



A Study of Post Traumatic Stress Disorder Following Road Traffic Accidents in a Tertiary Care Hospital Setting of North India.

KEYWORDS

Post Traumatic Stress Disorder, Road Traffic Accident, Cross Sectional Study

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ABSTRACT

Background: The occurrence of road traffic accidents (RTAs) resulting from low standard of road construction and inadequate maintenance have been on the increase in North India. While the physical consequences of these RTAs are apparent in soft tissue injuries and bone fractures, psychological consequences such as PTSD amongst others are not easily obvious.

Objectives: To identify the prevalence of psychiatric morbidity (e.g. depressive symptoms, anxiety symptoms and symptoms related to PTSD(Post Traumatic Stress Disorder) following injury sustained after road traffic accidents and to evaluate the relationship between severity of injuries of victims and psychiatric symptoms.

Material and Methods: It was a Cross-Sectional study which included 250 patients (142 men and 108 women) who were admitted to Orthopedic department of Shri Guru Ram Rai Institute of Medical and Health Sciences (SGRRM and HS), Dehradun, following Road Traffic Accident (RTA). Patients were interviewed using a questionnaire to collect the socio- demographic data, the Self Rating Questionnaire (SRQ) -Beck Depression Inventory(BDI),Beck Anxiety Inventory(BAI) and the Impact of Event Scale -Revised (IES-R). Patients were prospectively followed up for 1 month. Patients were aged between 20-75 years. The impact of injury was assessed by ISS (Injury Severity Scale) and ABI (Abbreviated Injury Scale).

Results: The mean age was 35 ± 8.90 years (range 20-70). Overall, the prevalence rate of Anxiety symptoms-18%, depressive symptoms-23.2% and PTSD symptoms-38%. Females had a higher rate of PTSD symptoms 52.6% (n = 50), compared to the males 47.4% (n=45). The majority of those with PTSD >50% were young, 20 - 29 years. The study also showed higher scales of psychiatric symptoms in major injuries in comparison to minor injuries showing direct correlation of psychiatric morbidity with severity of injury.

Conclusion: Psychiatric symptoms are frequent and severe after major injuries and less severe after minor RTA. There is urgent need to pay more attention to developing consultation-liaison psychiatry services in trauma units of North Indian hospitals.

Introduction

International Classification of Diseases, ICD- 10,¹defined PTSD (code F43.1) as: "Arises as a delayed or protracted response to a stressful event or situation (of either brief or long duration) of an exceptionally threatening or catastrophic nature, which is likely to cause pervasive distress in almost anyone.... Typical features include episodes of repeated reliving of the trauma in intrusive memories ("flashbacks"), dreams or nightmares, occurring against the persisting background of a sense of "numbness" and emotional blunting, detachment from other people, unresponsiveness to surroundings, anhedonia, and avoidance of activities and situations reminiscent of the trauma. The motor vehicle accidents are the single most significant event leading to the development of post traumatic stress disorder (PTSD).² Prevalence of PTSD following MVA, ranges from 10% ²to 46% .³

There is an increasing realization that trauma can have marked and sustained psychological effects. Up to 25% of severely injured patients experience significant early psychological reactions after trauma in some patients these reactions can be long lasting and have profound adverse effects on quality of life. Those at high risk of developing thus can be identified, and effective treatment can be administered.⁴ Patients with posttraumatic stress disorder experience disabling memories and anxiety related to the traumatic event. Traffic accidents have become the

leading cause of post-traumatic stress disorder since Vietnam War.⁵

The primary psychosocial consequences of Motor Vehicle Accidents (MVA) as beyond PTSD fall into the category of psychiatric co-morbidity, with four findings emerging. First, mood disorders, especially new cases of major depression, are most common co-morbid problem: Second, study it was ⁶ found that 27.4% of survivors with PTSD had another current co-morbid anxiety disorder. Third, several studies MSE a measure of "case-ness" or sufficient symptoms on some measure to constitute a psychiatric case. Finally there is travel anxiety and driving reluctance: ⁷found that 18.4% had travel anxiety at 1 year post MVA assessment; other ⁸ reported 18.2%.

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Materials and Methods:

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cal and Health Sciences (SGRRIM and HS), Dehradun, following Road Traffic Accident (RTA) in between January 2014 to June 2014 ie. 6 months.

