

FREQUENCY OF POST-TRAUMATIC STRESS DISORDER AND ITS ASSOCIATION WITH TYPES OF PHYSICAL INJURIES AND DEPRESSION IN EARTHQUAKE VICTIMS

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ABSTRACT

Objectives: To examine the frequency of Post Traumatic Stress Disorder (PTSD) in victims of October 2005 earthquake in Pakistan and to evaluate its association with type of physical injuries and depressive disorder.

Material and Method: 210 victims were assessed for PTSD and depression by using semi-structured clinical interview and HADS respectively. These subjects were selected at random. Victims, both with or without physical injuries, were assessed.

Results: Of the two hundred ten victims, 141 had sustained physical injuries. Among those, 51% had soft tissue injuries, 36% had bony injuries and 13% had spinal injuries. Among physically injured victims 87 (62%) developed PTSD and 54 (38%) did not. Sixty nine victims who did not sustain physical injuries, 32 (46%) developed PTSD while 37 (54%) did not. The results indicate significant relationship between PTSD and physical injury (Chi square = 4.43, df = 1, p < 0.05).

Conclusion: Frequency of PTSD was markedly increased in people suffered from physical injuries as compared to those who did not sustained injuries.

KEY WORDS: Post-traumatic stress disorder (PTSD), Physical injuries.

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INTRODUCTION

Post Traumatic Stress Disorder (PTSD) has a set of typical symptoms that develop after a person sees, is involved in, or hears of an "extreme traumatic stressor". The person reacts to this experience with fear and helplessness, persistently relives the event and tries to avoid being reminded of it.¹ Historically it was seen that the appearance of the disorder

roughly correlated with the severity of stressors; but not every response to such events is a post traumatic stress disorder e.g. 90% of Vietnam veterans met diagnostic criteria of PTSD. 43% had at least one other diagnosis.² Epidemiological studies found life time prevalence for PTSD of 7.8% to 9.2% with rate twice more common in females.³

Major health outcomes of earthquakes include physical injuries, cardiovascular effects and psychological reactions. Physical injuries are correlated with entrapment, higher number of floors in buildings and behavior at time of impact.⁴ PTSD and depressive symptoms are reported to be more marked in people near epicenter of earthquake. The estimated rates of PTSD and depression were 39% and 8% respectively.⁵ After exposure to severe trauma, either an earthquake or violence, adults are at high risk of developing severe and chronic post-traumatic stress reactions that are associated with chronic anxiety and depressive reactions.⁶

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Depressive symptoms were reported to be predicted by death of relatives, past psychiatric history and study site.⁷

The severity of the traumatic stress symptoms was predicted by female gender, fear during earthquake, older age, trapped under rubble, loss of near ones, past history of trauma, past psychiatric history and loss of close relatives.^{5,7-9} Post earthquake morbidity lasts longer in those who are older in age, have higher neurosis, use neurotic defenses and have history of emotional problems.¹⁰ PTSD and anxiety symptoms are reported to be more common in children who were alone at time of earthquake and received injuries.^{11,12} Multiple head injuries, thorax abdomen traumas, simple fractures and simple contusion were reported to be more frequent in earthquake victims of Mexico City in 1985.¹³

Koren D et al clearly indicated that bodily injury is a major risk factor-rather than a protective one-for PTSD. While supporting the notion that bodily injury contributes to the appraisal of the traumatic event as more dangerous, the data also suggest that this heightened level of perceived threat is not a simple, straightforward function of the severity of injury or of the traumatic event.¹⁴ Zatzick et al found that patients with surgical interventions and hospitalization after the trauma have more chances of development of PTSD at 1, 4 and 12 months interval.^{15,16}

Michael 1999 also studied the relationship between the type of physical injuries and PTSD. This study reported inverse relationship with the type of physical injuries and PTSD. They have correlated the PTSD development with the perceived general health, however the type of injuries mentioned by them penetrating, blunt and burned have no role in longer period of time.¹⁷

After exposure to severe trauma, either an earthquake or violence, adults are at high risk of developing severe or chronic post traumatic stress reactions that are associated with chronic anxiety and depressive reactions. Clinical evaluation and therapeutic intervention should include specific attention to these reactions. Early mental health intervention is recom-

mended to prevent their chronicity.⁶ Our study aims to examine the frequency of PTSD and its relationship with physical injuries.

PATIENTS AND METHODS

This was a cross sectional non interventional study carried out at field camps of Bela Nur Shah Nelum Park Camp, Muzaffarabad, Azad Kashmir. Every 20th victim was interviewed for assessment according to the registration in the camp. There were about 4200 victims in the camp. A sample of 210 subjects was studied six weeks after the incidence. Both male and female subjects were included who sustained soft tissue, bony, spinal or no injury at all. Demographic details along with the type of injuries sustained or not sustained were recorded, semi structured clinical interview was conducted to diagnose post traumatic stress disorder.

RESULTS

A total of 210 subjects which included 47.1% males and 52.9% females were included in the sample. Mean age of the sample was 33.91±15.62. Age groups in which PTSD was marked were 21-25, 26-30 years and 46-50 years with 23.53%, 14.29%, 12.61% respectively. PTSD was not reported in subjects below 11 years of age. PTSD was reported to be 10.08%, 8.4% and 5.88% in groups 11-15, 41-45 and 31-35 years respectively. Number of females who developed PTSD was more than males as shown in the following Table-II.

