mean and SD of 32.22 ± 2.177. Next highest was among nurses with mean percentage of 67.29% with mean and SD of 26.55 ± 5.272. Least was among paramedical staffs with mean percentage of 66.38% with mean and SD of 28.275 ± 4.516.

The area wise distribution of subjects, among doctors the highest mean percentage (89.85%) was in types of disaster with mean and SD of 7.188 ± 1.083. The other areas like flood mean percentage was 86.6% with mean and SD of 4.033 ± 1.040, bomb explosion

mean percentage was 78.86% with mean and SD of 3.016 ± 0.695, earthquake mean percentage was 78.6% with mean and SD of 4.716 ± 0.918, role of a health personnel mean percentage was 77.0% with mean and SD of 9.24 ± 1.68and least in landslide area with mean percentage was 69.75% with mean and SD of 2.79 ± 0.997.

Among nurses the highest mean percentage (80.66%) was related to floods with mean and SD of 4.033 ± 1.040 and related to earthquake with mean and SD of 4.817 ± 1.024 and mean percentage of 80.02%. The other areas like type of disaster mean percentage was 76.97% with mean and SD of 6.158 ± 1.522, boom explosion mean percentage was 60.32% with mean and SD of 3.016 ± 0.695, role of a health personnel mean percentage was 56.59% with mean and SD of 6.791 ± 1.217 and least in landslide area with mean percentage was 52.5% with mean and SD of 2.1 ± 1.306.

Among paramedical the highest mean percentage (80.6%) was related types of disaster with mean and SD of 4.03±0.922. The other areas like types of disaster the mean percentage was 73.5% with mean and SD of 5.88 ± 1.44, boom explosion mean percentage was 70.36% with mean and SD of 3.016 ± 0.695, landslide area with mean percentage was 67.5% with mean and SD of 2.70 ± 1.29, earthquake mean percentage was 65.33 % with mean and SD of 3.92 ± 0.857 and least in role of a health personnel mean percentage was 54.00% with mean and SD of 6.48 ± 2.96.

Table 5: Frequency and percentage distribution of level of self-expressed Competency among health personnel regarding disaster and its preparedness

Level of competency	Range of scores	Doctors (n=53)		Nurses (n= 120)		Para medicals (n=27)		Total (n=200)	
		f	%	f	%	f	%	f	%
Low competent	1 -30	0	0	9	7.5	1	3.70	10	5
Moderate competent	31-45	6	11.32	56	46.67	19	70.37	81	40.5
Highly competent	46-60	47	88.67	55	45.83	7	25.92	109	54.5

According to the data in table 5, regarding overall level of self-expressed competency, majority 109 (54.5%) of health personnel showed high level of competency, 81 (40.5%) showed moderate level of competency and rest 10 (5%) showed low level of competency regarding disaster and its preparedness.

Doctors 47 (88.67%) had a high level of competency regarding disaster and its preparedness. Followed by nurses 55 (45.83%) and then paramedical staffs 7(25.92%). Moderate level of competency in doctors were least 6 (11.32%), nurses were 56 (46.7%) and paramedical 19(70.37%). None of the doctors had low competency whereas 9(7.5? %) of nurses and one (3.70%) had low competency level.

Table 6: Maximum score, mean, percentage and standard deviation of self-expressed competency of health personnel regarding disaster and its preparedness. n=200

	Maximum score	Mean ± SD	Mean Percentage
Doctors	60	51.45±4.204	85.75
Nurses	60	43.78±7.676	71.96
Paramedical	60	40.78±7.484	67.96
Overall	**60**	**45.05±7.917**	**26.81**

Data in table 6 shows that Overall mean and standard deviation regarding self-expressed competency of health personnel regarding disaster and its preparedness were 45.05±7.917 with mean percentage of 26.81. Highest mean percentage 85.75 regarding competency was among doctors with mean and standard deviation of 51.45±4.204, and then were nurses with mean percentage of 71.96 with mean and standard deviation of 43.78±7.676. Least mean percentage 67.96 with mean and standard deviation of 40.78±7.484 was among paramedical staffs.

Correlation between Knowledge and Competency Regarding Disaster and Its Preparedness

Table 7: Correlation between knowledge and self-expressed competency regarding disaster and its preparedness among health personnel.

S.No	r value	P value	Result
1.	0.3631	0.000	Positively Correlated

P<0.005

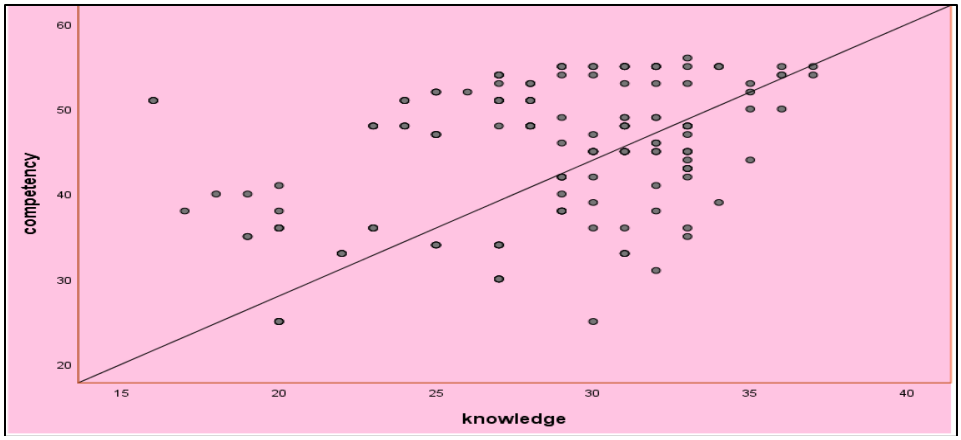

Fig. 7: Scattered diagram showing correlation between knowledge and self-expressed competency regarding disaster and its preparedness

The data presented in table 7 and figure 7 indicates that Karl Pearson's correlation r value computed between the level of knowledge and self-expressed competency of health personnel regarding disaster and its preparedness showed positive correlation.

