

Substance Use Among Non-fatally Injured Patients Attended Emergency Departments in North-East of Iran; Sabzevar

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Abstract: Introduction: During the recent decades, Iran has suffered from drug abuse and its consequences. On the other hand, recently, the occurrence of injuries and those related to mortality have increased dramatically in Iran. We have conducted this study to examine substance use among patients attended to emergency departments. **Methods:** This cross sectional population-based study was performed from January-June 2008. In this study 318 non fatally injured people who were referred to emergence departments of Sabzevar city were evaluated based on multi stage sampling. Abuse of amphetamines, marijuana, opium (opium and heroin) as illegal drugs and codeine and methadone as medical drugs were evaluated through standard methods. Extraction of opium and heroin was performed by using chromatography. Statistical analyses were perused using Chi-square, exact Fisher, logistic regression tests by using SPSS software. Significance level was considered as 0.05. **Results:** Mean±SD of age of the evaluated persons was 36.1±18.1 and 23% of them were female. From total number of injured cases, 36.5% of cases were driver, 10.7% passenger, 7.2% pedestrian, fall 41.8% and 3.8% violence. Prevalence of use of illegal drugs was 31.1% and there was not any significant difference between the male and female groups. Among the illegal drugs, the maximum use was for opium and the minimum was for amphetamine and marijuana. The maximum prevalence of abuse was observed in pedestrians and was 39.1% and the minimum was observed in drivers and was 27.6%. There was not any significant relation between the type of injury and abuse of illegal drugs. Medical cases were 23.6% among the total cases. **Conclusion:** Among the injuries the most frequent was accident and the prevalence of abuse of illegal drugs in the injured cases referred to emergency departments in Sabzevar city was relatively high. Our results are indicating that it is necessary to use precautionary strategies to reduce the abuse of drugs in Sabzevar.

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Introduction

Drug Abuse is one important health problems in the world. Based on the report by world health organization (WHO) in 2010, 153-300 million people with age ranging from 15-64 years old have used illegal drugs at least once during the last year. Furthermore it was reported 99000-253000 cases of death due to use of such drugs.(1) Death from use of these drugs likes the peak of an ice mountain, so that once use of such narcotic drugs can have serious and unpredictable affects and frequent use of such drugs can have functional and structural damages to the brain and a cause of cardiovascular diseases(2), gastrointestinal disorders(3), damage to other vital organs and hazardous sexual behaviors(4), affect on family relationships, reduction of visual acuity and

violent behaviors.(5) Furthermore, the studies on abuse of drugs are implying the increase of referring of cases to emergency departments due to their various injuries. (6-8) According a report by drug abuse warning network (DAWN) in 2009, there were 973591 cases of abuse of illegal drugs referred to emergency centers at USA urban areas. (9) On the other hand, injuries due to accidents are accounted as the main cause of referring to the emergency departments. Based on the estimations, there are 1.2 million fatal cases per year which are killed through accidents all around the world. There are also 5 millions of cases which are annually injured from the accidents. It is predicted that if there will not adopted any new precautionary strategies, the values will increase up to 65% within the next 20 years. (10)

Abuse of psychotropic, illegal and medical drugs is accounted as a risk factor with this regard. Based on the results of the studies in Spain in 2009, from all driving accidents, 34.4% of cases in men and 16.2% of cases in women were originated from abuse of drugs by driver. (11) This value amounts to 10.5% and 25% respectively in Shanghai (in 2010) and Norway (2011). (13,13)

In recent years, there was a considerable increased rate of trauma, injuries and death due to drugs abuse in Iran. Injuries are accounted as the second cause of death and the first cause of missing the useful duration of life. (14) According to the studies in 12 Iranian provinces in 2005, the prevalence of death from accidents was 44 cases per 100000. In 2004, the value was 14.5 cases in USA and 6.7 cases in Sweden per 100000 which are lower than that in Iran. (15,16) Sabzevar is one of the most important cities in the eastern part of Iran and is in the vicinity of Afghanistan and in the pathway between Mashhad and Tehran city which is capital of Iran. Therefore being as a subject of high prevalence of traffic and accident death and as well as entrance of narcotic drugs. Thus study of prevalence of drug abuse between the injured people referred to emergency departments of Sabzevar city is important and is the aim of the present study, of our knowledge, there are few studies in this field.

