Knowledge on disaster preparedness and associated work related factors among allied health professionals at Teaching hospital, Jaffna

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Abstract—Time to time as Sri Lankans, we have faced major natural hazards. Though disasters create a heavy physical and psychological burden for the members of the healthcare team, their preparedness to meet the disaster is utmost important as they are in the frontline of disaster management. The purpose of this study was to assess the level of knowledge on disaster preparedness and associated work related among allied health professionals at Teaching Hospital, Jaffna. A descriptive cross-sectional study was done with 300 allied health professionals recruited using stratified random sampling method. A multi sectional self-administered questionnaire was used to collect data. Correlation analysis and independent sample t-test and ANOVA were performed to identify associated factors. The mean age of participants was 34.5(SD±8.031) years. More than half of the participants were Nurses (n=209, 69.7%). The following work related factors were statistically significant on knowledge of disaster preparedness among allied health professionals. Travelling distance from residence was positively correlated with knowledge on disaster preparedness r (300) =0.123, p=0.033. Educational status, occupation and professional experiences were statistically significant associated factors for knowledge on disaster preparedness (p<0.001). There is a huge gap between the knowledge level on disaster and current needs of disaster preparedness among allied health professionals. They had limited opportunities for training. Specially nurses had that kind of practices than other allied health professionals. Therefore, training should be provided focusing on the specific gaps identified. Disaster preparedness should be rehearsed possibly through training and simulation exercises because training and education in disaster preparedness are considered as back bone.

Keywords— Disaster preparedness, Knowledge, Associated work related factors

INTRODUCTION

Globally hospitals have been involved in both internal and external disasters. These two types of disasters are independent but not mutually exclusive. Internal disasters are integrated to the hospital and occur more frequently than external disasters. External disasters affect the community as well as the hospital (Sakhare et al., 2016). Communities may need to be rebuilt physically, mentally, economically and socially with the strike of disasters (eg pandemic, epidemic outbreak). Especially in disasters that involve a large number of people such as pandemic or epidemic outbreak, all hospitals will be expected to play a major part in the response. With no or insufficient emergency plans, the hospital resources may be overwhelmed.

As one of the key steps in disaster management is preparedness. All health care professionals need to be familiar with effective actions in the case of disastrous events and in turn must receive proper disaster preparedness education, including continuing education courses in disaster management, regular drills within the

communities that they serve as well as integration of disaster courses content in the undergraduate curricula. Disaster preparedness and response units are functioning under the Ministry of Health, even though there is a gap. Although the government has made some improvement mainly for infrastructure resiliency, inadequate disaster preparedness remains at many regional hospitals. Despite the critical role of hospitals in saving lives of disaster victims, very limited research has been assessed in the disaster preparedness at hospitals in Sri Lanka (Munasinghe, N.L. 2019).

Disaster has direct and indirect health impact. Direct impacts are death, trauma, lacerations, fractures, amputations, etc. Indirect impacts are pandemic, epidemic diseases, malnutrition, mental health & psychosocial problems. Other than that, impacts on health workforce, health information management, medical products, vaccines & technologies, health financing, leadership & governance and health service delivery are also felt. Therefore, disaster preparedness is important. Assessing knowledge and associated factors on knowledge and training needs of allied health professionals on disaster preparedness and response would be helpful to know the key mechanisms of first responders to a disaster.

The general objective was to assess the level of knowledge on disaster preparedness and associated work related factors on knowledge on disaster preparedness among allied health professionals at Teaching Hospital Jaffna. The specific objectives were to assess the knowledge on disaster preparedness among allied health professionals and to determine the associated work related factors on knowledge on disaster preparedness.