Table-I: Age group of the subjects

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-10	3	1.4	1.4	1.4
	11-15	12	5.7	5.7	7.1
	16-20	18	8.6	8.6	15.7
	21-25	51	24.3	24.3	40.0
	26-30	30	14.3	14.3	54.3
	31-35	24	11.4	11.4	65.7
	36-40	6	2.9	2.9	68.6
	41-45	15	7.1	7.1	75.7
	46-50	21	10.0	10.0	85.7
	51-55	12	5.7	5.7	91.4
	61-65	12	5.7	5.7	97.1
66-70	3	1.4	1.4	98.6	
71-75	3	1.4	1.4	100.0	
Total	210	100.0	100.0		

Table-II: Subject who developed PTSD

			Sex		Total
			Male	Female	
PTSD	Yes	Count	41	78	119
		Expected	56.1	62.9	119.0
	No	Count	58	33	91
		Expected	42.9	48.1	91.0
Total	Count		99	111	210
	Expected		99.0	111.0	210.0

One hundred forty one earth quake victims from a total of 210 victims had sustained physical injuries. The details of physical injuries among those 141 victims were as follows, 51% had soft tissue injuries, 36% had bony injuries, and 13% sustained spinal injuries. Among 141 victims who sustained physical injuries 87(61.1%) victims developed PTSD and 38.3% (n=54) did not develop PTSD. Those 69 victims who did not sustain physical injuries, 46.4% developed PTSD and 53.6% did not develop PTSD. There is strong association between physical injuries and PTSD as shown by chi square value 4.43 (p<.05). Among the 119 victims who developed PTSD 31.09% sustained soft tissue injuries, 28.57% bony injuries, 13.45% spinal injuries and 26.09% sustained no injury.

The number of subjects who developed depression was 141(67.1%) and who did not develop depression was 69(32.9%) The number of subjects who developed PTSD along with depression was 96 and those who developed PTSD but did not develop depression was 23.

DISCUSSION

Exposure to severe trauma leads to development of severe and chronic post traumatic stress disorders with anxiety and depressive symptoms.⁴ Our study showed that 56.7% developed PTSD. Starr AJ suggests that the development of PTSD is more common in patients sustaining orthopedic injuries and we have found similar results. Patients having bony injuries tend to have high incidence of PTSD.¹⁵

Our study is consistent with the study conducted by Koren D et al.¹⁴ We have also

Table-III: PTSD injury Cross-tabulation

			Injury		Total
			Yes	No	
PTSD	Yes	Count	87	32	119
		Expected	79.9	39.1	119.0
	No	Count	54	37	91
		Expected	61.1	29.9	91.0
Total	Count		141	69	210
	Expected		141.0	69.0	210.0

found a direct relationship between physical injuries and development of PTSD symptoms. In a study by Micheal AJ¹⁷ inverse relationship with the type of physical injuries and PTSD was reported. They have correlated the development of PTSD with the perceived general health, however the type of injuries mentioned by them were penetrating, blunt and burned. Our study is not showing any of these correlations. We have not assessed the perceived general health of the patients after the injury so this area may have to be assessed in future studies with the association of PTSD and physical injuries.

Our study is in line with Zatzick et al¹⁶ as we have found the similar results at shorter interval of time however our study was not prospective. They suggested that effectiveness trials that test screening and intervention procedures for at-risk inpatients should be developed and our research indirectly proposes the same. Basoglou et al⁷ reported PTSD in earthquake survivors about 33% at epi center 14 months after the incident and 14% 100 kilometer away from epi center. Our study reports more than two times the rate reported by Basoglou et al, the difference could be due to severity of earthquake and time since the event; we conducted the study six weeks after the incidence while the previous study was carried out after 14 months. In our study, 23.53% of the victims who developed PTSD were in the age range of 21-25 years however in the study conducted

Table-IV: Subjects who developed Depression

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	69	32.9	32.9	32.9
	Yes	141	67.1	67.1	100.0
Total		210	100.0	100.0	

Table-V: Depression * Post traumatic Stress Disorder Cross tabulation

Depression	Post traumatic Stress Disorder		Total
	Yes	No	
No	23	46	69
Yes	96	45	141
Total	119	91	210

by Basoglou et al PTSD was most common at the extremes of age especially in the elderly. PTSD was not reported at all in our study in children below the age of eleven years as reported by Kolatis et al.¹¹ In our study PTSD was more common among females as compared to males; this finding is consistent with other studies.^{5,7,8}

Our study also found that physical injury was related to development of PTSD, this is also supported by Briere et al and Abdo.^{12,13} In our study we collected information about the type of injuries. We have found that bony injuries were more strongly related to the development of PTSD, than spinal and soft tissue injuries. Physical injuries are correlated with entrapment, higher number of floors in buildings and behavior at time of impact.⁶ In our study the number of victims who developed PTSD along with depression was 119 and 96 respectively, which is in accordance with the study by Kilic 1999.⁵ Goenijan et al⁶ reported the development of anxiety and depressive reactions after severe trauma. Basoglou et al 2004 studied the long term psychological effects earth quake disaster and found that PTSD and depression were more marked near epicenter. Our results were consistent with their findings however we did not study the relationship between the epicenter and these reactions.

We thus conclude that preventive measures such as implementation of safety building codes, medical emergency readiness and public education should be carried out in areas threatened by earthquakes. In addition special mental health programs should be initiated following an earthquake.

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