Materials and methods

Study design, setting and participants

The present work is a cross-sectional population-based study. The subject population was the non fatal injured cases that were referred to the emergency departments in Sabzevar city from January to June 2008. Based on the number of injured cases in similar period in the year 2007, following an estimation of ratio of drug abuse to have significance level of 0.05 in confidence level of 95% the number of cases was estimated to be 307. However we have evaluated 318 cases in this study based on multi-stage categorical-systematic sampling. For this purpose each emergency department was taken into account as a separate category and in each department the samples were selected and evaluated systematically.

Each injured alive person with age higher than 12 years that was receipted in emergency department in Sabzevar city due to accident, falling or violence was included as a sample. To avoid including the false positive cases in our study, those people who received painkiller by the ambulance nurse or were dead before sampling or avoided to continue the sampling process were excluded from the study. The samples' data was collected by using questionnaire including demographic questions such as sex, age, education, job, lodging (city or village),

usage of tobacco, cause of injury, namely information on the accident (as a driver, passenger or pedestrian), falling and violence.

Evaluation on abuse of drugs

For detection of drug abuse, a sample of 5-10 cc urine was taken from the case following hospitalizations in the emergency department. For unconscious ones or those without balance the sample was taken through inserting a catheter into bladder. It should be noted that the catheter was routinely inserted for these types of cases in the hospitals. The urine samples were then maintained in a refrigerator and submitted for analysis in laboratory after the treatment shift. All the laboratory analysis were performed by expert persons. For detection of type of drug, e.g. morphine, marijuana, amphetamine, standard test tabs. Thin layer chromatography (TLC) method was used for distinguishing between opium and heroin. In the present study, use of amphetamine, marijuana and opium was assigned as abuse of contraband drugs. However those cases with use of codeine and methadone were included in the medical group.

Statistical analyses

In analysis of data, ages of cases were categorized to three age groups: 12-29 years (young), 30-59 years (middle-aged) and ages higher than 60 (old). Pearson Chi-Square test and, if needed, Fisher's exact test, was used to analysis the categorical data. Independent t-test was used for comparison of means of quantitative variables for two sex groups. For estimation of chance ratios, logistic regression method was utilized. The analyses were performed with SPSS15. Significance level was considered as 0.05.

Results:

From total number of 318 cases studied, 73 persons (23%) were female and 245 persons (77%) were male. Mean \pm standard deviation (SD) of age of the cases was 36.1 ± 18.1 years. Mean \pm SD in the women and men groups were 44.4 ± 18.1 years and 33.6 ± 17.3 years, respectively. Mean age in the women group was significantly higher than that in the men group ($p < 0.001$). Cause of injury in 173 cases was accident (36.5% as driver, 10.7% as passenger and 7.2% as pedestrian). In the remaining 133 (41.8%) and 12 (3.8%) cases the cause of injury was respectively falling and violence.

Among the men, the most frequent cause of injury were respectively driving with 45.7% frequency (112 cases) and falling with 35.9% (88 cases). These values in the women group respectively amount to 61.6% (45 cases) for falling and 21.9% (16 cases) for passenger. Young persons had higher education level and also their referred to the

Table 1. Frequency of evaluated variables versus sex and age in non fatally injured patients referred to emergency departments in Sabzevar

