

Post traumatic stress disorder and the associated factors among the survivors of road traffic accident attending in a specialized hospital in Dhaka

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ABSTRACT:

Background: Post traumatic stress disorder (PTSD) is the most common mental disorders occurring among survivors of road traffic accident (RTA). It could result in long term adverse consequences if left untreated, mainly leads to social and functional impairments of RTA survivors which finally result in a poor quality of life. **Objectives:** To assess the prevalence of PTSD among the RTA survivors and the associated factors of it. **Materials & methods:** An institution based cross sectional study was carried out among 202 admitted RTA patients in the inpatient department of a specialized hospital in Dhaka city for one year duration. Data were collected from these patients using a semi structured interview administered questionnaire where Diagnostic and Statistical Manual-IV DSM-IV(PCL-S) checklist used to assess PTSD. The collected data were analyzed by using SPSS software (Version 21) and $p < 0.05$ considered as significant. **Results:** A total 202 RTA patients were included in the study and the prevalence of probable PTSD among RTA survivors was 41.1% according to DSM-IV(PCL-S) checklist. The mean age of RTA survivors found 37.6 (± 13.2) years, majority 57.4% belongs to 18-30 years age group. The mean PTSD score found 44.1(± 8.2), 9.2% RTA survivors had previous history of known depressive symptoms. Among the socio demographic attributes age and occupation were significantly associated with the PTSD; other accident related factors like time since accident and type of accident were strongly associated with the PTSD. **Conclusion:** This study found a high prevalence of PTSD among RTA survivors with some associated significant socio demographic and accident related factors. The findings suggest a need for early screening for PTSD among the survivors of RTA.

KEY WORDS:

Road traffic accident, Post traumatic stress disorder, Survivors, Factors

INTRODUCTION:

Road traffic accidents (RTA) can have serious and long lasting consequences for the survivors, both in terms of physical and psychological outcomes. Globally, over 50 million people experience trauma through RTA every year.¹ Road traffic injuries and related deaths have turned out to be a huge public health problems as well as threat in the developing world, where 90% of the world's deaths due to road traffic injuries are estimated to occur.²⁻³ Like many other countries in the world Bangladesh also suffers a great deal due to this RTA every year. Basically these accidents occur due to simultaneous flow of heterogeneous traffic, mixed flow pattern of traffic and pedestrians. World health organization (WHO), Harvard University and World Bank (WB)

simultaneously run a program named “Study Global Burden of Disease” which shows that RTA was the ninth biggest cause of death in the year of 1990, however by 2020, the ninth position of RTA will be raised to the third place.⁴⁻⁵ Research suggested that involvement in RTA may put individuals at an increased risk for a wide range of psychiatric disorder, including anxiety, depression, delirium, Post traumatic stress disorder (PTSD).⁶⁻⁸ PTSD could result in long term adverse consequences if left untreated, mainly leads to social and functional impairments of RTA survivors which finally result in a poor quality of life.⁹ This disorder is characterized by persistent re-experiencing the traumatic event in the form of vivid dreams, flash backs, night mares, disturbing memories, which may affect the victims normal life. It is not only the physical and psychological impairment but also high healthcare costs.¹⁰⁻¹² PTSD is prevalent among RTA survivors, the prevalence of PTSD among RTA survivors ranging from 6.3 % to 58.3%.¹³ RTA is more strongly associated with PTSD symptoms and psychological variables.¹⁴ Increasing RTA in developing countries, like Bangladesh, necessitates further research to assess the psychological effects and consequences of RTA among the RTA survivors. In this context, present study assessed the prevalence and the associated factors of PTSD among the RTA survivors visiting in a tertiary care center.

MATERIALS AND METHODS:

An institution based cross sectional study design was carried out among the admitted RTA patients in the inpatient department of a specialized hospital located in Dhaka city named National Institute of Traumatology and Orthopaedic Rehabilitation (NITOR). A total 202 RTA survivors who were taking treatment in that hospital during the data collection period were interviewed with a pre tested semi structured questionnaire to assess the PTSD and the associated factors of it. PTSD Diagnostic and Statistical Manual-IV DSM-IV(PCL) checklist¹¹ used to assess the PTSD. The PCL is a 17 item self report measure reflecting DSM-IV symptoms of PTSD. There are three versions of the PCL for DSM-IV, they are the PCL-M, the PCL-C and the PCL-S. Among these three versions of PCL for DSM-IV the PCL-S (specific) used in this study, which actually asks about the symptoms in relation to an identified stressful experience such as assault, disaster or accident. The PCL-S checklist contains 17 items, each item score ranges from 1 to 5 as not at all (1), a little bit (2), moderately (3), quite a bit (4), and extremely (5). The range of score is 17-85 and a cutoff score of ≥ 51 was used for the provisional diagnosis of PTSD. The interested RTA patients who were taking treatment aged ≥ 18 years, irrespective of sex were included in this study and those patients who had significant medical or surgical co morbidities, severely ill patients who were unable to take part in the interview were excluded from this study. Ethical clearance was obtained from the Institutional Review Board

