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Research Article

Knowledge, Attitude and Practice of Healthcare Providers regarding the Blast injuries management at Tertiary care hospitals in Karachi, Pakistan

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Abstract: The objective of this study is evaluate the knowledge and awareness of our healthcare providers regarding major types of blast injuries and their attitudes and practices while dealing with blast injury patients in Karachi, Pakistan. A cross-sectional survey was conducted at three major government hospitals (Jinnah Postgraduate Medical Center, Civil Hospital Karachi and Abbasi Shaheed Hospital, Karachi) from August 2013 to January 2014. Our target population for the survey included a total of 102 Surgical Postgraduate trainees and house officers (Interns) of the above said hospitals which were recruited using purposive non-probability sampling technique. A self-constructed questionnaire was prepared by the researchers and administered to the target population. The data was analyzed using SPSS 16.0. The variables were cross-tabulated to identify possible relationships. Out of total of 102, 50% of the data was collected from civil hospital Karachi, 51% of those were house officers, belonged under the age group of less or equal 25 years, and 75.5% were females with unmarried proportion of 66.7% of total. It was found that a total of 46 respondents had attended the patients from blast injuries in past whereas 56 had never attended a patient with blast injuries. 15.22% cases who did attend patients from bomb blast scored zero on knowledge related questions, 2.18% cases got maximum score of 10, and 47.83 cases scored minimally which was one out of ten. There was positive association between, the above two groups, with awareness of injuries, attainment of training, and interest in participation of such training programs. A positive association among hospitals must needs, specialty and equipment to handle such cases and those who had attended the patients with blast injuries was also observed. On the basis of findings, we can conclude that, although, respondents have shown through their responses that they do have attitude and practicing on managing blast injuries patients and that's mainly because of frequent exposure to such patients in these hospitals but no formal training was ever given to any of these doctors and thus, their knowledge regarding bomb blast injuries was found to be highly insufficient.
Keywords: Bomb Blast injuries, trauma, Tertiary care hospitals, Pakistan.

INTRODUCTION

Between 1991 and 2000, 93 terrorist attacks worldwide produced more than 30 casualties, with 885 of these incidents involving explosions. Other international incidents involving explosions include the 2005 London subway bombings, the 1995 bombing of the Murrah Federal Building in Oklahoma City, and the catastrophic explosions of aircraft into 3 buildings on September 11, 2001 in New York City and Washington DC. Approximately 25,000 US and coalition forces and 100,000 Iraqis were estimated to have been injured or killed by explosions in the Global War on Terrorism as of early 2009 [1].

Though serious terrorist strikes have been witnessed in different nations of the world such as Spain, London and Indonesia [2], a persistently increasing threat in Pakistan has resulted in a significantly greater number of terrorist attacks. Pakistan has become the prime target for bombing attacks particularly after the September 11 incident in USA. There have been a total of 404 suicide attacks only in which 5972 people have died, 15587 have been injured exceeding the total above 21500 and counting [3, 4]. Only in 2014 so far, (till February 9) there have been 85 bombing attacks so far leaving 179 dead and 503 injured [5, 6].

Explosions have the capability to cause multisystem, life-threatening injuries in single or multiple victims simultaneously. These types of events present complex medical scenarios as well as diagnostic, and management challenges for the health care providers. Explosions can produce classic injury patterns from blunt and penetrating mechanisms to several organ systems including unique injury patterns to specific organs. The existing systems for trauma care are

elementary in nature, predominantly restricted to cities and semi-urban areas, without integration at regional or statewide levels. Statutory provisions to aid national and provincial planning and implementation of trauma-care systems, regardless of jurisdictional boundaries, are yet to evolve. With an average of 5 suicide bombings per month, the need for adequate training of pre-hospital and emergency medical personnel and physicians who are directly involved in transporting and treating the bomb blast victims cannot be ignored [7].

The ongoing and increasing threat of terrorist activities, combined with documented evidence of decreasing emergency care capacity even within the U.S. health care system [8, 9], requires proactively preparing for these situations. Therefore, it is very important for the health care workers throughout the world to have awareness regarding the magnitude of injuries and death that can result from a blast mechanism especially in countries which have been the prime targets for bombing attacks in recent times. The objective of this study is evaluate the knowledge and awareness of our healthcare providers regarding major types of blast injuries and their attitudes and practices while dealing with blast injury patients in Karachi, Pakistan.