Age groups(years)	Female			p-value	Male			p-value
	<30	30-59	60<		<30	30-59	60<	
Cause of accident	Driver	2 (11.8)	1 (2.7)	1 (5.3)	74 (56.9)	34 (41.0)	4 (12.5)	<0.001
	Passenger	4 (23.5)	11 (29.7)	1 (5.3)	8 (6.2)	9 (10.8)	1 (3.1)	
	Piade	1 (5.9)	3 (8.1)	1 (5.3)	8 (6.2)	3 (3.6)	7 (21.9)	
	Fall	8 (47)	21 (56.8)	16 (84.2)	31 (23.8)	37 (44.6)	20 (62.5)	
	Injury	2 (11.8)	1 (2.7)	0 (0)	9 (6.9)	0 (0)	0 (0)	
Education	Not educated	3 (17.6)	11 (29.7)	18 (94.7)	3 (2.3)	15 (18.75)	17 (58.6)	f<0.001
	Primary education	2 (11.8)	18 (48.7)	1 (5.3)	20 (15.4)	32 (40.0)	8 (27.6)	
	High school	11 (64.7)	7 (18.9)	0 (0)	101 (77.7)	25 (31.25)	4 (13.8)	
	University	1 (5.9)	1 (2.7)	0 (0)	6 (4.6)	8 (10.0)	0 (0)	
Conditions in admission time	alert	13 (76.5)	25 (69.4)	14 (73.7)	90 (70.3)	62 (75.6)	27 (84.37)	F=0.900
	Semiconscious	3 (17.6)	6 (16.7)	4 (21.1)	25 (19.5)	14 (17.1)	2 (6.3)	
	Unconscious	1 (5.9)	5 (13.9)	1 (5.3)	13 (10.2)	6 (7.3)	3 (9.38)	
Way refer	By self	-	-	-	9 (7.0)	12 (14.6)	0 (0)	0.198
	other person	10 (58.8)	23 (63.9)	16 (84.2)	57 (44.2)	40 (48.8)	24 (75.0)	
	Ambulance	7 (41.2)	13 (36.1)	3 (15.8)	63 (48.8)	30 (36.6)	8 (25.0)	

*f= Fisher's Exact Test

emergency department using ambulance were more frequent than those in other age groups (Table 1).

From all cases studied 31.1% (99 cases) had illegal abuse of drugs. Among the illegal abuses the most frequent use was related to opium (28.9%), however abuse from marijuana and amphetamine was relatively much lower (Table 1). There was not observed any significant difference between the abuse of illegal drugs in men (with 31% frequency) and women (with 31.5% frequency) groups. The most abuse from the illegal drugs was in the 30-59 age range and there was not observed any significant relation between the age and type of injury with abuse of illegal drugs. From all cases evaluated, 75 persons (23.6%) had used medical drugs including codeine or methadon. The age group with age of higher 60 years had the most use of medical drugs which amounted to a frequency of 39.2%. The relation between use of medical drugs and age was statistically significant ($p=0.015$). Besides, the relationship between the type of accident and having abuse of amphetamine and methadone was statistically significant (Table 2).

The Odds Ratio of illegal drug abuse in the aged group to that in the young group was $OR=1.603$ ($p\text{-value}=0.706$, $CI95\%$: 0.952, 2.701). The value amounts to $OR=1.266$ for the elderly group to that of young group ($p\text{-value}=0.506$, $CI95\%$: 0.631, 2.538). There was not observed any significant difference between the Odds Ratio of abuse from illegal drugs in various age ranges. The Odds Ratio of use of medical drugs in the aged group to that of young group was $OR=1.125$ ($p\text{-value}=0.697$, $CI95\%$: 0.621, 2.040). The ratio was 2.625 for that of elderly

group to that of young group ($p\text{-value}=0.006$, $CI95\%$: 1.312, 5.252).

There was not observed any relation between the type of injury and abuse of illegal drugs in the smoking and non-smoking groups. However a significant relation existed between smoking and the abuse of illegal drugs such as opium, amphetamine, codeine and methadone. There was not seen any significant relation between the education level or lodging (city or village) and type of accident (car accident or other types). However a relationship existed between job and type of accident ($p<0.001$). The relationship was in the form that the accidents were most often in drivers (73.3% of total number of accidents) when compared to those had official jobs (33.3%).

Discussion

The present study is among the few researches performed in Iran on the two important social subjects with long-term side effects: drug abuse and injuries. Based on our results, 31.1% of non-fatal injured persons who referred to emergency departments had abuse of illegal drugs. Furthermore, 23.6% of cases had use of medical drugs including codeine and methadone.