After obtaining informed consent, patients were administered Semi Structured Performa in first week followed by other instrument to assess the symptoms of anxiety, depression and post traumatic stress disorder. Injury severity was assessed by administering ISS and ABI. Patients were again followed up after 4 weeks and the same scale used for the assessment. The questionnaires ask the patients to estimate their anxiety by using BAI (Beck Anxiety Inventory) ⁹ and depression by BDI (Beck Depression Inventory) ¹⁰ and HIES (Horowitz's Impact of Event Scale) ¹¹ to explore the psychological impact of a variety of traumas. The injury severity was assessed with use of ABI (Abbreviated Injury Score). ¹²

Data about the patients participating in the study were collected and analyzed using SPSS-17 for window. Chi square test was applied for statistical analysis and value of $p < 0.05$ was taken as significant.

Tools of Data Collection:

A) Semi Structured Performa: Self-designed semi Structured Performa was prepared to obtain the socio demographic characteristics of the patients. It is used to record patient's name, age, sex address, education, marital status, occupation, religion, socio-economic status and presenting complaints.

B) BDI (Beck Depression Inventory): This inventory assesses depression for patient's subjective perception. The subject has to rate according to how he has been feeling during the past two weeks on a 4 point. Scale ranging from 0-3, maximum total score is 63. The total score is categorized into mild, moderate and severe depression. The inventory is considered as a standard scale for measuring severity of the symptoms of depression. The 21 item which are rated on a 4 point scales covers the wider Psychopathology of depression.

C) BAI (Beck Anxiety Inventory): BAI is a 21 item self rated questionnaire that describes common symptoms of anxiety. This scale has a reliability value of 0-92 and a validity that ranges from 82-87 and inventory is considered as a standard instrument to measure anxiety symptoms. Scores have implication for both in measuring severity and assessing changes in symptoms due to intervention.

D) IES (Horowitz's Impact of Event Scale): IES was originally developed in 1979, later it was used for exploring the psychological impact of a variety of traumas. Although many measures of PTSD symptoms have emerged ¹³, the IES remains widely used. The IES does not measure the hyper arousal symptoms of PTSD described in DSM-IV ¹⁴

E) Injury Severity Score (ISS): ISS is used to assess patients in road traffic accidents. It makes use of the abbreviated injury scale which is assigned a value from 1 to 6, with: **Minor injury (1) Moderate injury (2) Severe but not threatening (3) Life-threatening but survival likely (4) Critical with uncertain survival (5) Fatal (6)** and its value correlates with the risk of mortality.

Results:

250 patients (142 males and 108 females) were enrolled in study. The mean age was 35 ± 8.90 years. Most of the participants were married (75.6% $n = 189$), Hindu by reli-

gion (59.2% $n=148$) and of primary or less level education (41.20% $n=103$). The majority of them were service holder (85.60 $n=214$). (Table1).

Table 1: Socio demographic profile of the victims of Road Traffic Accidents

S. No.	Socio Demographic Variables	Road Traffic Accidents Victims (%)
1	Mean Age (in years)	35 ± 8.90
2	Gender	
	Male	142(56.80)
	Female	108(43.20)
3	Marital status	
	Married	189(75.6)
	Unmarried	45(18.00)
	Widowed	16(6.40)
4	Religion	
	Hindu	148(59.20)
	Muslim	78(31.20)
	Others	24(9.60)
5	Level of education	
	Primary or below	103(41.20)
	Secondary	60(24.00)
	Higher secondary and above	87(34.80)
6	Employment status	
	Employed	214(85.60)
	Unemployed	36(14.40)

Table 2: Distribution of various psychiatric symptoms in RTA victims in 1st and 4th week

Duration	Anxiety symptoms		P value=0.070
	Yes	No	
1 st week	75(30.0)	175(70.0)	
4 th week	45(18.0)	205(82.0)	
Duration	Depressive symptoms		P value=0.0001
	Yes	No	
1 st week	140(56.0)	110(44.0)	
4 th week	58(23.20)	192(76.80)	
Duration	PTSD symptoms		P value=0.0000
	Yes	No	
1 st week	230(92.0)	20(8.0)	
4 th week	95(38.0)	155(62.0)	

Above table 2 shows the prevalence of anxiety, depression and PTSD in 1st and 4th week of patients of RTA. The anxiety symptoms in 1st and 4th week was significantly different ($p = 0.070$). Likewise depression and PTSD symptoms in 1st and 4th week were significantly different ($p=0.0001$) and ($p=0.0000$) respectively.

