Frequency of opium use in traumatic patients admitted to Shahid Rahnemoon hospital

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Abstract
Objective: Narcotic and alcohol use are recognized as the two important underlying factors in all types of trauma. In this study, the prevalence of opium consumption was investigated in traumatic patients who referred to Shahid Rahnemoon hospital in Yazd in 2018.

Methods: In this descriptive cross-sectional study, 252 patients with trauma admitted to Shahid Rahnemoon Hospital from October to December 2018 were studied. In order to collect the data, a checklist was administered including the patients’ demographic information (age and gender), opium consumption, location of trauma, day of occurrence of trauma and cause of trauma.

Results: The mean of patients’ age was 31.33 ± 19.46 years ranging from 2 to 90 years and 71.4% of them were males. The most common causes of trauma included accidents with motor vehicles (56%), falls from height (19.8%), and intimate partner violence (6%), respectively. Regarding opium consumption, 87.3% of patients did not use it, while 10.3% consumed opium. Narcotic abuse was significantly different with regard to the patients’ gender ($P=0.000$) and age ($P=0.000$).

Conclusion: Opium consumption increases the risk of error and accident while driving. People on methadone treatment also show high-risk behaviors and are at greater risk of accidents.

Keywords: Opium, Accident, Multiple Trauma, Alcohol Consumption

Introduction
Narcotic and alcohol use are recognized as the two important underlying factors in all types of trauma (1). Trauma is the first cause of death and disability in active populations of the developing countries (2). Based on a survey, the trauma-related death rate per 100 000 populations was 58 in Iran and 99 in the world (3). Among all injuries, maxillofacial trauma has a high prevalence and imposes a high cost on patients (3). Most epidemiological reports have indicated that maxillofacial trauma which is more common in 20-30 years old men (4-6), can be caused by traffic accidents, falls, and interpersonal violence. Among narcotic abusers, most injuries are caused by interpersonal violence, which may be due to the neurophysiological effects of the narcotics (7). A study by Carrigan et al indicated that using certain narcotics, due to suppression of the nervous system function, have a psycho-motor impact on the individuals and make them susceptible to trauma (1). Alcohol and some narcotics, such as marijuana, are also known as the leading causes of road accidents, which may occur due to the central nervous system disorders (8). Majdzadeh et al also stated that the risk of accidents increased in regular opium users (9). In general, better understanding of the trauma epidemiology can help the authorities to design appropriate programs and strategies to take preventive measures and organize the delivery of medical services, which consequently can lead to an improvement in the quality of trauma care. Of all trauma prevention programs, prevention injury programs have been the most cost-effective measures (10). Most studies conducted on maxillofacial trauma investigated the etiologic and therapeutic factors, while identifying the causes of maxillofacial trauma can prevent these injuries more efficiently (6). Benefits of preventive policies regarding maxillofacial trauma in different countries included reduced mortality rate and socio-economic burden (11). However, the importance of this issue has not received much attention in different countries (12). The aim of this study was to evaluate the prevalence of opium use in head and neck trauma patients who referred to Shahid Rahnemoon hospital of Yazd in 2018.
Methods

In this descriptive cross-sectional study, all of trauma patients that admitted to the Emergency Department in Shahid Rahnemoon Hospital of Yazd from October to December of 2018 were investigated. Inclusion criteria are trauma patients referred to the emergency department of Shahid Rahnemoon Hospital in Yazd in 2018 and exclusion criteria are any trauma patient who has been discharged out of personal consent. Data collection involved two stages. First, secondary information was obtained from the hospital information system using daily data. Then a checklist was administered including the patients’ demographic information (age, gender), location where trauma occurred (in the city, outside the city), day that trauma occurred (holiday, non-holiday), cause of trauma (falling from height, motor vehicle accident, pedestrian, intimate partner violence), as well as opium consumption (Yes, No). After making the needed coordination, patients hospitalized in the Emergency Department of Shahid Rahnemoon Hospital of Yazd were interviewed. Initially, the patients or their companions were explained about the study purpose, asked to sign the informed consent forms, and required to complete the self-reported checklist. To assess the reliability of the questionnaire, the questionnaire was filled out twice by the patient or her companion, the first time at the time of hospitalization and the second time immediately before the patient’s discharge. After the interviews were completed, the data were coded and analyzed using SPSS 23 by running descriptive statistics and chi-square test. This study has been approved by the “Ethics Committee in Research of Shahid Sadoughi University of Medical Sciences of Yazd” with the number IR.SSU.REC.1398.202.