METHODOLOGY

A cross-sectional survey was conducted to evaluate the knowledge, attitude and practice of the healthcare providers involved in the management of patients with blast injuries. The survey was conducted at three major government hospitals (Jinnah Postgraduate Medical Center (JPMC), Civil Hospital Karachi (CHK) and Abbasi Shaheed Hospital, Karachi) from August 2013 to January 2014. All these institutes are tertiary care, welfare hospitals that cater to most of the trauma casualties in Karachi. These hospitals are major postgraduate teaching centers and as such primary responders of casualties are residents and House Officers (Interns) of these hospitals.

Our target population for the survey included a total of 102 Surgical Postgraduate trainees and house officers (Interns) of the above said hospitals which were recruited using convenient sampling technique. It also included Emergency Casualty Medical Officers and paramedical staff working in the Emergency Department.

A self-constructed questionnaire was prepared by the researchers and administered to the target population. The questionnaire included questions regarding basic knowledge of the individuals in managing blast injuries, their attitude and practices in such circumstances and the self-assessment of their preparedness in such scenarios.

The questionnaire was administered in all the major surgical wards and emergency room. The survey was conducted within three days to eliminate repetition and bias due to information spreading about the questionnaire content. A verbal consent was taken from each responder before the questionnaire was handed out. Any questions from the respondent were answered in a predetermined manner. Confidentiality of the responses were ensured and maintained by the researchers.

The data was analyzed using SPSS 16.0. The variables were cross-tabulated to identify possible relationships. Written informed consent was obtained from all the participants. Confidentiality and anonymity of the data was ensured.

RESULTS

Table 1 showed, out of total, 50% data collected from civil hospital Karachi, and there were 51% was house officers, belonged under the aged group of less or equal 25 years, and 75.5% of them were females, of Muhajir ethnicity, with unmarried proportion of 66.7% of total.

A total of 10 questions were asked regarding the knowledge of respondents on basic types of blast injuries, their causes and the most common injury expected in that blast injury. Fig. 1 shows the percentage of cases with their scores of knowledge obtained with classification of respondents on the basis of their answer to the question if they have attended any patient of bomb blast or not. It was found that a total of 46 respondents had attended the patients from blast injuries, while 56 had never attended a patient with blast injuries. 15.22% cases who did attend patients from bomb blast scored zero on knowledge which was calculated from their response. 2.18% cases got maximum score of 10, and 47.83 cases scored minimally which was one out of ten. Another interesting fact observed from the same bar diagram was that the 1.79% respondents scored 7 out of 10 while they had never attended any patient with blast injuries in their past.

Table 2 gives the association of general questions with respondents who attended the bomb blast cases, results have shown that, there was positive association between, two groups, with awareness of injuries, attainment of training, and interest in participation of such training programs, but no association was observed when they were asked regarding who should be organizing trainings or workshops, corresponding p-values and percentages are also shown in table 2.

Table 3 showed a positive association among hospitals must needs, specialty and equipment to handle such cases and those who had attended the patients with blast injuries, corresponding p-values and descriptive are also shown.

Table 1: Demographics of the respondents

Demographics		Frequency (N=102)	Percentage (%)
Hospital	CHK*	51	50.0%
	JPMC*	25	24.5%
	Abbasi	26	25.5%
Respondent	House officers	51	50.0%
	Emergency doctors	20	19.6%
	Residents	12	11.8%
	Consultants	8	7.8%
	Para-medical staff	11	10.8%
Age group (years)	≤25	63	61.8%
	26-30	16	15.7%
	31-35	16	15.7%
	>35	7	6.9%
Gender	Male	25	24.5%
	Female	77	75.5%
Ethnicity	Muhajir	63	61.8%
	Pathan	7	6.9%
	Punjabi	13	12.7%
	Sindhi	10	9.8%
	Others	9	8.8%
Marital status	Single	68	66.7%
	Married	34	33.3%

