SAJEM EMERGENCY MEDICINE JOURNAL

Original Article

Disaster Management Preparedness: Attitudes and Previous Experience of Emergency Physicians of Peshawar, Pakistan

Hamid Shahzad,[1] Irfanullah,[1] Umair Shafqat,[1] Muhammad Habib Khan,[1] Shah Hussain,[1] Zahid Khan[1]

Authors

Dept of Emergency Medicine
Lady reading hospital Peshawar[1].

Correspondence to:

Umair Shafqat,
dept of Emergency Medicine
Umair_shafqat72323 @yahoo.com

ABSTRACT

INTRODUCTION

Emergency physicians play a vital role in any disaster as they are the first responders. Proper training and skills are required to deal any emergency effectively. The objective of this study is to assess the attitudes and previous experience of emergency physicians towards disaster management preparedness from three tertiary care hospitals of Peshawar, Pakistan.

METHODS

This cross-sectional study was conducted in three tertiary care hospitals i.e. Lady Reading Hospital, Hayatabad Medical Complex and Khyber Teaching Hospital, of Peshawar, Pakistan. A validated questionnaire was distributed among physicians working in Emergency Departments through convenience sampling from 4th August 2018 to 21st August 2018.

RESULTS

A total of 63 participants responded to the questionnaire with a male preponderance (n=53, 84.1%). Most of the doctors agreed that training in disaster preparedness should be mandatory for all health professionals (mean 4.8 ± 2.51 SD) with many doctors feeling prepared to do triage in mass casualty (4.30 ± 2.38 SD), deal with emergencies at local level (4.17± 0.64 SD) and provide psychosocial support to the victims (4.17± 0.71 SD). Although 33% of the respondents had dealt with a mass casualty at scene, only 27 % (n=17) of the respondents had been actively involved in a mass casualty drill.

CONCLUSION

Disaster preparedness is one of the key steps in managing a disaster effectively when it occurs. The attitudes regarding disaster preparedness among emergency physicians is highly positive however experience can be improved with further training. We propose development of disaster plans in every institution, drills according to the plans and frequent teaching sessions so that the physicians feel prepared when a disaster occurs.

KEY WORDS

Disaster management preparedness, Health care professional, Pakistan.

INTRODUCTION

Disasters hav arian crises and disasters globally, is 6.4 with 10 as the maximum score which is a moderately high rating.[5] Earthquakes in Kashmir (2005) and Baluchistan (2008 and 2013) lead to an estimated death toll of 76,000, affected more than 400,000 people with destruction of more than 3 million houses and a net estimated loss of USD 7.67 billion.[6,7] Extensive floods in 2010 and 2011 affected more than 29.5 million people and resulted in a loss of USD12.4 billion. Recent heat wave in coastal areas of Karachi crossed a death toll of 1200 people.[6] Apart from natural disasters, being a frontline ally in the war against terror, Pakistan has been a victim of numerous terrorist attacks nationwide. In the last year alone, there were a total of 370 terrorist attacks across 64 districts (165 in Baluchistan, 83 in Federally Administered Tribal Areas, 71 in Khyber-Pakhtunkhwa, 30 in Sindh,14 in Punjab etc).[8] In case of such massive and frequently occurring disasters, hospital resources are overwhelmed either because of limited reserves or increased demand of medical services so it is very important for the ED physician to be well prepared and well-trained to manage it effectively.

Many studies have been conducted in other parts of world regarding preparedness and attitude of emergency physicians towards disaster management which shows poor preparation of health workers in case of a mass causality event despite increased

awareness.[8-9] Studies from Yemen, Italy, Ethiopia, Iran and China show that knowledge of healthcare professionals about disaster and emergency management is insufficient.[8-13] Due to this deficient knowledge and lack of preparedness, it is recommended to have simulation-based drills, introduction of hospital emergency protocols, regular review and update of these policies, creating awareness about recognizing emergencies and how to respond effectively as a healthcare provider.[9-13]

Limited studies have been done in Pakistan regarding disaster preparedness. A study done in Karachi, in two public tertiary care hospitals in 2007, revealed that 46.2% participants had no idea about triaging in a mass disaster.[14] Shabbir et al showed that amongst 156 respondents from nursing staff in Lahore, 60.9% knew what disaster preparedness is but 75.6% had never been part of any disaster management plan.[15] To the best of our knowledge, this is the first study being conducted amongst doctors in Emergency Departments across three tertiary care hospitals in a disaster-prone area. The objective of this study to assess the attitudes and previous experience regarding disaster management preparedness among emergency physicians in Pakistan.