Results

In this study, 252 trauma patients admitted to the Emergency Department of Shahid Rahnemoon Hospital in Yazd were studied (Table 1). The mean of participants’ age was 31.33 ± 19.46 years and ranged from 2 to 90 years. Regarding gender, 71.4% of the patients were male and the rest (28.6%) were female. The relative frequency of patients based on the day of accident showed that most traumatic accidents (77.4%) occurred in non-holiday days. Based on the findings, 67.9% of the patients were traumatized inside the city, while 32.1% of the accidents occurred outside the city. The relative frequency of patients according to the cause of trauma indicated that the most common causes of trauma were motor vehicle accident (56%), fall from height (19.8%), and intimate partner violence (6%). The entails the frequency distribution of patients by narcotic use and non-narcotic use. In the present study, 177 (70.2%) individuals did not use any types of narcotics and 29 (11.5%) people smoked cigarettes or used hobble bubble. In general, 87.3% of the patients did not consume opium and methadone, while 10.3% used opium and 2.4% consumed methadone.

The frequency of opium and methadone consumption in male and female trauma patients is shown in Table 2. The results of chi-square test indicated a significant difference between narcotic abuse and gender ($P = 0.000$). In this regard, the prevalence of substance use was higher in men than women. In Table 2, the frequency of opium and methadone consumption in trauma patients across different age groups is depicted. According to the chi-square test, a significant difference was observed between narcotic use and age ($P = 0.000$). The highest prevalence of opium intake was in the age group of over 65 years, 25-44 years, and 45-64 years, respectively. Methadone users were within the age groups of 45-64 and 25-44 years. The frequency of opium and methadone consumption in trauma patients with regard to the day of accident is shown in Table 2. The chi-square test showed no significant difference between narcotic use and the day that trauma occurred ($P = 0.517$). Also, Table 2 depicts the data on the frequency of opium and methadone consumption in trauma patients by location of trauma; inside or outside the city. The results of chi-square test showed no significant difference between substance use and trauma location ($P = 0.383$).

As can be seen from Table 3, of the 141 traumatic motor vehicle accidents, 16 people used opium and 6 consumed methadone. Of the 11 trauma cases that occurred due to occupational accidents, 6 individuals were opium users.

| Variable                          | Number | Percent |
|----------------------------------|--------|---------|
| **Age groups**                   |        |         |
| <15                              | 58     | 23.0    |
| 15-24                            | 54     | 21.4    |
| 25-44                            | 78     | 31.6    |
| 45-64                            | 45     | 17.9    |
| ≥65                              | 17     | 6.7     |
| **Gender**                       |        |         |
| Male                             | 180    | 71.4    |
| Female                           | 72     | 28.6    |
| **Day that trauma occurred**     |        |         |
| Holiday                          | 57     | 22.6    |
| Non-holiday                      | 195    | 77.4    |
| **Location where trauma occurred**|       |         |
| In the city                      | 171    | 67.9    |
| Outside the city                 | 81     | 32.1    |
| **The cause of trauma**          |        |         |
| Motor vehicle accident           | 141    | 56.6    |
| Falling from height              | 50     | 19.8    |
| Intimate partner violence        | 15     | 6.0     |
| Pedestrian                       | 12     | 4.8     |
| Occupational accidents           | 11     | 4.4     |
| Falling                          | 10     | 4.0     |
| Sport accidents                  | 9      | 3.6     |
| Others                           | 4      | 1.6     |
| **Type of narcotic**             |        |         |
| Non-narcotic use                 | 220    | 87.3    |
| Opium                            | 26     | 10.3    |
| Methadone                        | 6      | 2.4     |
Also, of the 15 cases of trauma caused by intimate partner violence, 2 individuals used opium. Besides, of the 12 pedestrians with trauma accident, one was an opium user. Based on the results of chi-square test, no significant difference was found between narcotic use and cause of trauma ($P = 0.404$).

**Discussion**

In this study, 252 trauma patients admitted to the Emergency Department of Shahid Rahnemoon Hospital were evaluated. The mean of patients’ age was 31.33 years ranging from 2 to 90 years, but most of them (N = 190) were under 45 years of age, representing the economically active group. The incidence rate of trauma in the age group of 25-44 years was 31%, which is probably due to the behavioral, social, economic, and emotional changes that generally occur at this age. These changes lead to social excitement, high mobility, careless driving, and physical involvement (13-16).