Discussion

In this study, highest 120 (60%) were nurses, 53 (26.5%) were doctors and least 27 (13.5%) were paramedical staffs which is comparable with a descriptive, cross sectional study, to assess the knowledge, attitude, and practices of emergency personnel at two tertiary hospitals in Lagos with regard to emergency management and preparedness showed that majority, that is, 108 (52.7%) of the participants were nurses. The doctors numbered 83 (40.5%) and included resident doctors and house officers working in the emergency departments and those who did rotations in the emergency or trauma centers of these two hospitals. Other respondents were from allied medical (3, or 1.5%) and support services (11, or 5.5%).[6]

In the present study majority of nurses 102 (85%) were in the age group of below 30 years, 111 (92.5%) had experience between 5 years and 10 years. Majority 93 (77.5%) did not had experience in disaster relief and 72 (60%) no disaster related training. This is comparable with the study done on disaster response and management competency mapping of community nurses in China A pre-designed and well-tested questionnaire was employed to evaluate the competency in disaster response and management among 205 valid registered Chinese community nurses between September and October 2009, shows majority of nurses 72 (35.12%) were in the age group of 30 to 40 years, 64 (31.22%) had experience between 5 years and 10 years. Most 103 (50.24%) did not had experience in disaster relief and 130 (63.41%) had disaster related training.[8]

Regarding overall level of knowledge among health personnel on disaster and its preparedness, most 104 (52%) had average knowledge, 77 (38.5%) had good knowledge and least 19 (9.5%) had poor knowledge

Regarding competency, majority 109 (54.5%) of health personnel showed high level of competency, 81 (40.5%) showed moderate level of competency and rest 10 (5%) showed low level of competency regarding disaster and its preparedness.

Which is comparable to the a descriptive, cross sectional study conducted to assess the knowledge, attitude, and practices of emergency personnel at two tertiary hospitals in Lagos with regard to emergency management and preparedness discovered that less than half or 98 (47.8%) of the participants had good knowledge of emergency preparedness and planning, 76 (37.1%) had a fair knowledge, while 31 (15.1%) had poor knowledge.[6]

A non experimental descriptive survey was conducted to assess the knowledge and attitude regarding disaster preparedness among the health care team members. 200 health care team members were selected by non-probability quota sampling technique. 20 samples from each hospital were selected. Findings revealed that, out of 200 samples, majority (78.5%) of the health care team members had average knowledge, 36 ((18%) had good and 8 (4%) had poor knowledge. Regarding practices 152(76%) had average practices, 64 (32%) had good practices and 12 (6%) had poor practices regarding disaster preparedness. 184(92%) of health care team members had good attitude regarding hospital disaster preparedness.[9]

Conclusion

When compared among health personnel's the knowledge and self-expressed competency regarding disaster preparedness was high among doctors, followed by nurses and then paramedical. Hospitals should provide more training and in-service education regarding the disaster preparedness so that health personnel's are ready to face any type of disasters.

References

1. Park K. Text book of Preventive and social Medicine, 20th ed. Jabalpur: *Banarsi Bhanot Publication*; 2011. 736-40.
2. Mahmoud N M, Shiva S, Rohaneh R and Narges K. Iranian Nursery School Teachers' Knowledge about Safety Measures in Earthquakes. *Al Ameen J Med Sci*. 2012;5(1):63-8. Available from http://www. ajms.alameenmedical.org.
3. Singh R K, Saroja J. *Text book of disaster management*. Delhi: Central book of secondary education, Preet Vihar; 2006.
4. Ramya V S. Effectiveness of structured teaching programme on knowledge regarding disaster management among school teachers. *The nurse International*; 2012;(6):14-19.
5. Government of India. National policy on disaster management. Available from URL: http://ndmindia.nic.in/ NPDM-101209.pdf.
6. Adenekan BA, Balogun MR, Inem V. Knowledge, attitude, and practices of emergency health workers toward emergency preparedness and management in two hospitals in Lagos. *J Clin Sci.* 2016;13:23-8.
7. Braun BL, Wineman, Finn NL, Barnera JA, Schmaltz SP etal. Integrating Hospitals into Community Emergency Preparedness Planning. Annals of internal Medicine [serial online] 2006[cited 2006;144(11):799-811. Available from: URL:http://www.annals.org.org/egi/content.
8. Yu LUO, Ling LIU, HUANG W, YANG YN,DENG J, YIN CH, et.al. A Disaster Response and Management Competency Mapping of Community Nurses in China. *Iranian J Publ Health*. Sep 2013, 42(9):941-49
9. Sakhare V, Waghmare S, Joshi S.G. Knowledge and Attitude Regarding Disaster Preparedness Among The Health Care Team Members In Selected Hospitals of Pune City. *Int J Recent Sci Res*. 2016;7(5):11251-11257.