

## Epidemiology and Causes of Poisoning in patients Referred to Loqman Hospital, Tehran, Iran during summer 2010

Seyed Mahdi Mortazavi<sup>1</sup>, Yahya Haaji<sup>2</sup>, Ahmad Khonche<sup>3</sup>, Hamidreza Jamilian<sup>\*4</sup>

Received: 10.5.2012

Accepted: 30.05.2012

### ABSTRACT

**Background:** Poisoning is a serious health problem in the world. In the intentional type, the person may attempt suicide by self-poisoning or may be poisoned by others in a criminal act. The present study was designed to investigate the causes and the frequency of poisoning cases referring to Loqman Hospital, Tehran, Iran, during summer 2010.

**Methods:** In this descriptive-analytical study, age, gender, educational level, daily sleep duration, history of physical illness, and type of substance used for poisoning were analyzed by SPSS software.

**Results:** Of the 200 poisoned patients, 51% were male and 49% female. 60% of the patients were single. The patients' mean of age was 26.82 years. Minimum age was 14 years and maximum age was 77 years. Most of the patients were graduated from high school and 95.5% of them were living in large cities. Their parents were alive in most cases (92.2%) and 70.5% of them were the first to third child of their family. The person in charge of them was their parents in most cases. The mean daily sleep duration was 7 hours and 72% of the subjects did not have any physical illnesses. Also, 42% of the patients had history of cigarette smoking. Overall, 57% of the patients were poisoned by antidepressant drugs, 31% by narcotic compounds, and remaining 12% by unknown substances.

**Conclusion:** Most poisoned cases by antidepressant drugs can be explained by a various of reasons such as availability of the drugs. The findings of this study necessitate more vigilance from physicians in prescribing drugs and community in educating people about drugs.

**Keywords:** Antidepressant Drugs, Opioid Compounds, Poisoning.

IJT 2012; 642-648

### INTRODUCTION

Toxin is a substance capable of causing damage or disturbance in the body through a chemical action (1). Every year a large number of people suffer from various problems caused by poisoning ranging from mild illness to ICU admission and death. It imposes a large economic burden on the families and society (2).

Poisoning may happen as a result of incidental use of drugs and chemical

substances, intentional use for suicide (most cases of suicide are attempted by drug poisoning), or criminal poisoning (1, 3,4).

Advancements in technology and experimental sciences have led to the greater availability of drugs and industrial and agriculture substances which result in the higher incidence of poisoning.

Poisoning is influenced by social, economic, and cultural factors (5-7) and it usually occurs in 1- 5-year-old children,

1. Student of Nursing ,Baghyatallah University of Medical Sciences ,Tehran, Iran.

2. Faculty of Nursing , Baghyatallah University of Medical Sciences ,Tehran, Iran.

3. Department of internal medicine Baghyatallah University of Medical Sciences ,Tehran, Iran.

4. Department of Psychiatry , Arak University of Medical Sciences ,Arak ,Iran.

\*Corresponding Author Email: mjamilian@yahoo.com

aged people, and young people 12-30 years old because of their higher rate of intentional suicide or substance abuse; however, it seldom occurs in children 6-12 years old (1,8).

In 1955, drugs were identified as the third cause of fatal poisoning and the main cause of mortality in the 35-44 years age range in United States. This rate was raised 25% during 1990-1995. Although 59% of poisoned patients occur in ages under 14, the highest rates of hospitalization and mortality are seen in the elderly (1,9,10).

The main causes of poisoning in rural and urban societies are drugs. Various studies in several Iranian cities, including Tehran, Mashhad, and Babol, indicate that the incidence of drug poisoning is on the rise (1,11,13).

If the most common toxic substances in each geographic region were known, the appropriate diagnostic and therapeutic measure could be taken in order to diminish the mortality rate.

In some studies, poisoning by narcotic substances, especially opioid compounds, has been one of the most common reasons for referring to emergency wards during recent years in Iran (14,15). Although these compounds are widely used by laypersons for their sedative, analgesic, anxiolytic, and anti-diarrhea effects, they affect different body organs, including CNS, cardiovascular system, and GI tract.