The majority of trauma patients in this study were male (71.4%). This finding is in line with the studies conducted by Zargar et al (17) in Tehran, Taghipour et al (18) in Yazd, Kadkhodaie (19) in Rasht, Lee et al (14) in Korea, Ellis et al (20) in Scotland, Al Ahmed et al (21) in the United Arab Emirates, and Adekeye (22) in Nigeria. The higher incidence of trauma in men may be due to the fact that in many families they are the breadwinners which may put them at greater risk of accident or conflict (23). Furthermore, men often drive and participate in sports and physical activities more than women. They are also more probable to use alcohol and narcotics before driving, putting them at a greater risk of trauma (24).

Motor vehicle accident (56%) was the most common cause of trauma in this study. Prevention, one of the most important strategies to deal with this problem, requires the index of trauma epidemiology. Driving accidents are one of the main problems in developing countries. Evidence shows that 3500 people die from accidents in the world on a daily basis, most of which occur in Africa and the Middle East. Even in advanced countries, including the United States, trauma-related injuries (especially motor vehicle accidents) are the seventh leading cause of death (25). In the present study, of 252 patients, 153 cases were related to vehicle accidents. Results of the research by Taghipour et al on 251 fatal injuries caused by traffic accident in Yazd during 2004-2007 showed that 202 patients were

| Narcotic use | Non- narcotic use | Opium | Methadone | $P$ value* |
|-------------|------------------|-------|-----------|------------|
| Gender      |                  |       |           |            |
| Male        | 149              | 82.8  | 26        | 14.4       | 2          | 0.000       |
| Female      | 71               | 98.6  | 0         | 0          | 1          | 1.4         |
| Age group   |                  |       |           |            |
| <15         | 58               | 100   | 0         | 0          | 0          |            |
| 15-24       | 54               | 100   | 0         | 0          | 0          |            |
| 25-44       | 59               | 75.7  | 16        | 20.5       | 3          | 3.8         |
| 45-64       | 36               | 80    | 6         | 13.3       | 3          | 6.7         |
| ≥65         | 13               | 76.5  | 4         | 23.5       | 0          | 0           |
| Day of trauma |                |       |           |            |
| Holiday     | 53               | 93    | 3         | 5.2        | 1          | 1.8         |
| Non-holiday | 167              | 85.6  | 23        | 11.8       | 5          | 2.6         |
| Trauma location |            |       |           |            |
| In the city | 153              | 89.4  | 14        | 8.3        | 4          | 2.3         |
| Outside the city | 67         | 82.7  | 12        | 14.8       | 2          | 2.5         |

* Chi-square test.

| Narcotic use | Non- narcotic use | Opium | Methadone | $P$ value* |
|-------------|------------------|-------|-----------|------------|
| Cause of trauma |                 |       |           |            |
| Motor vehicle accident | 119 | 84.3 | 16 | 11.3 | 6 | 4.3 |
| Fall from height | 47 | 94 | 3 | 6 | 0 | 0 |
| Intimate partner violence | 13 | 86.6 | 2 | 13.3 | 0 | 0 |
| Occupational accidents | 7 | 63.6 | 6 | 36.4 | 0 | 0 |
| Falling | 10 | 100 | 0 | 0 | 0 | 0 |
| Sport accidents | 9 | 100 | 0 | 0 | 0 | 0 |
| Others | 4 | 100 | 0 | 0 | 0 | 0 |

* Chi-square test.
male (80.5%). The mean of patients’ age was 34.1 years and the most frequent cause of trauma was accidents of cars and motorcycles with pedestrians with a frequency of 100 cases (39.8%) (18). In the present study, the most common causes of trauma were motor vehicle accident (56%), falling from height (19.8%), and intimate partner violence (6%), respectively. The significant difference in the frequency of trauma-related accidents in this research compared to other studies can be due to less observance of the traffic laws and safety legal requirements such as wearing helmets and seat belts by drivers. The number of events caused by accidents can be reduced significantly by observing the safety principles (26). According to the Central Insurance Institute of Iran, Iran is ranked 189 among 190 countries of the world in terms of the unsafe driving accidents. On average, traffic accidents cause 23,000-27,000 deaths and 6,000 injuries annually in Iran. Yaghubi et al compared the traffic accidents of Iran and other countries and concluded that the number of accidents increased by 55% in Iran during 1994-1996. The index related to the number of Iranian accident victims is also several times higher than other countries. Most Iranian victims are within the active age groups of 20-50 years and among pedestrians (27).