METHODOLOGY

Hospital based descriptive cross-sectional study was done. Study was conducted from July 2019 to December 2019. The study was conducted among allied health professionals who are working at the Teaching Hospital, Jaffna as permanent staff members. Those who were on long term leave (such as maternity/ vacation etc) at study period were excluded from the study.
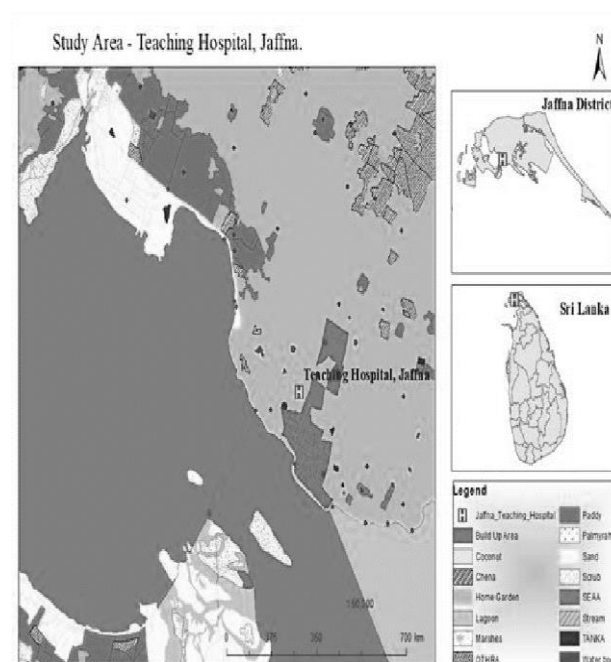

Figure 1. Location of study area

The sample size was calculated by following formula $N=z^2 p (1 - p) / d^2$, $(1.96)^2 \times 0.30(1-0.30)/0.05^2$. Rahman et al (2018) carried out a study in Bangaladesh on Knowledge and awareness on disaster management among medical professionals of a selected public and private medical college hospital. They found 30% of health professional had knowledge. Here, assumption 30% of health professional had knowledge. p=0.30 (Proportion value) Anticipated prevalence of knowledge of allied health professionals. About 10% of non-respondent rate was expected. So, actual sample size was 356. Stratified random sampling technique was used to select the participants to the study.

The study was conducted among allied health professionals who are working at Teaching

Hospital, Jaffna as permanent staff members. Among them Matrons, In-charge Nurses, Nursing officers, Midwives, Pharmacist, Medical laboratory technicians, Radiotherapist, Radiographer, Physiotherapist, Occupational therapist, Nutritionist, Ophthalmic technologist, Public health inspector, Speech therapist, Cardiographer and EEG technician were included.

The study instrument was a multi sectional self-administered questionnaire. It was prepared by using the information gathered from the literature and also discussed with expert advisories. The self-administered questionnaire was prepared in English and translated into Tamil and Sinhala. Questionnaire was included two sections such as A and B. Section A contained socio demographic and work related factors. Section B contained knowledge on disaster preparedness. In that Section B 1 part contained five main questions in which each had five statements. In Section B 2 part were contained eight written short answer structured questions. Validity of study instrument was done by face validity and it was done by pilot study among ten allied health professionals who are working at Point Pedro Base Hospital. The study purpose was explained to the allied health professionals and informed written consent was obtained from them at a convenient time without disturbing their duty. Then self-administered questionnaires were given to be filled by them. They were closely monitored during the time that they were filling the questionnaire to minimize discussions as this was a knowledge assessment.

Data was analyzed by using SPSS 21 Statistical software (Statistical Package for Social Science). Correlations, t-test and one way anova tests were performed. Multivariate analysis was done. It was used to identify the associated factors. Research

proposal was ethically approved by the Postgraduate Institute of Science, University of Peradeniya.