Table 3: Symptoms distribution with injury score in 1st and 4th week

Symptoms distribution with injury score in 1 st week			
Symptoms	Minor injury No.(%)	Major injury No.(%)	P value
Anxiety	35(31.81)	55(39.28)	P value=0.004
Depression	55(50.0)	70(50.0)	P value=0.563
PTSD	110(100)	120(85.71)	P value=0.015
Symptoms distribution with injury score in 4 th week			
Symptoms	Minor injury No.(%)	Major injury No.(%)	P value
Anxiety	12(10.90)	35(25.0)	P value=0.015
Depression	15(13.63)	50(35.71)	P value=0.011
PTSD	33(30.0)	62(44.28)	P value=0.117

Table 3 shows significant difference in anxiety and PTSD symptoms in minor and major injury ($p=0.004, p=0.015$) re-

spectively in 1st week but however in 4th week the anxiety and depressive symptoms differ significantly in minor and major injuries ($p=0.015, p=0.011$).

Using the ISS patients of minor injuries were 110 (male=81, female=29) and major injuries were 140 (male=61, female=79).

An overall prevalence of 38% ($n=95$) PTSD was found in 4th week among the patients interviewed. The rate was higher among the females compared to males. PTSD was significantly more common among the young patients. Using BAI, the prevalence of anxiety in 4th week 45 (18%) was found among the patients enrolled in the study. Likewise the prevalence for depression was found to be 58 (23.2%) in 4th week.

Discussion:

In the present study majority of population were mostly young. The predominance of males in the sample could be easily explained. Perhaps they were more likely to be motor vehicle drivers and hence more prone to injury compared to the females. There were greater representation of married 75.6% and unmarried were 18%. Though these factors were associated with a greater risk and are similar to those of other studies on traumatic events other than motor vehicle accidents¹⁵ they were not statistically significant. Those with primary or below education professionals and students had higher rates of accidents and developing psychological symptoms.

An explanation for this could be that the groups more affected had poor understanding of the possible consequences of the accident and didn't feared that their life goals and ambitions could be adversely affected. Prevalence of PTSD (38%) is comparable to that found in the developed countries: range 7 - 39%. As in the other studies¹⁶ the females were at a greater risk of developing PTSD. Among those who developed PTSD, most of them were young. It appears therefore that the young subjects are more prone to developing PTSD than the middle aged and older subjects. It is possible that the older subjects had learned coping mechanisms from past experience and younger has enhance their ability to cope with new trauma.

mas.¹⁷ Not only has it been shown that higher age could imply a higher risk of developing post-traumatic stress symptoms,¹⁸ but at the same time it also has been reported that no difference concerning posttraumatic stress measured with the instrument IES could be found between younger, older and middle aged individuals.¹⁹ Despite the significant number of patients with PTSD none had been previously diagnosed. All were attending the clinics purely for their physical injuries. Other studies of post-traumatic stress among individuals in different age groups have shown different results.

In the present study, the IES was used to assess post-traumatic stress. This instrument has been used in previous studies of post-traumatic stress in vehicle related accidents mostly in whiplash injuries^{20,21,22} The levels of post-traumatic stress with 250 patients suffering from moderate to severe stress symptoms in 4th week 38% which were clearly higher than previously reported early after injury (13%).²³

Conclusion:

The majority of MVA survivors do develop significant rates of PTSD (38%) and it is not easy to identify those at risk. A multidisciplinary approach is therefore essential in the management of the RTA survivors at the orthopedic and trauma clinics if their physical and psychological needs are to be adequately addressed. Awareness of the psychiatric outcomes after motor vehicle accidents and introduction of the psychological interventions will contribute to very large public health problem.

More important is the prevention of road accidents by implementing road safety measures such as safety belts, speed limit, improved road infrastructure and strict law enforcement measures on traffic offenders which will go a long way in preventing MVA and therefore PTSD and other psychiatric problems.

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