*CHK = Civil Hospital Karachi, JPMC= Jinnah Post Graduate Medical Center

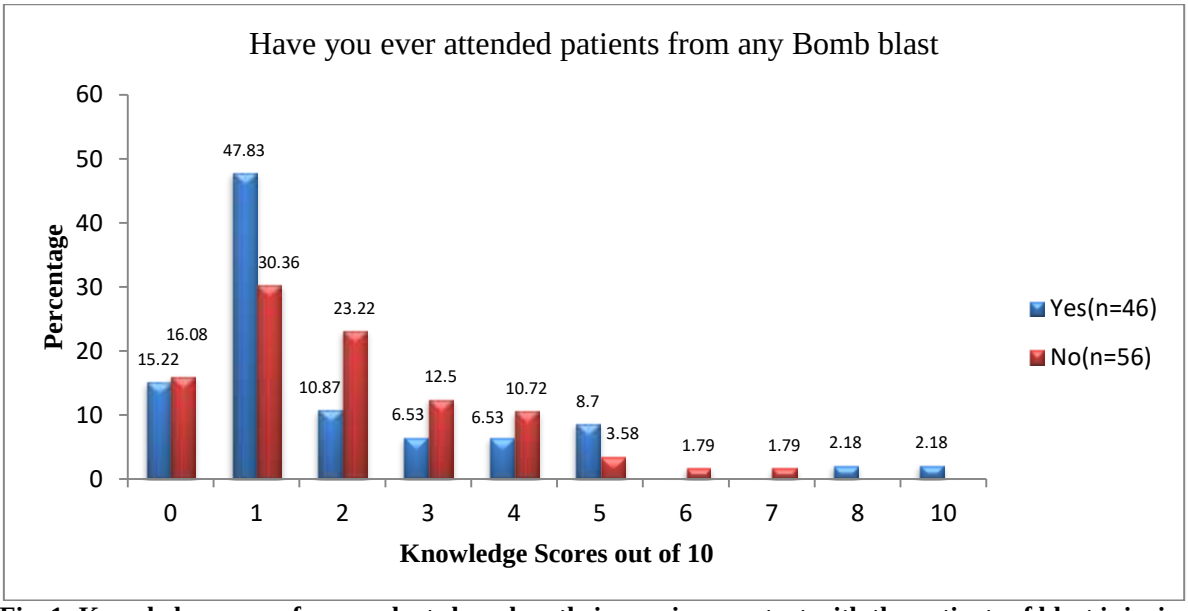

Fig. 1: Knowledge score of respondents based on their previous contact with the patients of blast injuries

Table 2: Response to general questions regarding blast injuries and related training

		Have you ever attended patients from any Bomb blast				
		yes		No		p-value
		n=46	%	N=56	%	
Are you aware about the different types of blast injuries	Yes	41	89.1%	25	44.6%	<0.01*
	No	5	10.9%	31	55.4%	
Have you ever received any training regarding the management of patients from Blast injuries	Yes	18	39.1%	5	8.9%	<0.01*
	No	28	60.9%	51	91.1%	
Will you participate if any such training is organized	Yes	43	93.5%	43	76.8%	0.02*
	No	3	6.5%	13	23.2%	
Who do you think should organize such training/workshops	Host Hospital or Institution	28	60.9%	22	39.3%	0.08
	PMA	2	4.3%	10	17.9%	
	CPSP	5	10.9%	6	10.7%	
	HEC	0	.0%	3	5.4%	
	Ministry of Health	11	23.9%	14	25.0%	
	Other	0	.0%	1	1.8%	
*p <0.05 found significant using Pearson chi square test						
PMA= Pakistan Medical Association, CPSP= College of Physicians and Surgeons, Pakistan, HEC= Higher Education Commission						

Table 3: Attitude of respondents regarding the management of blast injuries

		Have you ever attended patients from any Bomb blast				
		yes		No		*p*-value
		n=46	%	n=56	%	
Do you think management of patients with blast injuries require special skills	Yes	38	82.6%	46	82.1%	0.951
	No	8	17.4%	10	17.9%	
Do you think your hospital has the required specialty to handle blast injuries?	Yes	39	84.8%	33	58.9%	0.01*
	No	7	15.2%	23	41.1%	
Do you think your hospital has the required equipment to handle such blast injuries	Yes	39	84.8%	36	64.3%	0.020*
	No	7	15.2%	20	35.7%	
Do you think there is a need to establish specialized centers for handling such blast injuries	Yes	41	89.1%	49	87.5%	0.799
	No	5	10.9%	7	12.5%	
Does your hospital ensure safety of health care providers particularly in such emergencies like bomb blasts	Yes	33	71.7%	35	62.5%	0.325
	No	13	28.3%	21	37.5%	
Do you think, in current situation in Pakistan, blast injuries and its management should be included in curriculum of medical students	Yes	38	82.6%	49	87.5%	0.488
	No	8	17.4%	7	12.5%	
*p <0.05 found significant using Pearson chi square test						