RESULTS AND DISCUSSION

This descriptive cross sectional study was conducted with 300 allied health professionals who are working at the Teaching Hospital, Jaffna. Out of 356 approached participants, only 300 participants responded to the study. The respondent rate was 84.3%. The mean age of participants was 34.5 (SD± 8.031) years. Majority of participants were female (n=219,73.0%).Majority of them have diploma qualification (n=248,82.6%). More than half of the participants were Nurses (n=209, 69.7%), Pharmacists (n=12,4.0%), Midwives (n=25,8.3%), Medical Laboratory technician (n=21,7.0%) Physiotherapist (n=14,4.7%), In-charge nurses (n=4, 1.3%), Radiotherapist (n=2,0.7%), Matron (n=2, 0.7%), Public health inspector (n=2,0.7%), Cardiographer (n=5,1.7%), Occupational therapist (n=1,0.3%), Nutritionist (n=1,0.3%), Speech therapist (n=1,0.3%) and Electroencephalogram technician (n=1,0.3%). More than half of them were married (n=207,69.0%). Majority of them (75.7%) were Hindus (n=227,75.6%). Only (n=20) 6.7% of them were over 50 years old. The mean age of participants was 34.54 (SD ± 8.031) years. Majority of them had diploma qualification (n=248,82.6%). Only (n=47)15.7% of them were graduated. Two participants (0.7%) were postgraduated.

According to the above Figure 2 the least mark that was scored by allied health professionals was 18.0. Among four of them were scored a total mark (100.0). The mean of score of knowledge was 68.49 (SD±15.18). The median of knowledge score was 70.0. Mode of knowledge score was 72.0. Among (n=37)12.3%of them were got less than fifty mark. The correct answer for emergency colour code was given by (n=31)

10.3% of them. Triage color code for victims whose injuries demand urgent medical attention, after resuscitation, or as soon as practicable (n=126, 42.0%) and about the victims who had died (n=130, 43.3%) was known to nearly half of them. Only twenty five of them (8.3) participated in the disaster drill.
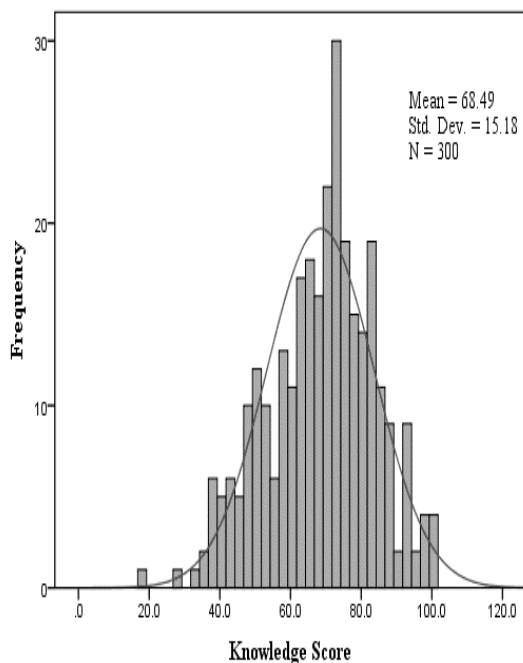

Figure 2.Distribution of allied health professionals' knowledge on disaster preparedness

As shown in Table 1travelling distance from residence to hospital positively and significantly correlated with the knowledge on disaster preparedness among allied health professionals (r (300) =0.123, p=0.033).

Independent sample t-test was used to identify work related factors associated with knowledge on disaster preparedness. It was done as an independent sample test. Here age was categorized as ≤30 years old as one and > 30 years old as two. Likewise professional experiences were categorized as <1-5 years as one and > 5 years as two, current unit experiences were categorized as ≤ 5 years as one and > 5 years as two and travelling distance from residence was categorized as ≤ 5 Km as one and > 5 Km as two. Other factors

were categorized as following sex as male and female, marital status as single or married but no one responded with the reply whether they were divorced or not. Religion was categorized as Hindu and others (Christian R.C, non R.C, Islam and Buddhist). Educational status was categorized as certificate course and diploma as one and graduate and postgraduate as another. Occupation was categorized as In-charge nurses and Nurses in one category and others (Midwives, Pharmacist, Radiotherapist, Physiotherapist, Medical laboratory technician, Matron, Cardiographer, Occupational therapist, Public health inspector, Nutritionist, Speech therapist, Electroencephalogram technician), Working unit of in-charge nurses, nurses and midwives were categorized as wards and special units (Emergency unit, Coronary Cardiac Unit, Laboratory, Haemo dialysis unit, Highly dependent unit, Blood bank, Antenatal clinic, Endoscopy unit, Operation theatre, Dental unit, Sexually transmitted diseases clinic, Infection control unit and Medical intensive care unit), Travelling mode to walk was categorized as walk, bicycle and motor cycle as one and others (Three wheeler, car and bus). Work related factors were categorized as Yes and No.

