Disaster Emergency Management Training: Preparedness (Knowledge and Attitude) of Health Professionals of Developing Country "Where Do We Stand?"

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ABSTRACT

Objective Disasters are the overwhelming events on the communities which are seen increasing around the world. and emergencies have been increasing all over the world. Since medical professionals are the frontliner in the emergencies and disasters, knowledge and training of disaster management of these individuals is a basic need to cope with these conditions. The study aimed to assess the knowledge, attitude and training in emergency and disaster preparedness among health professionals of Pakistan.

Methods: Cross-sectional study carried out using self-reported online and paper surveys. In total 750 health professionals responded. The Chi-Square test was used to identify any significant difference in the knowledge and attitude among the professional categories.

Result: The overall knowledge status of health professionals showed of all respondents, 35.06% had good knowledge, 47.06% had fair and 17.86% exhibited poor knowledge. Postgraduate were more knowledgeable than graduates. Doctors were better in knowledge than other subgroups of health specialties. Health administrators seemed insufficiently qualified in emergency and disaster planning. With respect to attitude assessment, majority of study respondents appeared in the 'positive attitudes' level to emergency and disaster preparedness. Of all respondents, 45.73% received no courses in disaster preparedness. 60.93% of all respondents had not participated in any exercise indisaster emergency preparedness.

Conclusion: This study shows considerable number of emergency health professionals found deficient in knowledge, with limited opportunities for training despite their beliefs towards disaster emergency management. There was a gross lack of formal teaching and training programs in emergency and disaster medicine. So, for the medical personnel, disaster emergency preparedness training/course should be necessary and efforts should be done to incorporate such courses and training in the curricula of health institutes at undergraduate and post graduate level. Long-term formal training such as undergraduate and postgraduate programs is necessary.

Keywords: Disaster, Emergency Management Training, Preparedness, Health Professionals, Developing Country.

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INTRODUCTION

Disasters are complex phenomena that result in rapid and diversified emergency situations, resulting in a significant damage, destruction, and trauma to affected people and environment. These unexpected events also affect the physical, psychological health as well as economic growth of a population[1]. Such conditions require the rapid and multidimensional emergency health services[1]. During the disaster response, priority is given to the treat the victims and

save the lives. As a result, rescue or emergency medical personnel are primarily responsible for disaster relief and aid[2]. From the last few decades, Pakistan has been facing variety of disasters: natural as well as man-made. As per its geographical localization and climatic changes, Pakistan have been exposed to many types of natural disasters like flood, droughts, earthquakes and landslides[3]. Since Pakistan is included in the category of developing countries, lack of well-developed infrastructure and rapidly growing population are the risk factors for the disaster situations for the next years[4]. These disasters are having very adverse impact on the human life as can be seen from the previous data of the earthquake 2005 in which more than 80,000 people died. In the flooding of 2010, over 18 million people were affected out which about 1,700 deaths were reported. About 150,000 families were displaced and approximately 1.8 million houses were damaged or destroyed. In addition to this about 515 health facilities were also destroyed in the same event[5].

The healthcare system in Pakistan is in the stage phase of progress and improvement for many years . But still there is lack of the emergency medical services in many respects[6]. For instance, several patients are brought to emergency with their own transport even with sever kind of illness[7]. In case if they got any kind of basic patient transport then mostly the vehicles are not well equipped and lack the primary care technician. In case of major emergency situations like disasters there is non-availability of on-location basic health care providers. Affected people are randomly collected and sent to the Emergency Department of any public sector hospital whatever comes in close vicinity[8].

Pakistan has been facing a number of disasters. Some are earlier described like 2005 earthquake and 2010 flooding. From many decades, the country is also victimized by violence, bombing and mass shooting resulting in the large number of emergencies and casualties. As Pakistan is under the phase of development and transformation, its rapidly increasing population and economic instability are also the risk factors for natural as well as man-made disasters. To deal with such conditions and to manage such emergencies there should be a well-developed disaster response system, having well-trained medical professional team. As these persons will be on the frontline so they should be skilled and knowledgeable who can manage the emergencies in-site as well as in-hospital[9]. These preparedness of response to disaster will minimize loss of life. Hence there is an immense need of training and education of the health professional to disaster management and preparedness.

Due to the rise in the rate of emergency and disasters, there is an intricate need to make an effective medical strategy to minimize the impact of disasters with the advent of new technologies. Moreover, the medical personnel dealing in such emergencies must be well-knowledgeable and capable of properly responding to any disaster or emergency as these medical professionals are the one who are on the frontline[10]. Studies have shown training of the medical professionals working in emergency and disasters can be an effective measure for disaster preparedness. Similarly lack of trained people will be having the adverse impact on the management of such unexpected conditions[11].