Table 4: Practice of respondents regarding the management of blast injuries

Questions on Practice						
		Have you ever attended patients from any Bomb blast				
		yes		No		*p*-value*
		n=46	%	n=56	%	
What is your plan of action/ approach for patients with blast injuries?	Curative	37	80.4%	28	50.0%	0.013*
	Conservative/symptomatic	6	13.0%	18	32.1%	
	Palliative/Supportive	2	4.3%	9	16.1%	
	Other	1	2.2%	1	1.8%	
How do you prioritize the patients with blast injuries?	As they are received	23	50.0%	12	21.4%	0.01*
	Severity	21	45.7%	28	50.0%	
	Conscious level	2	4.3%	10	17.9%	
	Forced to give care	0	.0%	6	10.7%	
What are the most common difficulties that you faced in management of patients of blast injuries?	Lack of human resource	16	34.8%	21	37.5%	0.01*
	Lack of material resource	7	15.2%	6	10.7%	
	Lack of emergency medication	1	2.2%	15	26.8%	
	Lack of security personnel	22	47.8%	13	23.2%	
	Other	0	.0%	1	1.8%	
Have you witnessed any change related to preparation for such situations in your hospital since the increase in the number of bomb explosions in the city?	Increase in number of security guards	14	30.4%	23	41.1%	<0.01*
	Increase in the deployed doctors/nurses in the emergency department	23	50.0%	11	19.6%	
	Increase in the availability of drugs	4	8.7%	5	8.9%	
	Training sessions to handle such situations	5	10.9%	12	21.4%	
	Other	0	.0%	5	8.9%	
Do you as a person train your junior doctors/students/ colleagues regarding the management of patients with blast injuries?	Yes	39	84.8%	29	51.8%	<0.01*
	No	7	15.2%	27	48.2%	
*p <0.05 found significant using Pearson chi square test						

In the last table, we showed the results obtained regarding practice questions, and all were give significant association, descriptive stats are given in table 4. Majority (80.4%) of the respondents has curative approach for the patients presenting with blasts injuries and they prioritize the patients on the basis of their entry into the emergency department (50%) and according to the severity of disease (45.7%). The most common difficulty faced during management of blast injury patients is lack of security personnel (47.8%). Majority of them (50%) mentioned that the number of doctors and nurses in emergency departments of hospitals have increased since the incidents of blasts injuries have increased in Pakistan. Majority of the doctors (84.8%) train their juniors regarding the management of such patients as their personal duty.

DISCUSSION

Explosions can produce instantaneous havoc, resulting in numerous patients with complex, technically challenging injuries not commonly seen after natural disasters [10]. The training and capacity building of doctors and supporting staff of any hospital indicates towards its readiness and effectiveness in dealing with any disastrous situation [11]. A high degree of required training and pre-defined roles of hospital staff can help reduce the turmoil associated with such an incident significantly and an can facilitate an efficient rescue effort [12]. Readiness and skills to deal with such a situation can be acquired through theoretical knowledge in classroom and simulated trainings [13]. Majority of the doctors (82.6%)

considered managing patients with blasts injury as a specialized job and thus, requiring training drills and simulations of the blast scene. A need for the specialized centers for management of such patients was also highlighted by our research (89%).

Our research reveals the disastrous preparation that our hospitals have to combat any of such adversaries. Majority of the doctors felt that they were not adequately prepared to handle such emergency situations and hold lack of training responsible for it. A much higher frequency (91%) was reported by a study conducted in Karachi in 2007 showing the inadequacies and deficiencies of the doctors involved in trauma care management [7]. Although, the situation has slightly improved but still inadequate training will surely lead to increase in the number of morbidities and mortalities associated with such incidents in future, if any.

The burden on part of the responsible authorities to provide training to all the work force of doctors can be abridged by inclusion of courses like Management of Blast injuries and acute trauma Life Support Program in the curriculum of undergraduate and post-graduate doctors. A great majority (82.6%) have shown agreement to this notion. These training courses will prepare doctors for not only day to day encountered scenarios but also to deal with emergency situations like blasts or explosions; thus, greatly reducing the need for specialists and preventing a large number of deaths as well [14]. Similar suggestions were presented by the study conducted in 2007 but still waiting for action to be taken by the higher authorities [7].