Of 141 traumatic motor vehicle accidents, 16 individuals were opium users and 6 were methadone users. Based on numerous studies, the individuals’ ability to drive is easily impaired by the consumption of narcotics such as opium, benzodiazepines, and cannabis by almost well-known mechanisms (28-31).

Various studies conducted in different countries (32-41) have investigated the epidemiological status of the amount and type of narcotics, illegal medicines, and increased possibility of the fatal and non-fatal accidents. Studies in Iran also focused on the epidemiological status of the trauma causes and severity. Bakhtiar et al. reported that narcotic abuse after alcohol, fatigue, and drowsiness played the most important role in fatal accidents (42). Assari et al found that among those accused of fatal traffic accidents in Iranian prisons, 37.3% were opioid users, 20% were cannabis users, and 13.7% used the mixture of opium and cannabis (43).

Yaghibi et al. reviewed the investigations and reports provided by the international organizations on the causes of traffic accidents in Iran and throughout the world and mentioned four effective factors related to human, road, vehicle, and environment in this regard. In 90 to 95% of the Iranian traffic accidents, the human factor was responsible for the event. Among the human factors, the following factors were effective: ignoring the driving regulations, driving errors, having inaccurate traffic attitudes, being tired and drowsy, using narcotic and alcohol, driving in the dark (late at nights, early morning, after lunch), as well as youth driving, especially late at nights and at the weekends with their peers (27).

In the present study, most traumatic events (77.4%) occurred in non-holiday days, 67.9% of the accidents occurred in the city, and 32.1% of them happened outside the urban area. The results indicated that the day and location of trauma did not have a statistically significant association with the type of narcotic used.

In our research, 26 traumatic patients who consumed opium were male. Of these, 16 were injured in motor vehicle accidents and 4 were injured in occupational accidents. Afshar et al also showed that road accidents and occupation-related injuries were the most common injuries that happened to narcotic abusers admitted to Orthopedic Ward of Urmia University of Medical Sciences (44).

Moreover, unauthorized opiates can be substituted with maintenance therapy narcotics, such as opioid agonist narcotics (32). Methadone and buprenorphine control all symptoms of deprivation. Based on our findings, 6 traumatic patients had consumed methadone and all of them were traumatized by car accidents. Tabibi stated that methadone-treated individuals had higher risky behaviors while driving than narcotic abusers (45), which may be due to the complications caused by methadone use such as dizziness, fainting and weakness, chronic fatigue, sleep disturbances, hypotension, and pupillary stenosis (33).

Conclusion
Opium consumption increases the risk of driving errors and accidents. People on methadone treatment show high-risk behaviors more frequently and are at higher risk of accidents. With a better understanding of the epidemiology of trauma, appropriate programs and strategies can be developed, including the implementation of preventive measures and organizing the provision of medical services. This can ultimately lead to an improvement in the quality of trauma care. For example, in some countries, accidents are one of the major causes of death and to reduce the damage caused by them, prevention measures have been prioritized in their work plans. Of all the trauma programs, injury prevention programs have been the most cost-effective. Perhaps due to the knowledge of the epidemiology of accidents, it is possible to design and implement effective studies and practical measures in the prevention and treatment of trauma patients.

Authors’ contributions
All of the authors participated in data collection, analysis and writing this article.

Ethical issues
In order to conduct the study, first the purpose of the study was explained to all patients and after obtaining informed consent to participate in the study, the research questions
References

1. Carrigan TD, Field H, Illingworth RN, Gaffney P, Hamer DW. Toxicological screening in trauma. J Accid Emerg Med 2000;17(1):33-7.

2. Azizi A, Abdoli G. Mortality rates in Kermanshah province – 2000, J Kermanshah Univ Med Sci. 2003; 7(3):e81256.

3. Mackersie RC. Field triage, and the fragile supply of “optimal resources” for the care of the injured patient. Prehosp Emerg Care 2006;10(3): 347-50.

4. Batista AM, Ferreira Fde O, Marques LS, Ramos-Jorge ML, Ferreira MC. Risk factors associated with facial fractures. Braz Oral Res 2012;26(2):119-25.

5. Buchanan J, Colquhoun A, Friedlander L, Evans S, Whitley B, Thomon M. Maxillofacial fractures at Waikato Hospital, New Zealand: 1989 to 2000. N Z Med J 2005;118(1217):U1529.