Globally a number of studies have been carried out on the training and preparedness of disaster management by health professionals. However, in Pakistan evaluation of knowledge and training of health professional in emergency and disaster management have not been explored[12]. So, this constitutes the aim of study to assess and evaluate knowledge, attitude, and training of health professionals towards emergency and disaster management in Pakistan. This will further help the authorities to implement education and training programs of the medical health professionals for management and preparedness of disasters and emergencies.

MATERIALS AND METHODS

Cross-sectional study conducted in Jan 2019 via a self-reported survey of both online and paper form questionnaires. As most of medical teaching institutes, universities and hospitals are present in major cities of Pakistan so the study participants were taken from these cities.

The study population included were health professionals working in emergency department of private and public sectors. All non-medical profession and non-health administrative staff were excluded in study. These study subjects were categorized based on instructive level, experience in emergency department, specialty and workplace. The on-location visits and online survey through WhatsApp and email focused governmental and private hospitals as well as ambulance rescue points.

The questionnaires were designed to outline the basic principles of disaster management stages and was developed by reviewing the literature of similar studies and highlighted the main factors required for

the preparation and response in disaster conditions[13]. The first portion included: introduction of the study and demographic data of the participant. Second portion included: knowledge and attitude tests Attitude test includes questions of 3 points Likert scale questions (agree, disagree and not sure). Third portion included the multiple-choice question regarding the training, experience, and practice in disasters management (Table-III).

To test the tool validity of questionnaire before use, initially study was conducted on 20 health personnel. It was excluded from the main data. The authors used the feedback from the pilot study respondents to revise the questionnaire content. Consent was taken from the participant with ensuring them about the purpose and secrecy of the information provided by them.

For the online questionnaire, link was sent to the health personnel and left open for two months. The in-hand paper questionnaire ware distributed to the health facilities and hospital mentioned above. This study has been approved by the IRB of the authors' affiliated institutions.

The data was analyzed to get the final scores of the staff knowledge and attitude. In the knowledge test, the participants could get one score for each correctly answered question and zero for an incorrect answer. The collected data was tabulated and analyzed using SPSS version 20. Descriptive statistics were applied to find the frequencies, percentages and means. Cross –tabulations were performed to get relations between study variables. Chi Square test was used to observe the association between categorical variables. P value of < 0.05 was considered as statistically significant.

RESULTS

A total of 750 health professionals of emergency department responded to the questionnaire. Male were 521(69.49%) and Female were 229(30.53%). Based on the qualification of these respondents, 467(62.26%) were graduates and 283(37.73%) post-graduates. Among all respondents, 385(51.33%) were doctors, 282(37.6%) were medical staff and only 83(11.06%) were health administrators. (Table I.)

With respect to the working experience in ER, 390(52%) of the respondents had less than 5 years' experience, 262(34.93%) had experience from 5-10 years while 98(13.06%) were having more than 10 years' experience. (Table I.)

The source of information regarding the disasters emergencies preparedness was Media in 352(46.93%) and books/articles in 34(4.53%).

Focusing on those who got the training of Disaster and emergency management, 89(11.86%) were taught at the undergraduate level, 157(20.3%) were taught by NGOs (Non-Government Organizations) and 138(18.4%) used the online training programs. Additionally, 23(3.06%) of participants voluntarily learned themselves by self-study or group learning. Among all respondents, 343(45.7%) had not been taught/trained for any disaster planning (Table II).

Table I: Demographic Distribution of the participants under the categories of qualification, charge they hold and experience.

Demographic Data of participants	
Total participants	750 (100%)
Gender: **Male:** **Female:**	 521(69.49%) 229(30.53%)
Qualification: Under-Graduate	283(37.73%)
Graduate	467(62.26%)
Doctors	385(51.33%)
Medical Staff	282(37.6%)
Health administrators	83(11.06%)
Experience: Less than 5 years	390(52%)
5-10 years	262(34.93%)
More than 10 years	98(13.06%)

Table II: Distribution of the participants in Trained and non-trained, and in attending the workshops/courses in emergency and disaster preparedness.

