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Psycho-Social and Mental Variables and Post-Traumatic Stress Disorder in Traffic Accident Survivors in Northern Iran

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ABSTRACT

Objective: To assess the psycho-social and mental variables associated with post-traumatic stress disorder (PTSD) in a series of Iranian patients.
Methods: A total of 528 eligible accident survivors in pre-sampling of a randomized controlled trial targeting PTSD were included in this cross-sectional study. Psycho-social characteristics associated to PTSD were explored in these survivors in an outpatient clinic. They completed the questionnaires via interview between six weeks to six months after accident. Data collection tools were PSS (DSM-V version) for PTSD and BDI-II for depression and a researcher-made questionnaire for psycho-social variables.
Results: There was a significant association between PTSD and the following variables; family communication, current depression, return to work, history of death of relatives, witnessed the death, length of amnesia, hospitalization, injured situation, and accident severity. Multivariate logistic regression indicated that some variables were associated with PTSD such as accident severity, (p<0.001), injured situation, (p<0.001), current depression, (p<0.001), RTW (p<0.001), and family communication (p=0.01).
Conclusion: Psychiatric nursing prevention efforts is best directed toward motorcycle depressed drivers with severe accident and poor family communication who do not return to work. Thus, routine assessment of PTSD, depression and psycho-social variables after traffic accidents must be taken into account.

Keywords: Post-traumatic stress disorder; Psychological; Social; Traffic accident.

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Introduction

Road traffic accidents are the third highest cause of mortality in Iran which lead to death and disability (17%, 22.7%, respectively) [1]. Therefore, road crashes worldwide, particularly in developing countries such as Iran requires prioritization [2]. Post-traumatic stress disorder (PTSD) is the most common psychological response to exposing traumatic events [3]. In 5th edition of Diagnostic and Statistical Manual (DSM-5), PTSD has been defined with 4 clusters and 20 symptoms in which re-experience (intrusions), avoidance, arousal and negative alternations in cognitions and mood are referred [4]. The appearance of the same symptoms one month earlier is called acute stress disorder. However, they are attributed to PTSD if taking longer than one month [5]. In a systematic review on predictors of PTSD after accident, of all 51 eligible studies, 7 were performed one month after accident (16.5% prevalence), 15 ones six months later (18% prevalence), and the rest were performed within one to six months after accident which was remarkable. Nine studies belonged to the US and seven to Britain (31%). No related study has been performed in Iran [6]. The prevalence of PTSD was reported 31.5% after three months in Iran [7].

The majority of those who develop PTSD after accident are not identified or treated [8]. About 56-87% of PTSD sufferers do not seek psychological assistance due to avoidance symptoms [9] and stigma [10]. Avoidance symptoms make the disorder chronic, because the trauma victims do not seek/follow cure [9]. Part of them avoid any treatment and continue living in the community without any diagnosis and treatment due to the stigma [10]. In addition to PTSD, a number of other psychological problems are often present after accident. A study in US showed depression and PTSD co-occurrence in 21% of individuals at six months following trauma [11]. Moreover, the traffic accident survivors with PTSD appear with high rates of alcohol use (to relieve their symptoms of anxiety, irritability and depression) [12].

The chineese researchers in their study specifically targeted survivors with grief experiences, directly exposed to high risk of more severe PTSD [13]. The most co-morbid condition specially depression was associated with poor quality of life and impairment in several areas of functioning [14]. Psycho-social/mental associated variables for PTSD among traffic accident survivors in some studies are as follows; previous psychiatric illness [15], use of a lawyer or litigation [16], blaming others for the injury [17], having an unsettled compensation claim [17], social support [18] and grief due to death of a close friend or relative [19]. Involving in compensation claims can intensify PTSD through re-traumatization. They may exaggerate their symptoms to gain any variety of benefits and malingering affects their return to work (RTW) [20]. Survivors with PTSD had significantly less work potential after accident than survivors without PTSD. Besides, RTW lasts in this group due to longer physical treatments [21]. Theories of the social support state that social support following trauma allows a trauma victim to shape their interpretation of the experience and influence on PTSD. Increased social supports especially from family and friends have been reported to be associated with reduced PTSD symptoms [22]. Prior studies have identified associated variables for PTSD population such as mental history [23]. Therefore, recording histories of depression, anxiety, alchol use, and greif after traffic accidnets is a nessesity. The results of these few studies were controversial. They somehow depend on contextual variables and vary in different countries [24]. It is not easy to identify those at risk without knowledge of existence, so vast research is required. In Iran, no study has addressed this important issue to discover the probable local predictors, while the rate of accidents is remarkably higher in our country than in others.