Salvatore in his review on use of illegal drugs and prevalence of injuries in a period of time between 1996-2003, has evaluated the prevalence of abuse of illegal drugs in injured cases referred to emergency department. He used blood and urine sample for detection of drugs and the prevalence detected from analysis of these two samples in the

studied persons was respectively 35-40%. The most frequent used drug were cannabis and cocaine. The first drug had a frequency of 9.2-34.2% of use.(17) In the present study the prevalence of abuse of the illegal drugs is in this range. Use of cannabis in this study was lower than of that in other studies but higher than use of opium and its derivatives. Based on a rapid situation assessment (RSA) study on abuse of drugs in Iran in 1998-1999, the most used drug was opium and its derivatives, heroine and cannabis. In the recent years based on the reports by governmental responsibilities, the use of new industrial narcotic drugs is more commonly intended. However there are many regions in Iran with traditional and common use of opium and its derivatives.(18)

By considering this fact that native and cultural variables have high impacts on consumption patterns of a population, it would be justify the difference between the abuse of opium and that of cannabis and amphetamine and the similarity between the abuse in non-fatal injured men and women in this study. However our results of abuse prevalence in injured persons are similar to those reported in other studies in this field. (17,19,20)

In a study by Bogstranda in 2011, it was reported that although abuse of alcohol and illegal drugs in men was significantly higher than women, abuse of medical drugs was significantly higher than that in men group.(13) World health organization (WHO) in a report in 2010 announced that the abuse of drugs in men are higher than in women in relatively all parts of the world.(1)

There was not observed any significant difference between abuses of illegal drugs in various age ranges groups. The most frequency of users of illegal drugs were elderly people in age range of 30-59 years. From a epidemiologic research on drug abuse in Iran which has been performed in 2002, the most and least use of illegal drugs were respectively related to age groups of 25-34 and 55-65 years.18In a study by Pérez in 2009 abuse of drugs was higher in the age range of 18-39 years than that in age group with age higher than 40 years.(21)

The main point of this study is high use of medical drugs and codeine in elderly age people (those with ages higher than 60 years). This fact could be due to a number of difficulties and physical pains in this age group which increase considerably theintend for use of codeine as a medical drug. The most frequent cause of referring the injured people to emergency persons was traffic accidents. Frequency of use of medical drugs and abuse of illegal drugs were higher in pedestrians than that in other injured groups. In approximately one third of accident cases (30.1%) there was an abuse of drugs. However it was not observed any relation between prevalence of

accident and abuse of drug. On the other hand, Woratanarat in 2009 has found a significant relation between prevalence of accident and use of illicit drug.20However target population in the present study differs from that in the study by Woratanarat, because we have evaluated all types of injuries referred to emergency departments but in the study by Woratanarat only the drivers were studied. In a study by Drummer in 2011 performed in Australia, 35% of accidents were related to abuse of drugs, with most use of cannabis.21In a study by Péreza in 2009 in Spain, it has been observed abuse of drugs in 28.8% of accidents. In this study traffic accidents were the second cause of referring of people to emergency departments, the first one was violence.(21)

Based on the main aim of this study, the results of various statistical analyses have shown a significant relationship between drug abuse and type of accident in the injured persons. In a review article by Salvatore in 2006, it was reported that in the previous studies it was not observed any relation between the abuse of illicit drugs and prevalence of injuries, however the results are reverse for use of alcohol.(17)

Conclusions and implications for prevention

In the present study, ratio of abuse of drugs in the injured people referred to emergency departments was relatively high, on the other hand comparable with the values reported in other published studies. It seems that one of the best strategies to prevent the long term effects from injuries and appropriate diagnosis and treatment of abuse of drugs is performing routine screening tests in the emergency departments. By this way therapeutic actions are applied accordingly on the injured patient. Besides, it is an aid to detect to diagnose and cure the abuse of drugs in the cases with long term use of such drugs. The results of this study have also indicated that there was a high use of medical drugs in the elderly persons. This fact reflects this point that it is necessary to take into account the health problems especially in this group of people. Executing training programs to promote their health knowledge is helpful for this purpose.

Limitations and positive points of this study

There were limitations in this study:

There were cases which have received analgesic drugs by administration of nurse of ambulance. These cases were not taken into account in this study and can be a source of underestimation in the frequency of abuse of drugs.

The highlights of this study

- This study is among the few researches performed in Iran on the drugabuse in injured people.