Study outcome	
Training in disaster and emergency management	
Un trained:	343(45.73%)
Trained	407(54.26%)
Sources of training:	
In graduation curriculum	89(11.86%)
NGOs training programs	157(20.3%)
Online programs	138(18.4%)
Self-learning	23(3.06%)
Attending emergency and disaster preparedness workshop and courses	
Not received	457(60.93%)
Received	293(39.06%)
Sources:	
Primary Trauma Care	109(14.53%)
ATLS	95(12.66%)
Triage/mass causality responses	51(6.8%)
HOPE	24(3.2%)
First Aid and First Response Workshops	14(1.8%)

Table III: Questionnaire Performa: Knowledge and attitude of health professionals regarding disaster emergency preparedness[13]

Knowledge items:	Yes	No	
Have you heard about disaster?			
Have you ever been taught about disaster planning?			
Have ever performed a disaster drill(s) or workshop(s) in your facility or city?			
A disaster is an imbalance between the demands that caused by an events and an available resources?			
A disaster can occur either from natural or man-made causes?			
Did you think, one day your country/city might be affected by disaster?			
Did you think, one day your facility might be affected by disaster?			
A disaster planning is to prepare to what might be needed to be done, how to be done, before and after disaster?			
The surrounding hazards that most likely causing disaster to your facility most be identified and dealt with?			
A disaster management it is includes both a health or non-health professional employees in the facility?			
A disaster management it is an integral collaborative action of different agencies such as the hospitals, local health authority, civil defense and others?			
Attitude items	Agree	Disagree	Not Sure
Training in disaster planning should be taught in your country			
Training in disaster planning is necessary in each health facilities.			
t is necessary to have an emergency plan in your facility, city or country for any anticipated hazards.			
It is necessary to have a disaster management committee in your facilities?			
It is necessary to know your duty(s) and role(s) during disaster response in your facility.			
To improve disaster management, is a training through the stimulation exercises, drills or workshops should be provided.			

In terms of courses or workshops attended, about 60.1% (475) of study population (health professionals) were not having any workshops or training courses attended. 39% (293) of the respondents availed different kinds of courses like 14.53% (109) did primary trauma care, 12.66% (95) were in ATLS (Advanced trauma life support system), 6.8% (51) in triage/mass causality responses, 3.2% (24) were in HOPE and 1.8% (14) in first aid and first response workshops (Table II).

The results showed about 263(35.06%) of the participants were having good knowledge of disaster emergency preparedness, 353(47.06%) were having fair and 134(17.86%) had poor knowledge. In comparison of knowledge among the study population postgraduates showed more correct answers to the question than graduates and the difference was statistically significant. Statistically insignificant difference of knowledge was observed in between the medical staff and health administrators, with both securing lower scores. With respect to the working experience no significant difference was observed among these categories.

With respect to the attitude towards implementation of training programs of the disaster management, 668(89.06%) of the study population agreed. Among these individuals, postgraduates' attitude was more positive than undergraduates with the statistically significant difference. Among the health professional, doctors' attitude was more positive than the medical staff and health administrators, though no statistical difference was observing among this health professional attitude.

DISCUSSION

In present study, we aimed to find out the level of knowledge, attitude, and training on disaster management among healthcare professionals in developing country like Pakistan. We found that overall level of knowledge was not sufficient and needs a lot of improvement. Only 35.06% of the participants were found able to deal with disaster emergency situation, while 47.06% and 17.86% professionals had fair and poor knowledge respectively.

This kind of unsatisfactory response has been reported previously also. We have example of studies conducted in developing countries like Nigeria[14] and Kenya[15] with non-probability sampling. With inclusion of both healthcare and non-healthcare professionals working in hospital, the overall results showed 47.8% and 36% for Nigeria and Kenya respectively. In one study[16] done on two groups of postgraduate nursing students with more than 10 years' experience, in Madinah, KSA, it was found that the level of training and knowledge for disaster management were not at acceptable level. However, there are few studies with results showing staff with adequate knowledge and attitude towards disaster management[17,18]. Overall acceptable knowledge base[17] was found in one study done in Johannesburg. A study was done in Mecca, Saudi Arabia[19], including all registered nurses working in emergency department in public sector, with results showing most of them with adequate knowledge and being confident enough to deal with disaster. However, they were not aware about their role in effectively managing mass gathering disaster. Therefore, it was recommended for them to have hospital and university-based training for this purpose. It looks like participants did not have enough exposure to training programs. A possible reason behind this could be lack of courses on how to deal with disaster in their institution and during continuing medical education (CME) in their health care facilities.