Based on studies, we hypothesized that some pre- and post-accident psycho-social/mental variables would associate with worse mental health and PTSD. We therefore conducted this cross-sectional study to assess the association between psycho-social/mental variables and PTSD after road traffic accident in Iranian northern population.

Materials and Methods

Study Population

We conducted this cross-sectional study from March 2015 to September 2015 on exposed patients to road traffic accidents who had been referred to Imam Reza Clinic of Poursina Teaching Hospital in Guilan province. In current study, 528 survivors were then screened for subsequent participation in a clinical controlled trial for the PTSD associated variables. Thus, the sample size of current study constituted the samples size calculated for a clinical trial. The questionnaire was filled for all 528 survivors between six weeks to six months after accident via interview in that time frame [25]. The study protocol was approved by the institutional review board (IRB) and the medical ethics committee of the Guilan University of Medical Sciences.

Study Protocol

A trained psychiatric nurse supervised the interview process in the clinic. Subjects were eligible if they had the following inclusion criteria; at least 15 years of age, passed six weeks to six months after accident, Persian speaking ability, no recent severe psychological problem (e.g. psychosis or mania), no severe internal or brain disease and no acute physical pain inhibiting the process of review. Exclusion criteria included suicidal and homicidal behavior, verbal or linguistic problems, psychotic

symptoms (e.g. hallucination), alcohol or substances intoxication at the time of interview, re-current accident, and recent grief.

Post-Traumatic Stress Scale (PSS)

Developed previously by Foa *et al*. was modified by Elhai *et al*. according to DSM-5 content generating a 20-item questionnaire (3 questions are about clinical symptoms of PTSD added to previous 17 questions). Although we could use old standard Persian tools, the researchers of this study preferred to use a tool covering all symptoms of this disorder recommended in most recent psychological textbooks. Thus, this is the first Persian study examining the validity and reliability of PSS (DSM-5). Besides, because the questions of this new version covered all items of the older one, practically two tools were used in one study. (PSS17 Foa and PSS20 Elhai). Our tool examines the most stressful accident in the last month and contains 20 items with a score of zero to 3. The minimum and maximum scores are 1 and 60 (zero= not at all, 1 = once in a week (rarely), 2= two to four times a week (sometimes) and 3 = five times and more in a week (always). In four clusters of symptoms; re-experience of accident while awake or asleep (questions 1-5), avoidance meaning ignoring any symptom which simulates the incident for the person (questions 6-7), negative changes in mood and cognition characterized by symptoms of guilt (questions 8-14), irritability characterized by symptoms of anger and nervousness (questions 15-20) [4, 26]. The goodness-of-fit for DSM-5 symptoms was obtained very good based on confirmatory factor analysis and none of the factors were more correlated with depression [4]. Scores higher than 17 were considered cut-off for inclusion in study [27].

To assess the content validity, the questionnaire was given to ten experts; eight research members of Guilan Road Trauma Research Center (one psychiatrist, three psychologists, three neurologists, one neuroscientist) and two psychiatric nursing faculties of Nursing and Midwifery School and for face validity, ten victims of traffic accidents admitted to the orthopedics ward of hospital with symptoms of acute stress, secondary and high school education and willing to cooperate were questioned. Thus, the questions were read to them. If the subjects expressed confusion or the questions seemed ambiguous, the questionnaire was updated based on the comments and suggestions.

Its reliability was calculated by the internal consistency and the computation of Cronbach's alpha coefficient (α=0.88), so the PSS questionnaire showed a favorable reliability and validity.

Beck Depression Inventory (BDI-II)

The BDI-II was a validated and reliable scale with 21 self-report items widely used by both clinical and non-clinical adult population. It assesses the depression symptoms over the past month using a four-point Likert scale with frequency/intensity of behavioral anchor points (0="Not at all," to 3="always"). According to original scale, total scores of the scale may range from 0 to 63. In this study, cut-off point was considered ≥17 which required consulting a psychologist or psychiatrist in previous studies [28]. The classification of depression scores is: 0–16 (without depression), 17–27 (mild depression), 28–34 (moderate depression) and 35–63 (severe depression) [29]. Persian language translations of the BDI-II also were produced by Ghassemzadeh *et al*. (2005) that proved a good test-retest reliability (r=0.74), a very good internal consistency (Alpha=0.87). Cronbach's cognitive subscale was 0.83 and Cronbach's somatic-vegetative subscale was 0.71 [30].