MATERIALS & METHODOLOGY

Study Design and Setting

This cross-sectional study was conducted in three tertiary care hospitals i.e. Lady Reading Hospital, Hayatabad Medical Complex and Khyber teaching hospital, of Peshawar, Pakistan. A validated questionnaire was distributed among physicians working in Emergency Departments through convenience sampling from 4th August 2018 to 21st August 2018 after ethical approval from the department. Lady reading hospital has a 179 bedded Emergency department with a total of 422 health care staff working through day and night. It has its own blood bank, laboratory, well equipped operation theatre and a learning resource centre. The data collected from other two hospitals is less because of lack of proper emergency setup and a smaller number of ED physicians at the time of our data collection.

Study Population

After assuring confidentiality and taking informed verbal consent, the questionnaire was given to the physicians working in ED. Nursing staff and paramedics were excluded from the study.

Study Tool

The questionnaire consisted of three portions. First 9 questions assessed attitudes of emergency physicians towards response to health emergency. The next 5 questions consisted of self-assessment of disaster knowledge. The last four questions were regarding previous experience of dealing with disasters or casualty drills.

Statistical Analysis

Categorical variables were presented as frequencies and percentages. Disaster knowledge and awareness related responses were presented as mean ± SD. Comparison between the mean disaster knowledge score of male and female doctors was done using Kruskal-Wallis test.
The analysis was performed in 95% confidence interval using the Statistical Package for Social Science (SPSS), version 23 (IBM, Armonk, NY, USA).The threshld for statistical significance was kept at 0.05.

RESULTS

Total 63 emergency doctors responded to the questionnaire created for this study. Among them, 53 (84.1%) were male and 10 (15.9%) were female. Most of them were aged between 18 to 30 years. The majority (61.9%) of the respondents had MBBS degree while the remaining 38.1% had FCPS degree as their highest educational qualification. More than two third of the doctors had work experience of one year or less. (Table 1)

The study questionnaire included 9 questions to assess the attitudes of emergency physicians towards the response to health emergencies and risk awareness. The answers to these questions were created using 5-point Likert scales with 1 point being 'strongly disagree' and 5 point being 'strongly agree'. The highest mean 4.80 ± 2.51 was observed against the statement 'trainings in emergency response and disaster preparedness should be mandatory for all health professionals'. The lowest mean score (2.14 ± 2.94) was observed against the following statement – 'every medical institution should have a disaster/ mass casualty incident protocol'. (Table 2).

Five items were included in the questionnaire to measure the disaster knowledge in the 5-point Likert scales. The highest mean score (4.93 ± 4.41) was noticed for the item – 'I feel prepared to participate in national emergency response system for disaster'. The lowest mean score (4.00 ± 0.57) was noticed for the item – 'In a case of disaster, I feel confident recognizing differences in health assessments indicating potential exposure to specific agents'. (Table 3).

Most of the physicians agreed to the following questions – 'Over the past two years, have you been participating in any educational activity dealing with disaster/mass casualty preparedness or management?' (65.1% agreed); 'Should educational activities dealing with disaster preparedness and management be mandatory for license renewal?' (68.3% agreed). Seventy-three percent of the

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physicians were never involved in mass casualty drills and 66.7% of the physicians never participated in the management of disaster/ mass casualty cases at the scene. (Table 4).

The attitude and awareness related questions (9 + 5 = 14 questions) were compared between male and female physicians. Mean score of male physicians and female physicians were statistically similar for most questions ($p > .05$) (Table 5).

Table 1: Baseline characteristics of the respondents. (n = 63)

Gender	
Male	53 (84.1)
Female	10 (15.9)
Age	
18 – 30	43 (68.3
30.1 – 40	19 (30.2)
> 40	1 (1.6)
Academic qualification	
MBBS	39 (61.9)
FCPS	24 (38.1)

Work experience in ED (in years)	
0 – 1	43 (68.3)
1.1 – 2	10 (15.9)
2.1 – 3	0 (0.0)
3.1 – 4	1 (1.6)
> 4	9 (14.3)

Table 2: Attitudes of Emergency physicians towards response to health emergencies and risk awareness. (n = 63)