The most widespread opioid compounds in Iran are opium, heroin, and Iranian crack (a street name for a form of heroin). Due to the opioids effects on the respiratory center in inducing hypoxia and respiratory distress, poisoning by these compounds can be one of the most common causes of mortality (16-18).

Opioid compounds have also been reported as the second cause of mortality in inpatient cases in the Poisoning Ward of Cina Hospital in Hamadan, Iran (19).

Another cause of poisoning is contamination and use of oil compounds such as petrol which may produce lead poisoning. This kind of poisoning is a serious health hazard in developing countries (22-24).

Poisoning by rice tablet is another serious problem about poisoning in Iran. Rice tablet or aluminum phosphide is a very toxic substance that is used as an available and cheap substance in the eradication of harmful rodents which causes severe poisonings (25).

The other cause of poisoning in modern societies is poisoning by alcoholic drinks that causes complications such as social insecurity and criminal acts among the youth (26).

The aim of the present study was to survey the causes of chemical and drug poisoning in Loqman Hospital, a main referral center for poisoning in Tehran.

## MATERIALS AND METHODS

This study was done through running interviews. All poisoning patients who referred to Loghman Hospital during summer 2010 were inquired about their demographic information, reason of poisoning, and other pertinent data. Overall, 200 cases of poisoning participated in the study. The obtained data were analyzed by SPSS software version 16.0.

## RESULTS

The present study was done on 200 poisoned patients who referred to Loqman Hospital. In terms of gender, 51% of the cases were male and the rest 49% were female. It indicates the greater incidence of poisoning in males. Also, 60% of the cases were single and most of them had attempted suicide. This indicates single persons are more susceptible to poisoning.

Mean age of the patients was 26.82 years which shows that most patients are in adolescent ages (Figure1).



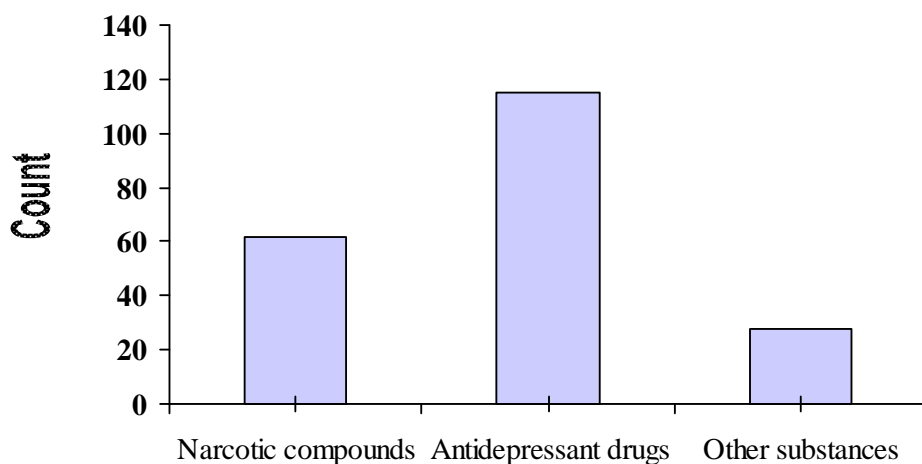
**Figure1:** Age of studied cases

Regarding the place of residence, 95.5% of the cases lived in large cities which indicates the greater availability of substances, more stress, and psychological problems in cities that affect the rate of poisoning.

Education level of the fathers (50% of cases) and mothers (60% of cases) of the patients were at primary school level. This indicates the higher incidence of poisoning in less educated families. In these families, members' emotional needs are not noticed and it causes mental disorders, suicide, and intentional poisoning.

Economic state of 70.5% of the cases was at an acceptable level. Mean sleep time of the patients was 7.7 hours (minimum= 2 hours and maximum = 15 hours). In terms of physical illnesses, 72% of the cases did not have physical illnesses. Among the rest 28%, the most common physical illness was GI diseases. Moreover, 42% of the cases had a history of cigarette smoking and most of them had been heavy smokers for at least 5-10 years.