Psycho-Social/Mental Questionnaire

This is a researcher-made questionnaire which contains many simple questions for assessing some probable risk variables of PTSD including alcohol use, family/close communication, previous psycho-therapy, depression treatment history, current depression, anxiety treatment history, blame, involving in litigations; that(means victim in a file litigation related to the accident is involved), RTW; (If the answer is positive, it means that the person returned to his previous work [military service, university, school and house chores] after accident), previous death of a close relative, recent death of a close relative, witness of death, length of amnesia, hospitalization, injured situation and accident perceived severity. PTSD, depression and psycho-social/mental variables were evaluated at the same time.

If the patients to be visited in the clinic were accident case (six weeks to six month after accident), they were interviewed by a female psychiatric nurse under the supervision of a psychiatrist using the above tools. First, the interviewer introduced herself and asked for permission to participate in an interview about stress after the accident. If the interviewee showed interest, the study purpose was stated. Written consent was obtained before starting the interview. If the stress score was less than 17 or the depression less than 17, PTSD and depression were not reported. If more symptoms were observed, free consultation sessions were available (Clinical Trial Project). If risky behavior symptoms were observed, question 16 in PSS (Have you committed/ intended dangerous acts such as suicide, homicide, drug and alcohol abuse, etc.) was positive, s/he was referred a psychiatrist for immediate assistance.

Statistical Analysis

Data were analyzed using SPSS software (version 19.0). Statistical tests such as Fisher's exact test, Chi-square and ANOVA tests were used to assess the relationship between psycho-social/mental variables and PTSD. Significant psycho-social/ mental variables were entered to the binary logistic

regression to determine the predictors.

Results

Of all participants, 528 patients completed this survey. The mean and standard deviation of age was 32.55±12.98 in PTSD and 33.95±13.50 in N-PTSD (non PTSD) group (15 –79 years old). The majority of participants were male (73.1%). The mental variables of the participants are shown in Table 1. Most of the survivors were not drinker (84.7%). There was no significant relationship between alcohol habit and PTSD (p=0.09). A high number of patients reported no previous psycho-therapy (82%), no depression treatment history (75.9%), and no current depression on BDI-II (73.9%) and no anxiety treatment history (78%). The results of chi-square test indicated a significant association only between current depression and PTSD ($\chi2$=53.25, df=1, p<0.001). The psychosocial variables of the participants are shown in Table 2. Moreover, most of them had good family communication (66.9%) and close communication (66.5%). There was a link between family communication and PTSD (p=0.03) but no significant association was noticed between close communication and PTSD (p=0.22).

In both groups, the accident blame was on the other driver/rider (63.1%). Results suggested no significant relationship between blame categories and PTSD with Fisher's exact test (p=0.23). Also there was no link between involving in litigation and PTSD with chi-square test in the groups (61%) (p=0.07). Participants who reported no RTW were more likely to have higher score of PTSD than N- PTSD group. The results of chi-square test indicated a significant association between RTW and PTSD in two groups (61.7%) ($\chi2$=37.32, df=1, p<0.00). In all study population, 35.6% had history of bereaved close friends or relatives (n=69). A significant association was observed between two variables ($\chi2$=5.31, df=1, p=0.01). It was found that in both two group, 7.6% (n=17) had recent death of close friends or relatives. There was no a link between PTSD and recent death of relatives ($\chi2$=2. 94, df=1, p=.06). It was found that 44.19% of both groups had witnessed a death. The results of chi-square test indicated a significant association between witnessing the death and PTSD ($\chi2$=4.14, df=1 p=0.03). About variable of length of amnesia, Kruskal–Wallis test showed a significant difference between the two groups (KW=6.23 p=0.01) and post hoc test confirmed this finding in more than 24-hr amnesia and non-amnesia sub-categories under unequal zed condition of variances.

About length of hospitalization, Kruskal–Wallis test showed a significant difference between the two groups (KW=9.47 p<0.001); however, the post hoc test did not confirm it under unequal zed condition of variances. Most injured survivors were motorcyclists in both groups (35.8%) who had higher score of PTSD than other counterparts (p<0.001). Most of participants had perceived severe accident (37.7%) who had higher score of PTSD than other counterparts (p<0.001) (Table 2).