6. Chrcanovic BR. Factors influencing the incidence of maxillofacial fractures. Oral Maxillofac Surg 2012;16(1):3-17.

7. Roccia F, Bianchi F, Zavattiero E, Tanteri G, Ramieri G. Characteristics of maxillofacial trauma in females: a retrospective analysis of 367 patients. J Craniofac Surg 2010;38(4):314-9.

8. Longo MC, Hunter CE, Lokan RJ, White JM, White MA. The prevalence of alcohol, cannabinoids, benzodiazepines and stimulants amongst injured drivers and their role in driver culpability; part ii: the relationship between drug prevalence and drug concentration, and driver culpability. Accid Anal Prev 2000;32(5):623-32.

9. Majdzaheh R, Feiz-Zadeh A, Rajabpour Z, Motevalian A, Hosseini M, Abdollahi M, et al. Opium consumption and the risk of traffic injuries in regular users: a case-crossover study in an emergency department. Traffic Inj Prev 2009;10(4):325-9.

10. Pouranaghaz Tehrani S. Drugs And Behavior. Tehran 2013. Page 4-78

11. Schuur JD, Hsia RY, Burstin H, Schull MJ, Pines JM. Quality measurement in the emergency department: past and future. Health Aff (Millwood) 2013;32(12):2129-38.

12. London JA, Mock CN, Quansah RE, Abantanga FA, Jurkovich GJ. Priorities for improving hospital-based trauma care in an African city. J Trauma 2001;51(4):747-53.

13. Chandra Shekar BR, Reddy C. A five-year retrospective statistical analysis of maxillofacial injuries in patients admitted and treated at two hospitals of Mysore city. Indian J Dent Res 2008;19(4):304-8

14. Lee JH, Cho BK, Park WJ. A 4-year retrospective study of facial fractures on Jeju, Korea. J Craniomaxillofac Surg 2010;38(3):192-6.

15. Lone P, Singh AP, Kour I, Kumar M. A 2-year retrospective analysis of facial injuries in patients treated at department of oral and maxillofacial surgery, IGGDC, Jammu, India. Natl J Maxillofac Surg 2014;5(2):149-52.

16. Paes JV, de Sa Paes FL, Valiati R, de Oliveira MG, Pagnoncelli RM. Retrospective study of prevalence of face fractures in southern Brazil. Indian J Dent Res 2012;23(1):80-6.

17. Zargar M, Modaghegh MH, Rezaizharia H. Urban injuries in Tehran: demographic of trauma patients and evaluation of trauma care. Injury 2001;32(8):613-7.

18. Taghipour H, Panahi F, Khoshmohabat H, Moharamzadeh Y, Abasi A, Hojjatifrozabadi N. Injury severity and causes of death Autopsy deals cost incurred due to theCar Accidents. Shaheed Sadoughi University of Medical Sciences. 2010;17(5):358-64.

19. Kadkhodai MH. Three-year review of facial fractures at a teaching hospital in northern Iran. Br J Oral Maxillofac Surg 2006;44(3):229-31.

20. Ellis E 3rd, Moos KF, el-Attar A. Ten years of mandibular fractures: an analysis of 2,137 cases. Oral Surg Oral Med Oral Pathol 1985;59(2):120-9.

21. Al Ahmed HE, Jaber MA, Abu Fanas SH, Karas M. The pattern of maxillofacial fractures in Sharjah, United Arab Emirates: a review of 230 cases. Oral Surg Oral Med Oral Pathol Radiol Endod 2004;98(2):166-70.

22. Adekeye EO. The pattern of fractures of the facial skeleton in Kaduna, Nigeria. A survey of 1,447 cases. Oral Surg Oral Med Oral Pathol 1980;49(6):491-5.

23. Pandeys S, Roychoudhury A, Bhutia O, Singhal M, Sagar S, Pandey RM. Study of the pattern of maxillofacial fractures seen at a tertiary care hospital in north India. J Maxillofac Oral Surg 2015;14(1):32-9.

24. Ungari C, Filici F, Riccardi E, Rinna C, Iannetti G. Etiology and incidence of zygomatic fracture: a retrospective study related to a series of 642 patients. Eur Rev Med Pharmacol Sci 2012;16(11):1559-62.

25. Potenza BM, Hoyt DB, Coimbra R, Fortlage D, Holbrook T, Hollingsworth-Fridlund P. The epidemiology of serious and fatal injury in San Diego County over an 11-year period. J Trauma 2004;56(1):68-75.

26. argar M, Khaji A, Karbakhsh M, Zarei MR. Epidemiology study of facial injuries during a 13 month of trauma registry in Tehran. Indian J Med Sci 2004;58(3):109-14.