Overall, 57% of the cases were poisoned by antidepressant drugs, 31% by narcotic compounds, and 12% by unknown substances (Figure 2).



**Figure2:** Type of used substance in studied cases

**Table1.** The relationship between the history of criminal conviction and the type of poisoning

		Condemnation			Total	
		Yes	No	4.00		
Used substance	Narcotic compounds	Count	16	45	1	62
		% of Total	8%	22.5%	0.5%	31%
	Antidepressant drugs	Count	11	103	0	114
		% of Total	5.5%	51.5%	0%	57%
	Other substances	Count	0	24	0	24
		% of Total	0%	12%	0%	12%
		Count	27	172	1	200
	Total	% of Total	13.5%	86%	0.5%	100%

**Table2.** The relationship between gender and the type of poisoning

		Gender		Total	
		Male	Female		
Used substance	Narcotic compounds	Count	48	14	62
		% of Total	24%	7%	31%
	Antidepressant drugs	Count	39	75	114
		% of Total	19.5%	37.5%	57%
	Other substances	Count	15	9	24
		% of Total	7.5%	4.5%	12%
		Count	102	98	200
	Total	% of Total	51%	49%	100%

The present study showed a significant relationship between the history of criminal conviction and the type of poisoning ( $P < 0.003$ , Table 1). There is also a significant relationship between gender and the type of poisoning ( $P < 0.001$ , Table 2).

## DISCUSSION

Poisoning and suicide are major problems in societies that cause 9% of all deaths (4, 27,28). The present study showed that most of poisoned patients were male and this is consistent with the findings of Boushehri's study in 2004 (32).

Drugs are one of the causes of high frequency of poisoning is drug which can

be due to the availability of OTC drugs, erroneous drug administration and prescription, and possibly drug misuse trends in the population (27-29).

In the present study, psychotropic drugs, especially antidepressants, were the most common cause of intentional and unintentional drug poisoning. This is in accordance with the findings of Karami *et al* (28,30). Drugs such as carbamazepine can produce acute poisoning because of suicide or chronic poisoning due to long-term use without adequate patient monitoring (31). Opioid poisoning occurs due to the inappropriate use of opioid analgesics in the treatment of pain and its resulting euphoria (32,33). On the hand,

poisoning is the most common cause of suicide among Greek women (18%); while only 9.4% of suicide cases in men are due to poisoning (34).

Drug poisoning is a common method for committing suicide in Sweden and it occurs due to prescribed drugs among the elderly old age and OTC drugs (usually acetaminophen) in the young population.

Benzodiazepines and antidepressant drugs account for about one third of drug-related poisoning cases (23, 28, and 30). Some studies have shown that benzodiazepines alone are the most commonly-used drugs in committing suicide (28,35-37).

In Poland, the prevalence of poisoning by sedative and psychotropic drugs has been reported 83.7% among adults (38). According to the findings of the present study, the age of most of the poisoned patients fell in the range of 21-30 years. It is comparable to the findings of Jabal-Aameli *et al's* study (19). Moreover, most of the cases in the present study were living in large cities. This is in agreement with the findings of the study done by Mohammadi and *et al* (3).

## CONCLUSION

As the findings of this study and various researches showed several factors, such as the ease of the availability of drugs, family conflicts, emotional changes in puberty, and socioeconomic factors, are involved in poisoning. However, there are various ways to reduce the incidence of poisoning. Noticing the high frequency of suicide and unintentional poisoning by antidepressants, it is suggested that serotonin reuptake inhibitors (e.g. fluoxetine and fluvoxamine) with less side effects be used as a substitute (39).

It is also suggested to pay more attention to patients with depression and provide patients' families with necessary information. OTC drugs should be used with more caution and greater control. Nursing care and education should develop

and psychological counseling should be done in all poisoned and suicidal patients. Provision of appropriate information about chemical, pharmacological, and toxic compounds, such as oil, opium and its derivatives, and organophosphates has a crucial role in decreasing mortality due to poisonings. Moreover, families should be more vigilant in teaching life skills to their teens.