Five million people worldwide lose their lives annually as a result of trauma and injury [15]. The protocol for management of any trauma patient is concise and simple and is based on the mnemonic, "ABCDE" in which A is Airway, B is Breathing, C is Circulation, D is Disability, and E is Exposure/Environment [16]. The guidelines though, differ slightly in more resourced and less resourced setting but the focus remains on cervical spine immobilization in any given scenario. In our study, the doctors (50%) prioritized patients on the basis of their entrance in the emergency rather than by symptoms showing the casual attitude and lack of knowledge.

Usually, in training hospitals, the senior consultants are on calls and are called only in cases of emergency or in situations which could not be handled by the trainee doctors. These doctors provide much needed knowledge and experience to the trainees when called upon. However, in any case of emergency whether blast injury or any massive casualty, the house officers and residents of the hospital are the primary responders of victims and as such play a vital role until the seniors arrive. It is important to train them adequately and identify specific roles in the emergency management as time is the key in management of such patients.In our study, (84.8%) doctors agreed that they train their junior doctors which help these house officers and residents take effective interventions by the time the senior doctor arrives. Dearth of specialist trauma physicians as triage officers is still evident in our hospitals despite the fact that there importance has been pointed out repetitively [7, 17]. The most important resource in reducing preventable casualties is the presence of experienced trauma physicians or surgeons [18]. A lack of dedicated trauma team in our hospitals mostly leads to delay in important clinical decisions in patients with multisystem injuries putting unnecessary risk to their lives.

Incidents like blast injuries causes on spot fatalities. An important aspect of management of such patients involves identification of the severely wounded and provision of optimal care to them [19]. Thus the impact of timely evacuation and triage on effectively dealing with a mass casualty event cannot be underestimated [20-22]. Currently, no national or regional guidelines for triage, patient-delivery decisions, pre-hospital treatment plans and transfer protocols exist. There are no minimal qualifications for ambulance personnel and no technical specifications of the type and quality of ambulance equipment that should be present in ambulances used in these scenarios. The scoop and run technique is usually applied for transfer of victims to the ambulances. Except a stretcher the ambulances are not equipped with the necessary lifesaving equipment. Since the development of Aman foundation ambulance service, there has been slight improvement in this situation but there contribution is limited due to limited number of ambulances available besides being expensive.

There should be Emergency Medical Service providers who in the absence of a defined national pre-hospital triage methodology should be responsible for triage at mass casualty events. They should make every effort to standardize processes and definitions at the local level. Effective management of the emergency medical response to a mass casualty like bombing requires substantial preparation by pre-hospital medical care systems. Integration into the local trauma system and understanding its emergency response methodology are critically important to ensure that the most severely injured bombing victims are transported to facilities that have the resources required to care for them. This emphasizes the need for strong communication between the ambulance services and the hospital much before the arrival of the patient so as to alert the trauma team at the center. Also the accessibility of resources required for management of such patients should be ensured by the hospital staff to avoid any bottle necks in the management of victims.

It was noticed that one of the reasons behind lack of knowledge regarding management of such patients was also lack of exposure for junior doctors. Current

patterns in worldwide terrorist activity have increased the potential for casualties related to explosions, yet few civilian emergency medical service providers in the United States have experience treating patients with these injuries [10]. Another important factor is the political involvement in many such incidents. The over-pressurizing of the party workers on doctors can cause fatal errors which then lead to life threatening treats to doctors. As mentioned by doctors (47.8%) in present study that lack of security personnel is one of the major hurdles towards management of patients with such injuries. Such conditions can be avoided by ensuring safety of the doctors and supporting staff by the hospitals and concerned authorities.

CONCLUSION

On the basis of findings, we can conclude that, although, respondents have shown through their responses that they do have attitude and practicing on managing blast injuries patients and that's mainly because of frequent exposure to such patients in these hospitals but there was no formal training was ever given to any and thus, their knowledge regarding bomb blast injuries was found to be highly insufficient. Majority of the respondents were not aware of initial triage, trauma resuscitation, and transport of patients and standard protocols for multiple injured patients or mass casualties.

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