(IRB) of National Institute of Preventive and Social Medicine (NIPSOM) to carry out the study with the reference number NIPSOM/IRB/2013/1125. Anonymity and confidentiality of information were maintained strictly, and informed consent was obtained prior taking interview from the respondents. Finally collected data were analyzed by using SPSS software version 21 on the basis of study objectives and the results presented in the form of tables and figure. Statistical significance was accepted for values of $p < 0.05$.

RESULTS :

Table 1: Socio demographic attributes of the RTA survivors (n=202)

Socio demographic attributes	Category	Frequency	Percentage
Age (in years)	18 – 30	116	57.4%
	31 – 59	67	33.2%
	60 – 75	19	9.4%
Mean (\pmSD) : 37.6 (\pm13.2) years			
Sex	Male	148	73.3%
	Female	54	26.7%
Religion	Muslim	182	90.1%
	Hindu	20	9.9%
Marital status	Married	155	76.7%
	Unmarried	47	23.3%
Educational qualification	Illiterate	50	24.8%
	Up to primary	64	31.7%
	Secondary	38	18.8%
	Higher secondary	19	9.4%
Occupation	Graduate & above	30	15.4%
	Student	14	6.9%
Occupation	Business / Service	58	28.7%
	House wife	34	16.8%
	Day laborer	44	6.9%
	Motor workers	43	21.3%
	Others	9	4.5%
Monthly family income (in taka)	Mean (\pmSD) : 18099.01(\pm12406.069) taka		

Table 1 reveals that the mean age of RTA survivors was 37.6 (\pm 13.2) years, more than half 116 (57.4%) belongs to 18 – 30 years age group; , majority 148 (73.3%) were male, 182 (90.1%) were Muslim and among the occupational variation 28.7% were in business / service, 21.3% were motor workers.

Table 2: Accident related factors of RTA survivors (n=202)

Accident related factors	Category	Frequency	Percentage
Place of accident	Highway	86	42.6%
	Subway	73	36.1%
	Intersection of road	43	21.3%
Accident vehicle	Bus	51	25.2%
	Truck	10	5.0%
	Motor cycle	47	23.3%
	Car	16	7.9%
	Bicycle	13	6.4%
	Auto bike	65	32.2%
Nature of accident	Face to face collision	105	52.0%
	At the time of crossing road	16	7.9%
	Push from back	47	23.3%
	Break fail	15	7.4%
	Overtaking another vehicles	19	9.4%
Role during accident	Driver and / or assistant	47	23.2%
	Passenger	63	31.2%
	Pedestrian	92	45.7%
History of previous RTA	Yes	35	17.3%
	No	167	82.7%

Table 2 reveals that among the RTA survivors less than half 86 (42.6%) faced accidents in highways, majority 141 (69.8%) patients affected lower extremity; 32.2%, 25.2%, 23.3% accident occurred by auto bike, bus, motorcycle respectively. In majority cases (52.0%) accident nature is face to face collision followed by push from back (23.3%); 17.3% RTA survivors had previous history of RTA and less than half (45.7%) RTA patients were pedestrian.

Table 3: Clinical factors of RTA survivors (n=202)

Clinical factors	Category	Frequency	Percentage
History of previous known depressive symptoms	Present	18	9.2%
	Absent	184	90.8%
Severity of injury	Mild	-	-
	Moderate	46	22.8%
	Severe	156	77.2%
Affected body parts	Neck and chest	22	10.9%
	Upper extremity	30	14.9%
	Lower extremity	141	69.8%
	Spinal cord	9	4.5%
Mean duration of suffering from accident (days)	Mean (±SD) : 41.1 (±24.3)		

Table 3 reveals that among the RTA survivors majority 156 (77.2%) injury was severe which includes any kind of fracture, whereas 46 (22.8%) were in moderate injury (any kind of sprain) and mild injury refers as only abrasion, laceration, bruise; 18 (9.2%) patients had previous history of known depressive symptoms; less than half 86 (42.6%) faced accidents in highways, majority 141 (69.8%) patients affected lower extremity and the mean duration of suffering from RTA is 41.1 (±24.3) days.