## ACKNOWLEDGEMENT

The authors are profoundly thank to all organizations and experts who supported this study.

## REFERENCES

1. Sobhani A, Shojaii-Tehrani H, Nikpour E, Norozi-Rad N. Drug and chemical poisoning in Northern Iran. Archives of Iranian Medicine. 2000;3(2):32-6.
2. Cantineau A, Jarrier I, Curtes J. Les intoxications aiguës de l'enfant. Expérience du Centre Anti-poisons de Rennes. Revue de pédiatrie. 1985;21(3):117-23.
3. Mohammadi N, Daavari MK, Pazhoomand A. The Epidemiology of Intentional poisoning in adolescence in Tehran. 2007;65(4):59-64.
4. Wessmann-Brenner A, Friedman LM, David A. Organophosphates poisoning a multihospital survey, 1 srael med A and od J.2005;7(3):207.
5. Gould MS, Kramer RA. Youth suicide prevention. Suicide and Life-Threatening Behavior. 2001;31:6-31.
6. Qeshlaqi F, Khanyam I, Eazadi N. The Relationship between Cardiovascular signs and other poisoning signs and prognosis in organophosphates poisoning. Scientific Journal of Forensic Medicine. 2008;14(3):172-5.
7. Cythia K, Ford M, Delaney K, Ling L, Erickson T. Organophosphates and carbamate. clinical toxicology. 2001: 819-29.
8. Eivazi A, Poornajaf A. The Epidemiology of Occupational poisoning in Ealaam farmers. Scientific Journal of Ealaam University of Medical Sciences. 2004;12(44):44-5.

9. Marcdante KJ, Kliegmen RM, Macdante KJ, Jenson HB. Poisoning. In: Jeans PC, editors. Essentials of pediatrics. Elsevier Saunders. 2006. P.204-12.
10. Hasanian H, Fagheehi T. Fatal poisoning in children referred to Loqman –E Hospital during 1996-2005. Research Journal of Shaheed Beheshti University of Medical Sciences. 2008;13(6):535.
11. Talebian A, Doroodgar A, Salehi E, Akbari H. The Epidemiology of poisoning in inpatient children in Kaashan shaheed Beheshti Hospital during 1997-2002. Fez Scientific Quarterly. 2006;2(2):46-9.
12. Hoffman R, Osterhoudt K. Evaluation and management of pediatric poisonings. Pediatric case reviews (Print). 2002;2(1):51-63.
13. Gheshlaghi F, Eizadi-Mood N. Atopic diseases: Risk factor in developing adverse reaction to intravenous N-Acetylcysteine. Journal of Research in Medical Sciences. 2006;11(2):108-10.
14. Izadi-Mood N, Gheshlaghi F, Sharafi SE. Fatal poisoning cases admitted to the Emergency Department of poisoning, Noor Hospital, Isfahan, Iran. J Legal Med. 2003; 9(3): 122-6.
15. Vandoost H, mirakbari SM. Studi of poisoning in adult, poison control center, Loqman-E Hakeem Hospital Tehran-Iran from April 25, 2001. The Internet journal of pharmacology. 2002;1(2).
16. Hickman M, Madden P, Henry J, Baker A, Wallace C, Wakefield J, et al. Trends in drug overdose deaths in England and Wales 1993-98: methadone does not kill more people than heroin. Addiction. 2003;98(4):419-25.
17. White JM, Irvine RJ. Mechanisms of fatal opioid overdose. Addiction. 1999;94(7):961-72.
18. Afzali S, Mani-kashani KH, Abbasi-Kolsom F. Pattern of mortality due to poisoning by drugs and chemical agents in Hamadan, Iran 2005-2007. Qom university of medical sciences Journal. 2008; 2(2): 27-31.
19. Jabal-Aameli M, Eazadi N. Frequency pattern of narcotic poisoning according to demographic determinants and clinical features. Armaghaan-E Daanesh. 2005;10(37): 71-80.
20. Sheikhol-Islami H, Kafee K, Ziaee A. Predisposing factors of suicide in patients referred to Emergency ward. Journal of Geelan University of Medical Sciences. 2008;17(65):77-87.
21. Eddleston M. Patterns and problems of deliberate self-poisoning in the developing world. Qjm. 2000;93(11):715-31.
22. Pearce J. Burton's line in lead poisoning. European neurology. 2007;57(2):118-9.
23. Karaamati MR, Namaie-Qaasemi M, Balaal-Mood M. Relationship between iron deficiency and lead poisoning. Scientific Journal of Beerjand University of Medical Sciences. 2009;16(1):51-8.
24. Masoodi M, Zali MR, Ehsani-Ardakani MJ, Mohammad-Alizadeh AH, Aiassofi K, Aghazadeh R, et al. Abdominal pain due to lead-contaminated opium: a new source of inorganic lead poisoning in Iran. Arch Iran Med. 2006;9(1):72-5.
25. Rezaie-Kandi M, Faheem P, Karbasi M, Qale-Noie M, Bayaat- Makoo K, Chamani T ; et al. The evaluation of donor's corneal endothelial cells expired due to poisoning by rice tablet (Aluminium phosphide). Bina Journal of Medicine. 2006;12(2):211-5.
26. Benemanski V, Solodun IV, Iushkov G, Bun M, Piskareva T. Comparative morphological characteristics of changes in the liver in case of poisoning with alcohol-containing liquids in human and following subacute treatment of animals with ethyl and propyl alcohols, ethylene glycol and their mixtures. Sudebno-meditsinskaia ekspertiza. 53(3):14-6.
27. Ashkani H. The study of suicide with drugs and toxic substances in emergency wards and ICU centers of Sheeraz University of Medical Sciences. JMR Journal of Research. 2002;1(1):97-102.
28. Carlsten A, Waern M, Allebeck P. Suicides by drug poisoning among the elderly in Sweden 1969–1996. Social psychiatry and psychiatric epidemiology. 1999;34(11):609-14.
29. Townsend E, Hawton K, Harriss L, Bale E, Bond A. Substances used in deliberate self-poisoning 1985–1997: trends and associations with age, gender, repetition and suicide intent. Social psychiatry and psychiatric epidemiology. 2001;36(5):228-34.