No.	Statement	Mean	SD
1	Every medical institution should have a disaster/mass casualty incident protocol	2.14	± 2.94
2	Every medical institution should have strategy with organizational logistics and plans in disaster response situation	4.68	± 1.04
3	Institutional strategies in disaster/mass casualty incident response situation need to be checked and updated periodically	4.68	± 0.47
4	All health professionals should be familiar with institutional strategy regarding implementation of emergency plans and evacuation procedures	4.59	± 0.50
5	All health professionals should be acquainted with the identification process of bioterrorism/ biological or chemical attacks and should have knowledge how to perform required procedures	4.33	± 0.58
6	Trainings in emergency response and disaster preparedness should be mandatory for all health professionals	4.80	± 2.51
7	Overall and situational risk awareness of mass casualty incident/disasters need to be high among health professionals	4.54	± 0.56
8	Beside health professionals, the organizational logistics and roles in disaster response situations should include different local and national agencies	4.37	± 0.52
9	Mass casualty drills should be carried out frequently in order to retain knowledge and skills in the event of a disaster/ mass casualty	4.78	± 2.26

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Table 3: Emergency physicians' self-assessment of disaster knowledge. (n = 63)

No.	Statement	Mean	SD
1	I feel prepared to participate in national emergency response system for disaster	4.93	± 0.41
2	I feel prepared to participate in local community emergency response system for disaster	4.17	± 0.64
3	I feel prepared to carry out accepted triage principles used in disaster incident	4.30	± 2.38
4	In a case of disaster, I feel confident recognizing differences in health assessments indicating potential exposure to specific agents.	4.00	± 0.57
5	In a case of disaster, I feel prepared to provide psychosocial support to the victims	4.17	± 0.71

Table 4: Previous experience of emergency physicians regarding training, mass casualty drills, and participation in real disaster management. (n = 63)

Item	Yes N (%)	No N (%)
Over the past two years, have you been participating in any educational activity dealing with disaster/mass casualty preparedness or management?	41 (65.1)	22 (34.9)
Have you ever been actively involved in mass casualty drills?	17 (27.0)	46 (73.0)
Should educational activities dealing with disaster preparedness and management be mandatory for license renewal?	43 (68.3)	20 (31.7)
Have you ever participated in the management of disaster/mass casualty cases at the scene?	21 (33.3)	42 (66.7)

Table 5: Comparison of attitude and self-assessed knowledge between male andfemale emergency physicians. (n = 63)

Item	Gender	n	Mean	SD	p-value
Disaster incident protocol	**Male**	53	2.34	3.16	.199
	Female	10	1.10	0.32	
Institutional strategy	**Male**	53	4.64	1.13	.130
	Female	10	4.90	0.32	
Institutional strategy update	**Male**	53	4.62	0.49	.020
	Female	10	5.00	0.00	
Knowledge of institutional strategy	**Male**	53	4.53	0.50	.030
	Female	10	4.90	0.32	
Training in emergency response	**Male**	53	4.24	0.55	.002
	Female	10	4.80	0.42	
Knowledge of identification process	**Male**	53	4.83	2.73	.140
	Female	10	4.70	0.67	

Item	Gender	n	Mean	SD	p-value
Risk awareness	**Male**	53	4.47	0.58	.023
	Female	10	4.90	0.32	
Other agencies inclusion	**Male**	53	4.25	0.48	<.001
	Female	10	5.00	0.00	
Mass casualty drills	**Male**	53	4.78	2.46	.058
	Female	10	4.80	0.42	
National emergency response system	**Male**	53	4.20	0.79	.074
	Female	10	3.70	0.82	
Local emergency response system	**Male**	53	4.21	0.66	.293
	Female	10	4.00	0.47	
Triage principles	**Male**	53	4.38	2.58	.518
	Female	10	3.90	0.57	
Health assessment in disaster	**Male**	53	4.98	0.60	.544
	Female	10	4.10	0.32	
Psychosocial support to the victims	**Male**	53	4.17	0.75	.901
	Female	10	4.20	0.42	

Local emergency response system	Male	53	4.21	0.66	.293
	Female	10	4.00	0.47	
Triage principles	Male	53	4.38	2.58	.518
	Female	10	3.90	0.57	
Health assessment in disaster	Male	53	3.98	0.60	.544
	Female	10	4.10	0.32	
Psychosocial support to the victims	Male	53	4.17	0.75	.901
	Female	10	4.20	0.42	