Table 4: PTSD score by using DSM-IV(PCL-S) checklist among RTA survivors (n=202)

Score of PTSD	Frequency	Percentage
31 – 40	70	34.7%
41 – 50	49	24.3%
≥ 51	83	41.1%
Mean (±SD)	44.1 (±8.2)	

Table 4 reveals that the mean PTSD score was 44.1 (±8.2), majority 83 (41.1%) patients PTSD score was ≥ 51, whereas 70 (34.7%), 49 (24.3%) patients score was 31 – 40 and 41-50 respectively.

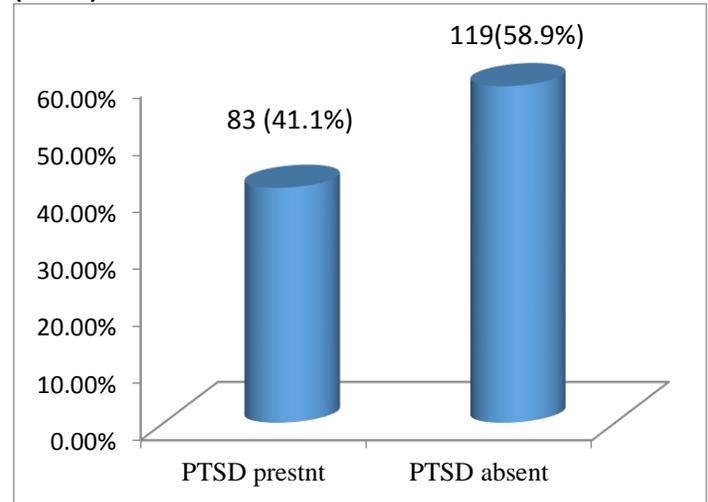
Figure 1: Distribution of RTA survivors according to PTSD (n=202)

Figure 1 shows that 83 (41.1%) RTA patients developed PTSD according to DSM-IV(PCL-S) checklist

Table 5: Associated RTA related factors of PTSD among the RTA survivors (n=202)

RTA related factors	Category	PTSD present	PTSD absent	p value
		n (%)	n(%)	
Type of accident	Bus accident	20(39.2)	31(60.8)	0.004 ^{hs}
	Truck accident	03(30.0)	07(70.0)	
	Motor cycle accident	31(66.0)	16(34.0)	
	Car accident	12(75.0)	04(25.0)	
	Bi cycle accident	10(76.9)	03(23.1)	
Place of accident	Auto bike accident	43(66.2)	22 (33.8)	0.037 ^s
	Highway	42(48.8)	46(51.2)	
	Subway	47(64.4)	26(35.6)	
Time since accident	Intersection of road	30(69.8)	13(30.2)	0.003 ^{hs}
	30-60 days	62(73.8)	22(26.8)	
	>60 days	57(49.6)	61(50.4)	

p-value was calculated by chi square test

**s : Significant, hs : Highly significant, ns :Not significant
p-value significant at <0.05**

Table 5 shows the association between PTSD and RTA related factors. Here type of accident, time since accident were highly associated with the PTSD (as p <.01) and place of accident significantly associated with PTSD (as p <.05).

Table 6: Associated socio demographic attributes of PTSD among the RTA survivors

Socio demographic attributes	Category	PTSD present	PTSD absent	p value
		n (%)	n(%)	
Age (in years)	18 – 30	57 (49.1)	59 (50.9)	0.017 ^s
	31 – 59	22 (32.8)	45 (67.2)	
	60 - 75	4 (21.1)	15 (78.9)	
Sex	Male	57 (38.5)	91 (61.5)	0.218 ^{ns}
	Female	26 (48.1)	28 (51.9)	
Educational qualification	Illiterate	21 (42.0)	29 (58.0)	.604 ^{ns}
	Up to primary	24 (37.5)	40 (62.5)	
	Secondary	16 (42.1)	22 (57.9)	
	Higher secondary	10 (52.6)	9 (47.4)	
	Graduate and above	12 (47.6)	19 (52.4)	
Monthly family income (in taka)	≤10000	33 (37.1)	56 (62.9)	.593 ^{ns}
	10001 - 20000	28 (48.3)	30 (51.7)	
	20001 - 30000	12 (41.4)	17 (58.6)	
	>30000	10 (38.5)	16 (61.5)	
Occupation	Student	7 (50.0)	7 (50.0)	.05 ^s
	Business / Service holder	22 (48.0)	36 (52.0)	
	House wife	18 (52.9)	16 (47.1)	
	Day laborer	4 (28.6)	10 (71.4)	
	Motor worker	25 (58.1)	18 (41.9)	
	Other	18 (25.6)	29 (74.3)	

p-value was calculated by chi square test

s : Significant, ns :Not significant

p-value significant at <0.05

Table 6 shows the association between PTSD and socio demographic attributes of RTA survivors. Here sex, educational qualification, monthly family income were not significantly associated with the PTSD (as $p > .05$); whereas age and occupation had significant association with PTSD (as $p < .05$).