Multivariate logistic regression indicated that some variables were associated with PTSD such as accident severity (OR=0.12; 95% CI=0.05-0.30), injured situation (OR=2.69; 95% CI=1.44-5.04), current depression (OR=3. 14; 95% CI=1.98-4.99), RTW (OR=0.31; 95% CI=0.19-0.53) and family communication (OR=0.26; 95% CI=0.09-0.75). Other variables in the model were not significant (Table 3). Table 3 shows depression as the first and most significant psycho-social predictor which affects PTSD after accident. The risk of PTSD increases by 3.14 times in depressed individuals than the non-depressed base group. The second predictor is the perceived accident severity. The risk (odds ratio) of PTSD increases by 0.12 times in people with moderate/severe and very severe accident compared to mild severe accident in base group. The next variable

Table 1. Mental variable of the 528 traffic accident survivors.

Variable	Categories	PTSD N (%)	N- PTSD[a] N (%)	Results
Alcohol habit	Drinker	7 (22.58)	24 (77.42)	df=3
	Non drinker	140 (31.32)	307 (68.68)	p=0.09
	Withdrawal	0 (0)	11 (100)	
	Recreational	14 (35.90)	25 (64.10)	
Previous Psycho-therapy	Yes	32 (33.68)	63 (66.32)	$\chi2$=0.55
	No	129 (29.79)	304 (70.21)	df=1
				p=0.26
Depression treatment history	Yes	45 (35.43)	82 (64.57)	$\chi2$=1.92
	No	116 (28.93)	285 (71.07)	df=1
				p=0.10
Current Depression	Yes	76 (55.07)	62 (44.93)	$\chi2$=53.25
	No	85 (21.79)	305 (78.21)	df=1
				[b] p<0.001
Anxiety treatment history	Yes	37 (32.46)	77 (67.54)	$\chi2$=4.91
	No	122 (29.61)	290 (70.39)	df=2
				p=0.08

[a]N-PTSD: non- post-traumatic stress disorder; [b]Chi-square test; [c]Fisher exact test; Significance level was considered $p\leq0.05$

Table 2. Psycho-social variable of the 528 traffic accident survivors.

Variable	Categories	PTSD N (%)	[a]N-PTSD N(%)	Results
Family communication	Very good	35 (34.31)	67 (65.69)	df=4
	Good	98 (27.76)	255 (72.24)	[b]p=0.03
	Moderate	15 (31.91)	32 (68.09)	
	Poor	13 (56.52)	10 (43.48)	
	Very poor	0 (0)	3 (100)	
Close communication	Very good	35 (38.89)	55 (61.11)	df=4
	Good	96 (27.35)	255 (72.65)	[b]p=0.22
	Moderate	17 (32.69)	35 (67.31)	
	Poor	12 (36.36)	21 (63.64)	
	Very poor	1 (50)	1 (50)	
Blame	Subject	21 (21.88)	75 (78.13)	df=6
	other driver	107 (32.13)	226 (67.78)	[b]p=0.23
	Road	2 (33.33)	4 (66.67)	
	Animals	5 (33.33)	10 (66.67)	
	Vehicle malfunction	4 (66.67)	2 (33.33)	
	The subject's driver	19 (32.20)	40 (67.80)	
	Both subject and other driver	3 (23.08)	10 (76.92)	
involved in litigation	Yes	106 (32.92)	216 (67.08)	$\chi2$=2.29
	No	55 (26.70)	151 (73.30)	df=1
				[c]p=0.07
RTW	Yes	69 (20.97)	260 (79.03)	$\chi2$=37.32
	No	92 (46.23)	107 (53.77)	df=1
				[c] p<0.001
histories death of a relatives	Yes	69 (36.70)	119 (63.30)	$\chi2$=5.31
	No	92 (27.06)	248 (72.94)	df=1
				[c]p=0.01
Recently death of a relatives	Yes	17 (42.50)	23 (57.50)	$\chi2$=2.94
	No	144 (29.51)	344 (70.49)	df=1
				p=0.06
Witnessed the Death	Yes	19 (44.19)	24 (55.81)	$\chi2$=4.14
	No	142 (29.28)	343 (70.72)	df=1
				[c]p=0.03
Injured situation	Pedestrian	38 (35.85)	68 (64.15)	df=5
	Bicyclist	2 (15.38)	11 (84.62)	[b] p<0.001
	Motor Driver	36 (19.05)	153 (80.95)	
	Car Driver	26 (33.33)	52 (66.67)	
	Motor Passenger	22 (43.14)	29 (56.86)	
	Car Passenger	37 (40.66)	54 (59.34)	
Accident Perceived Severity	Mild	7 (5.26)	126 (94.74)	df=3
	Moderate	37 (26.62)	102 (73.38)	[b] p<0.001
	Severe	89 (44.72)	110 (55.28)	
	Very Severe	28 (49.12)	29 (50.88)	
Length of amnesia	<1h	1.67 (0.46)	[d]KW p=0.01	
	1-12h	1.63 (0.48)		
	12-24h	1.44 (0.52)		
	>24	1.55 (0.50)		
	no	1.76 (0.42)		
Hospitalization	<24h	1.77 (0.42)	[d]KW p<0.001	
	24-48h	1.65 (0.47)		
	48h-7d	1.61 (0.48)		
	7d-14d	1.60 (0.49)		
	>14d	1.68 (0.47)		