As compared to other specialties, physicians had higher level of knowledge. Another study reported similar results[20]. However, those who medical teacher, appeared to have knowledgeable as compared to their colleagues like managers and practitioners. Furthermore, media was the source of information to 46.93% of the participants and 20.3% has knowledge from their undergraduate lessons. In addition to this, only 293 (39.06%) of the respondents were trained in disaster management in past. Out of these, a good number of participants (20.3%) were given training by NGOs, this might be due to massive number of PTC courses were done through out Pakistan[21] and 18.4% learnt though online teaching with no facilitation from formal institutions and healthcare facilities.

In our study, we found positive response of the participants and they were keen to learn the disaster management and to be prepared for it. Such findings are reported in some studies published in international journals[14,16,17,22,23]. Participants expressed their concern about training and according there should be a committee deigned to supervise how the plan will be taken into action. They should also know about their role once plan is activated. The present study shows the higher percentage of participants (89.06%) consider training for disaster management as essential not only for their institution but at national level. In addition to this, 681 (90.8%)

participants think that workshops, exercise on simulator and drill should be conducted in their healthcare facility which will be appropriate training. In fact, both education as well as training are essential for such emergency preparedness[22,23].

Therefore, to build up and strengthen the ability of the healthcare worker for dealing for mass emergency, they must be provided formal education program. Long term training program with comprehensive modules are preferred over short courses[24]. It is Government's responsibility to establish training program for disaster management, both at undergraduate and post-graduate level, either within the country or overseas based on scholarship. Learning programs, with combination of interactive session, online or in classroom, and hands on workshops and drill are of greater importance.

Those who are doing research and educating in field of disaster management can serve to improve the level of understanding and education. People can be educated and trained in different ways. Furthermore, different kind of methods and activities can be applied to make them learn proper planning. With this, individuals will get knowledge and improved skills and can be used to evaluate the performance of individuals on simulator. Education for disaster management can be helpful in all stages of crisis it has greater impact in terms of preparation. Training programs in leadership skill can be responsible for increasing the capacity for a set up to deal with disaster.

Hands-on exercises, based on trainer from different agencies, which focus not only on disaster management but also on leadership skills, teamwork, communication skill and decision-making on resources allocation, are mandatory. There was a study showing traumatic mass causality incidents leads to multiple events causing hurdle to the healthcare workers, particularly those belonging to the surgical teams. For this reason, it is recommended for first responders to have adequate training in Incident Command System (ICS) and triaging mass casualty. In addition to disaster management, consideration should be given to basic and advanced disaster life support (BDLS, ADLS), primary trauma care course (PTC) pre-hospital trauma life support (PHTLS) and advanced trauma life support (ATLS)[20].

It is Government's responsibility to implement training on disaster management as part of orientation and CME programs of each specialty. Emergency HICS and plan to deal with mass emergency that could occur should be established by collaborators. In addition to this, healthcare workers should be trained on regular basis to increase their ability to respond to such situation in an effective way. The community also needs to be involved in disaster management. The key to community survival includes awareness of disaster risk, effects and how to respond when such situation happens. Furthermore, to improve the efforts for disaster response, training programs should be organized by government for public volunteers. For this purpose, search, rescue, evacuation and basic first aid skills courses are recommended. After impact caused by disaster, it is important to provided mental support to the victims[25]. Therefore, first aid skills for psychological support should be given importance. It was also found that infectious casualties are a risk that healthcare provides are facing at their workplace. Therefore, it is important for them to have training in infection control measures, personal protective equipment (PPE), surveillance, early warning, and case-tracking systems.

Several limitations were met in the current study. all emergency health professionals of all provinces of Pakistan will not get an equal chance to participate. Authors focused on the main urban cities. Therefore, we can say the overall findings can reflect the current knowledge of the country. It is also recommended that study on larger scale should be done to include rural area of Pakistan.

The origin of training among the trained participants; was not specified in the questionnaire's items as to whether the training was held inside or outside the country. Thereby, it does not reflect the provided actual size of formal programs. Finally, the items' content of the questionnaire. Since there was no emergency plan applicable in all health facilities to be tested in this survey, the authors just included the basic principles in disaster management in the questionnaire[13].

CONCLUSION

This study shows considerable number of emergency health professionals found deficient in knowledge, with limited opportunities for training despite their beliefs towards disaster emergency management. There was a gross lack of formal teaching and training programs in emergency and disaster medicine. So, for the medical personnel, disaster emergency preparedness training/course should be necessary and efforts should be done to incorporate such courses and training in the curricula of health institutes at undergraduate and post graduate level.

Long-term formal training such as undergraduate and postgraduate programs is necessary.

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