DISCUSSION:

PTSD is common psychological phenomena and also an important public health problem among RTA survivors. Present study assessed the PTSD among RTA survivors and the associated factors of it. Regarding the socio demographic attributes of RTA survivors the study reported that the mean age of RTA patients is 37.6 (± 13.2) years, more than half (57.4%) were in 18-30 years age group, almost three fourth (73.3%) were male, majority were Muslim. Among the RTA survivors occupational variability observed as business (28.7%), followed by motor workers (21.3%), housewives (16.8%), student, day laborer etc. Quite similar findings in case of mean age of RTA patients and sex observed in the study conducted by Ongecha et al.¹⁶ and Bedaso et al.¹⁷ Present study reported that more than half (52.0%) RTA occurred by face to face collision followed by push from back (23.3%), overtaking other vehicles (9.4%), during crossing road (7.9%) and break fail (7.4%). Less than half of the RTA (42.6%) occurred in highway, the rest 36.1% and 23.3% RTA occurred in the subway and intersection of road respectively. The highway condition in our country is not satisfactory. Most of

the accidents occurred in the highways due to bad road condition of highway along with other factors. It was also reported that majority (45.7%) RTA survivors in the study found pedestrian, followed by passenger (31.2%), driver and/or assistant (23.2%). Similar categories of respondents among RTA survivors observed in the study by Bedaso et al.¹⁷; Arora et al.¹⁸ Current study reported a notable portion (9.2%) of RTA patients had previous experience of RTA, which is very unfortunate. In the study by Bedaso et al.¹⁷ showed that 25% RTA victims had previous RTA history and also they showed that having previous history of RTA is a determinant of PTSD. More than three fourth (77.2%) RTA survivors injured severely due to RTA having any kind of fracture, while 22.8% RTA survivors injured moderately having any kind of sprain. Due to RTA majority (69.8%) patients affected lower extremity, followed by upper extremity (14.9%), neck and chest (10.9%), spinal cord (4.5%); lower limbs were more affected than other parts of the body. Among the RTA survivors the mean duration of suffering from accident observed as 41.1 (± 24.3) days. Current study reported that 9.2% RTA survivors had previous history of known depressive symptoms, which also observed in previous studies.¹⁷⁻¹⁸ Present study also reported that a high percentage (41.4%) of PTSD among the survivors of RTA who attended for treatment in that specialized center. According to DSM-IV(PCL-S) checklist the mean PTSD score among the RTA survivors found 44.1(± 8.2). Psychological problems are common in any kind of accident victims. The RTA survivors suffer from psychological problems which may affect their quality of life. It is reported that anxiety and depression are the common after math of physical and emotional trauma. In different studies the probable PTSD among RTA survivors found 15.4%¹⁷, 32.4%¹⁸, 22.8%¹⁹ Among RTA survivors current study reported much higher percentage of PTSD in comparison with the above mentioned studies. In a meta analysis, it was showed that the pooled prevalence of RTA survivors was 22.25% (95% CI : 16.71% - 28.33%) and the PTSD ranging from 6.3% to 58.3%.¹³ However studies of different countries observed PTSD among RTA survivors like 19.2% in Iran²⁰, 18.4% in Germany²¹, 29.1% in UK²², 26.7% in Nigeria²³, 46.5% in Ethiopia²⁴, 32.4% in India¹⁸. The reason for the probable variation of PTSD among RTA survivors might be because of the differences in the socio-economic and geographical nature of the study area, variation in sample size, and difference in utilization of tools used to assess the PTSD. Regarding the RTA related attributes present study showed that type of accident and time since accident were highly associated with PTSD, also the place of accident was associated with PTSD. In a study conducted by Bedaso et al.¹⁷ showed that having previous history of accident, time since accident are significant determinants of PTSD among the RTA victims. Regarding the socio demographic attributes of RTA survivors age, occupation are significantly associated with PTSD, where as other socio

demographic attributes (sex, educational qualification, monthly family income) were not associated with PTSD.

CONCLUSION:

The findings of the present study concluded that there is a high prevalence of PTSD among RTA survivors. Age and occupation of RTA survivors were significantly associated with PTSD, younger age group was predominant among RTA survivors and majority of them developed PTSD. Time since accident and type of accident were strongly associated with the PTSD among the RTA survivors, also the place of accident was associated with PTSD. PTSD could result in long term adverse consequences if left untreated for RTA survivors, which affect their quality of life. The study advocates for training health professionals in identifying psychological issues, providing counseling services, motivational assistance, mental health services and management of crisis across health settings especially in trauma units.

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