- Evaluation of abuse of drugs was performed based on standard methods with a high level of precision.

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Table 2. Results of drug abuse tests in non fatally injured patients referred to emergency departments in Sabzevar

	Opium		TSH		Amphetamines		Methadone		Codeine		Medical [#]		Illegal drugs ^{##}	
	\$\$	+\$	-	+	-	+	-	+	-	+	-	+	-	+
Sex														
Females	52 (71.2)*	21 (28.8)	69 (94.5)	4 (5.5)	71 (97.3)	2 (2.7)	71 (97.3)	2 (2.7)	59 (80.8)	14 (19.2)	57 (78.1)	16 (21.9)	50 (68.5)	23 (31.5)
Males	174 (71.0)	71 (29.0)	237 (96.7)	8 (3.3)	237 (96.7)	8 (3.3)	238 (97.1)	7 (2.9)	193 (78.8)	52 (21.2)	186 (75.9)	59 (24.1)	169 (69.0)	76 (31.0)
p-value	0.972		0.481 f**		1 f	1 f			0.869		0.702		0.937	
Age groups(years)														
< 30	111 (75.5)	36 (24.5)	142 (96.6)	5 (3.4)	145 (98.6)	2 (1.4)	145 (98.6)	2 (1.4)	120 (81.6)	27 (18.4)	118 (80.3)	29 (19.7)	108 (73.5)	39 (26.5)
30- 59	78 (65.0)	42 (35.0)	115 (95.8)	5 (4.2)	116 (96.7)	4 (3.3)	116 (96.7)	4 (3.3)	98 (81.7)	22 (18.3)	94 (78.3)	26 (21.7)	76 (63.3)	44 (36.7)
60 <	37 (72.5)	14 (27.5)	49 (96.1)	2 (3.9)	47 (92.2)	4 (7.8)	48 (94.1)	3 (5.9)	34 (66.7)	17 (33.3)	31 (60.8)	20 (39.2)	35 (68.6)	16 (31.4)
p-value	0.164		0.927		0.057	0.17			0.054		0.015		0.205	
Injury circumstances														
Driver	87 (75.0)	29 (25.0)	112 (96.6)	4 (3.4)	114 (98.3)	2 (1.7)	114 (98.3)	2 (1.7)	90 (77.6)	26 (22.4)	88 (75.9)	28 (24.1)	84 (72.4)	32 (27.6)
Passenger	24 (70.6)	10 (29.4)	32 (94.1)	2 (5.9)	32 (94.1)	2 (5.9)	32 (94.1)	2 (5.9)	26 (76.5)	8 (23.5)	24 (70.6)	10 (29.4)	23 (67.6)	11 (32.4)
Pedestrian	15 (65.2)	8 (34.8)	21 (91.3)	2 (8.7)	19 (82.6)	4 (17.4)	20 (87.0)	3 (13.0)	18 (78.3)	5 (21.7)	15 (65.2)	8 (34.8)	14 (60.9)	9 (39.1)
Falls	92 (69.2)	41 (30.8)	129 (97.0)	4 (3.0)	131 (98.5)	2 (1.5)	131 (98.5)	2 (1.5)	107 (80.5)	26 (19.5)	105 (78.9)	28 (21.1)	90 (67.7)	43 (32.3)
Violence	8 (66.7)	4 (33.3)	12 (100.0)	0 (0)	12 (100.0)	0 (0)	12 (100.0)	0 (0)	11 (91.7)	1 (8.3)	11 (91.7)	1 (8.3)	8 (66.7)	4 (33.3)
p-value	0.808		0.498 f		0.009 f	0.044 f			0.807		0.369		0.825	
Total	226 (71.1)	92 (28.9)	306 (96.2)	12 (3.8)	308 (96.9)	10 (3.1)	309 (97.2)	9 (2.8)	252 (79.2)	66 (20.8)	243 (76.4)	75 (23.6)	219(68.9)	99 (31.1)

[#] Medical = Codeine or Methodone ^{##} Illegal drugs = Opium or TSH or Amphetamines ^{\$}Result of Test was Positive, ^{\$\$}Result of test was Negative *Number(percent) **f = Fisher's Exact Test