According to that a statistically significant difference in knowledge on disaster preparedness based on the educational status, occupation, professional experience, following disaster related courses during their study period. Certificate course and diploma obtained a less mean (SD)

knowledge score (67.0+14.9) than graduate and postgraduate (75.9+14.6) conditions; t (298) = -3.827, p=0.000. In-charge nurses and nurses obtained a higher mean (SD) knowledge score (70.2+15.4), than other categories (such as (64.2+13.9) conditions; t (298) =3.184, p=0.002. Professional experiences ≤ 5 years obtained a less mean (SD) knowledge score (70.6+14.4), than >5

years (66.6+15.6) conditions; t (298) =2.296, p=0.022. Disaster related courses included in their study period obtained a higher mean (SD) knowledge score (77.8+16.9), than not included (67.5+14.7) conditions; t (298) = -3.453, p=0.001.

One-way anova test was done for certain work related factors among them significant factors were shown in below Table 2. Among those the highest educational qualification was significant F (3,296) =4.934, p=0.002. Occupation was significant F (13,286) =1.779, p=0.046. Working unit of in charge nurses, nurses and midwives F (18,281) =3.147, p= 0.000. Professional experiences were significant F (36,263) =1.569, p=0.025.

For analyzing purposes knowledge was categorized as average and good according to the score of the questionnaire. Score below or equal to 70.00 was considered as average knowledge and a score above 70.01 was considered as good knowledge. It was considered that according to this categorization more than half of the allied health professionals had average knowledge (n=200,66.7%). It was used for multivariate analysis. It was done as significant factors with knowledge which were found during correlation, t test and anova test analysis. Here, control of other variables educational status and occupation were statistically significant respectively p=0.000 and p=0.002.

Table 1.Correlation of socio demographic factors and work related factors with knowledge

Variables	Mean	Standard deviation	Knowledge	
			Pearson Correlation	Sig.(2tailed)
Age	34.5	8.031	-.013	0.828
Professional experiences	8.7	7.5389	-.022	0.700
Current unit experiences	4.6	4.5238	-.093	0.106
Travelling distance from residence	11.8	9.7556	0.123	0.033

Table 2. One way anova test for socio demographic and work related factors with knowledge

Variable	Degree of freedom (df)		F test	Significance
	Between group	Within group		
Religion	4	295	0.811	0.519
Highest educational qualification	3	296	4.934	0.002
Occupation	13	286	1.779	0.046
Working unit of in charge nurses, nurses and midwives	18	281	3.147	0.000
Working unit of others	2	297	2.270	0.105
Professional experiences	36	263	1.569	**0.025**
Current unit experiences	30	269	1.095	0.341
Travelling distance from residence	34	265	1.008	0.462
Travelling mode	3	296	0.645	0.587

CONCLUSION

A huge gap between the knowledge level on disaster and current needs of disaster preparedness among allied health professionals was found in this study. Multivariate analysis was done as significant factors with knowledge which were found during correlation, t test and anova test analysis. Here, control of other variables educational status and occupation were statistically significant respectively p=0.000 and p=0.002. Limited understanding about the concept of disaster and disaster preparedness was found among a considerable number of professionals. This study found that more than half (n=163, 54.3%) of them had average knowledge.Therefore, training should be provided focusing on the specific gaps identified. All staff members need to know about disaster preparedness and that they should know their function during a disaster. Disaster preparedness should be rehearsed

possibly through training and simulation exercises because training and education in disaster preparedness are considered as backbone.

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