27. Yaghoubi AA, Cyrus A, Azizabadi-Farahani M, Amini M, Noori GR, Gudarzi D, et al. Epidemiological Assessment of Trauma Patients Referring to Arak Vali-Asr Hospital. Journal of Rescue and Relief 2010;2(1):1-9.

28. Barbone F, McMahon AD, Davey PG, Morris AD, Reid IC, McDevitt DG, et al. Association of road-traffic accidents with benzodiazepine use. Lancet 1998; 352(9137):1331-6.

29. Elvik R. Risk of road accident associated with the use of drugs: a systematic review and meta-analysis of evidence from epidemiological studies. Accid Anal Prev 2013;60:254-67.

30. Ramaekers JG, Berghaus G, van Laar M, Drummer OH. Dose related risk of motor vehicle crashes after cannabis use. Drug Alcohol Depend 2004;73(2):109-19.

31. Vitale S, van de Mheen D. Illicit drug use and injuries: A review of emergency room studies. Drug Alcohol Depend 2006;82(1):1-9.

32. Gjerde H, Normann PT, Christophersen AS, Samuelsen SO, Morland J. Alcohol, psychoactive drugs and fatal road traffic accidents in Norway: a case-control study. Accid Anal Prev 2011;43(3):1197-203.

33. Al-Abdallat IM, Al Ali R, Hudaib AA, Salameh GA, Salameh RJ. Idhair AK. The prevalence of alcohol and psychotropic drugs in fatalities of road-traffic accidents in Jordan during
2008-2014. J Forensic Leg Med 2016;39:130-4.
34. Canfield DV, Hordinsky J, Millett DP, Endecott B, Smith D. Prevalence of drugs and alcohol in fatal civil aviation accidents between 1994 and 1998. Aviat Space Environ Med 2001;72(2):120-4.
35. Carfora A, Campobasso CR, Cassandro P, Petrella R, Borriello R. Alcohol and drugs use among drivers injured in road accidents in Campania (Italy): A 8-years retrospective analysis. Forensic Sci Int 2018;288:291-296.
36. Christophersen AS, Gjerde H. Prevalence of alcohol and drugs among car and van drivers killed in road accidents in Norway: an overview from 2001 to 2010. Traffic Inj Prev 2014;15(6):523-31.
37. Holmgren P, Holmgren A, Ahlner J. Alcohol and drugs in drivers fatally injured in traffic accidents in Sweden during the years 2000-2002. Forensic Sci Int 2005;151(1):11-7.
38. O’Malley PM, Johnston LD. Unsafe driving by high school seniors: national trends from 1976 to 2001 in tickets and accidents after use of alcohol, marijuana and other illegal drugs. J Stud Alcohol 2003;64(3):305-12.
39. Pelicao FS, Peres MD, Pissinate JF, de Paula DM, de Faria M, Nakamura-Palacios EM, et al. Predominance of alcohol and illicit drugs among traffic accidents fatalities in an urban area of Brazil. Traffic Inj Prev 2016;17(7):663-7.
40. Ricci G, Majori S, Mantovani W, Zappaterra A, Rocca G, Buonocore F. Prevalence of alcohol and drugs in urine of patients involved in road accidents. J Prev Med Hyg 2008;49(2):89-95.
41. Rodriguez NN, Dalri MC, Alonso Castillo MM, Garcia KS. Accidents and injuries due to consumption of alcohol or drugs in patients treated at an emergency room. Rev Lat Am Enfermagem 2010;18 Spec No:521-8.
42. Bakhtiyyari M, Soori H, Ainy E, Salehi M, Mehandar MR. The survey of the role of humans’ risk factors in the severity of road traffic injuries on urban and rural roads. Safety promotion and injury prevention (Tehran) 2014;2(3):245-252.
43. Assari S, Moghani Lankarani M, Dejman M, Farnia M, Alasvand R, Sehat M, et al. Drug Use among Iranian Drivers Involved in Fatal Car Accidents. Front Psychiatry 2014;5:69.
44. Afshar A, Asadzadeh M, Kargar H, Aghdashi MM, Mirzatolooeei F. Opium and opioid abuse in orthopedic inpatients: a cross sectional study in Urmia University of Medical Sciences. Acta Med Iran 2012;50(1):66-9.
45. Tabibi Z. The influence of addiction on aberrant driving behaviors and traffic safety. Applied Research Psychological Applied 2017;8(3):89-105