[a]N-PTSD: non- post-traumatic stress disorder; [b]Fisher exact test; [c]Chi-square test; [d]Kruskal-wallis test; ***ANOVA one way; Significance level was considered $p \leq 0.05$

is RTW, the risk of PTSD increases by 0.31 times in no-RTW compared to RTW in base group. The next predictor is injured situation. The risk of PTSD increases by 2.69 times in drivers/riders compared with others in base group. The final predictor in terms of significance is family communication. In individuals with a poor communication compared to very good communication in base group, the risk of PTSD increases by 0.26 times (Table 3).

Discussion

This is the first study on psycho-social/mental predictors of PTSD after road traffic accident in north of Iran which found some of the psycho-social/mental variables associated with PTSD symptoms. We observed that the status of alcohol use in all sub-categories (non-drinker, recreational, withdrawal) was not related to PTSD. These results do not support other findings which showed greater PTSD symptoms leading to greater alcohol craving [31, 32]. Seemingly, given the consequences of real statistics on alcohol use in Iran, perhaps many deny to report this experience due to legal and moral limitations.

Rate of current depression was significantly higher in PTSD compared to the N-PTSD group. These results are similar to others reporting PTSD as co-morbid with major depressive disorder [33]. In line with our finding, Hruska, *et al*., [34] reported the highest level of severity of PTSD symptoms along with the highest prevalence of current major depression disorder (MDD) following accident in America. PSS has several similar questions to BDI-II, in particular the negative changes in mood and cognition which have been recently added to the cluster of PTSD, guilt feeling, not enjoying life and negative thoughts which explains the concomitance of these two disorders. In fact, people with PTSD often suffer at least a mild depression.

Rate of depression in PTSD group of our findings highlight the importance of clinicians' attention to co-occurring depression symptoms and suggest the potential use of interventions that promote adaptive cognitions about suicide among people suffering PTSD [35].

We found the level of poor family communication was significantly higher in the PTSD group compared to the N-PTSD group. An inverse association was indicated between symptoms of PTSD and family/friends support in previous studies but social support from a close other was not associated with post-traumatic cognitions [22]. This finding is compatible with a study in which family and friend visitation in the emergency department reduced the anxiety and stress symptoms months after trauma [36] and contrary with the study by Ellis et al. in Australia [37] suggesting that social support was negatively correlated with depression symptoms, but not acute stress symptoms.

Moreover, this study found a significant connection between history of death of close relatives and PTSD. These results concur with many other studies which dedicated their attention to recent grief but in present study we discussed two questions of history and recent, death of close friends or relatives separately. The latter had nearly significant relation with PTSD (p=0.06). In parallel with this finding, in a systematic review of several studies in different countries, previous emotional problems manifested as a vigorous predictor of PTSD [6]. There was a significant relationship between witness of death in recent accident and symptoms of PTSD. However, Rayburn *et al*., [6] suggested death or injury of a close friend or relative as a cause of avoidant coping and predictor of depression [19]. Also in many studies being exposed to a fatality during accident was a powerful predictor of PTSD with a huge effect.