DISCUSSION

Lady Reading hospital was the main setting of our study because this is the largest hospital of the province with all major specialities, a trauma referral centre for 26 districts and has dealt with 267 incidents of mass casualty in the last 10 years.[16] Emergency physicians have the added responsibility to have the knowledge and skills to cater for the patients coming from disaster-struck area in hospitals and in the field. For such capability, rigorous training must be in place so that they feel confident dealing under stressful conditions. The concept of disaster preparedness is recently developed after major disasters and terrorist attacks.[17] Curriculums are being designed for undergraduate health profession students to acquire core competencies in emergency preparedness such as hazards risk assessment and planning, knowledge of CBRNE (chemical, biological, radiological, nuclear and explosive) agents, surveillance, public health emergency preparedness etc.[18] Riveria et al showed that internal factors such as lack of specialized equipment and training courses, and external factors such as insufficient knowledge about mass casualty incident and lack of involvement of other hospital departments can be a major barrier in preparing for disasters but providing dedicated time for training and education is the main barrier that one must overcome.[19]

Almost all the items on the attitude showed a very positive response from the emergency doctors. The attitudes of the doctors regarding disaster preparedness was positive with most agreeing to presence of organizational logistics and institutional plans (4.68± 1.04 SD), regular reviewing and updating of these strategies (4.68± 0.47), awareness of doctors regarding implementation of emergency plans and evacuation plans (4.6 ± 0.50) and regular drills (4.78 ±2.26) so that the knowledge and skills can be maintained. A Yemeni study showed similar results with 84.9 % health professionals agreeing that training to manage disasters is essential in all health care facilities.[8] A study from India showed significant positive

attitude fro awareness of disaster planning and preparedness among medical interns but was deficient in knowledge of their role during drills.[20] Most doctors agreed that they should be prepared to identify probable bioterrorism/ biological or chemical attack. Along with health care professionals, presence of other administrative authorities at local and national level for provision of logistics and other operations were agreed upon. (4.37±0.52)

This should encourage the administration and faculty of the departments to create more learning and training opportunities for the doctors. The doctors also felt confident in managing emergencies and felt that they were prepared to participate in national and local emergencies. Although a poor knowledge of triaging was shown in a similar study conducted in Karachi, [14] it is encouraging to know that most doctors were confident in principals of triaging in mass disasters which is the first priority in assessing any disaster and directing relief efforts accordingly.

Emergency physician's self-assessment regarding their preparedness was another positive result from the study. In all questions, the physicians thought that they were prepared to handle national, local and potential biological disasters. This is a significant improvement as compared to a study done in Karachi where only 3.3 % of respondents were comfortable in dealing a bomb blast emergency and 2.2% of then were comfortable in dealing with a chemical, nuclear or biological disaster. Rivera et al showed that most ED health professionals thought that they were prepared to deal with local disasters such as 4-car highway accident (74%) but majority (65%) felt unprepared while dealing with a biological or chemical attack such as anthrax scare or treating small pox.[19] Although a knowledge or simulation- based assessment would have been a better way to assess preparedness, the difference in preparedness could be due to the high influx of trauma at one ED as compared to other.

The positive attitude is however not translated into an excellent experience as 73% of the doctors have not been actively part of any mass casualty drill. This is further augmented by the result that only 65% of the doctors had been part of an educational activity dealing with such disaster preparedness in the last 2 years. This can partly be explained by the fact that 43% of our study population had work experience of less than one year.

In our study, around 65% of the doctors had taken part in an educational activity for disaster management with 33% managing it as a real-life scenario. Although most doctors agreed that every medical institute should have drills for disaster management, around 31.7 % were reluctant to include it as a mandatory component for license renewal. Among comparison between male and female physicians, there was a statistically significant difference achieved in 5 out of 14 questions. All female physicians had a consensus on regular updating of institutional strategy and inclusion of local and national stakeholders in disaster management drills. Female physicians also had a stronger response in educating the physicians about knowledge of institutional strategy, training in emergency response and training to be able to recognize for risks. This variation might be due to difference in work experience or level of training, but further studies are required to establish it.

CONCLUSION

Disaster preparedness is one of the key steps in managing a disaster effectively when it occurs. The attitudes regarding disaster preparedness among emergency physicians is highly positive however experience can be improved with further training. We propose that further work can be done in making proper disaster plans for each institution, awareness of all health professionals especially emergency physicians for these plans, regular teaching and training sessions and involvement of other departments in making local policies for implementing these plans.

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