In current study, more than half of our study participants had RTW (work/school/university). Despite of relatively high rate of recovery, a significant association was observed between N-RTW and PTSD. Parallel with current study, symptoms of PTSD were associated with RTW. Therefore, flashbacks, a specific symptom of re-experiencing the trauma, are known to significantly delay RTW. When patients return to the same or similar accident location, they may experience severe flashbacks leading to fear, stress and irritability and an overall dramatic increase in PTSD symptoms [21]. Zatzick *et al*. suggested a dose-response relationship such that with only PTSD disorder, a threefold increased odds of not returning to work was seen 12 months after injury and patients with both PTSD and depression disorders had a five-six fold increased odds [38]. Some reviews have mentioned the patients

Table 3. Final step of multivariate Binary logistic regression model of psycho-social predictors of dependent variable of PTSD at sixth week-sixth month (n=528)

Predictors	Categories	B	SE	W	Sig	Exp(B)	CI	
Accident severity	Moderate Severe Very Severe	-2.07	0.44	21.71	p<0.001	0.12	0.05	0.30
Injured situation	Motorcyclist Driver	0.99	0.32	9.62	p<0.001	2.69	1.44	5.04
Current Depression	Yes	1.14	0.23	23.54	p<0.001	3.14	1.98	4.99
RTW	No	-1.14	0.26	19.17	p<0.001	0.31	0.19	0.53
Family communication	Poor	-1.34	0.54	6.14	0.01	0.26	0.09	0.75

exaggerating their symptoms to gain benefits and avoid returning to work [20].

These findings emphasize that attention should be paid to development of symptoms of PTSD during rehabilitation and after discharge more than ever.

There was a significant relationship between length of amnesia and PTSD symptoms. The results are not in line with Topolovec-Vranic *et al*. study that head injury with loss of consciousness was associated with PTSD [39]. In our study on-scene conscious survivors had more PTSD symptoms. There is an interaction between consciousness at the time of accident and PTSD so that those who had memory of the event met the PTSD criteria. Similarly, many studies have confirmed such relationship that PTSD develops after a traumatic event in cases who experienced awareness during anesthesia [40]. Length of hospitalization had a significant relationship with PTSD symptoms. Another study has reported similar findings were seriously injured victims were hospitalized after a traumatic accident for a period of time which could predict the later PTSD symptoms after hospitalization [25].

When the motorcyclist was the injured one, PSS was high. Thus, this group had higher PTSD symptoms. Which has also been confirmed in Iranian studies in which this group experienced more accidents with more deaths. As a common culture in northern Iran, many motorcyclists live in rural areas who use their vehicle for non-recreational purposes without helmet. In contrary to developed countries, most motorcyclists are recreational rider who wear helmet [41]. Lastly the current findings suggest that, perceived accident severity was related to PTSD, which was in fact, the subjective perception of the intensity of the accident expressed by the survivors. Previous studies had shown the impact of severity of physical injury and perception of life threat in development of PTSD [42]. Perceived threat to life was also a consistent predictor of PTSD and had an eye-catching role in numerous studies [6].

This study had some limitations. Some variables (RTW, accident severity and…) assessed in present study using single items have complicated constructs and their scales have not been standardized in Iran. Future studies should separately seek the constructs in details. Finally, qualitative studies are suggested to evaluate the blame, RTW, severity injury experience and other non-significant variables in these survivors.

This research was carried out in the main trauma center with a high number of accident admissions in northern Iran. Having a large sample size, it employed the newest PTSD tools which included all clusters of symptoms published in recent American textbooks. The tools were used through interview to facilitate the process for low literate or illiterate participants. Some participants may have exaggerated their symptoms for any reason, it is suggested that future studies consider using malingering instruments, too.

Measuring severity of physical injuries with a tool can help us understand that perceived severity is related to PTSD as well as the objective severity of injuries with measuring tool.

In conclusion, the results of our effort can be used in theoretical as well as practical fields. These findings can increase awareness and be useful in future planning for nursing services provided after road traffic accidents. Healthcare providers need to assess some psycho-social/mental variables in survivors. There may be more simple methods of prevention which can be useful in the outpatient department such as early monitoring of mental health which is particularly important in the first month after incidence. It seems that psychiatric nursing prevention efforts in trauma outpatient centers can be best directed toward survivors depressed with perceived severe accident and poor family communication who, often, do not return to work. These findings insist on the importance of routine assessment of PTSD, depression and psycho-social/mental variables after road traffic accident.

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