30. Sakhaa K. Drug poisoning in admitted children. *Journal of Tabreez University of Medical Sciences*. 2007;28(1): 67-76.
31. Behnoush B, Bazmi, Taghaddosinejod F. Carbamazepine poisoning and multiple-Dose activated charcoal. *Acta medica Iranica*. 2009;47(1): 9-14.
32. Afzali S, Jafari MR. Chest X-ray changes in opioid compounds poisoning in Hamadan. *Journal of Qom University of Medical Sciences*. 2010;4(2): 3-7.
33. Joranson DE, Ryan KM, Gilson AM, Dahl JL. Trends in medical use and abuse of opioid analgesics. *JAMA: The Journal of the American Medical Association*. 2000;283(13):1710-4.
34. Zacharakis C, Madianos M, Papadimitriou G, Stefanis C. Suicide in Greece 1980–1995: patterns and social factors. *Social psychiatry and psychiatric epidemiology*. 1998;33(10):471-6.
35. Moghadamnia A, Smaellnia ST, Esmaeili M, Bayati Z, Gholitabar Z. A report of childhood poisoning in Babol. *Archives of Iranian Medicine*. 2004;7(4):297-9.
36. Drummer OH, Ranson DL. Sudden death and benzodiazepines. *The American journal of forensic medicine and pathology*. 1996;17(4):336-42.
37. Cattell H, Jolley DJ. One hundred cases of suicide in elderly people. *The British Journal of Psychiatry*. 1995;166(4):451-7.
38. Kotwica M, Czerczak S, Jaraczewska W, Jarosz A. The pattern of acute poisonings with drugs during the period 1991-1995. *Toxicology Letters*. 1996;88:96.
39. Ramchandani P, Murray B, Hawton K, House A. Deliberate self poisoning with antidepressant drugs: a comparison of the relative hospital costs of cases of overdose of tricyclics with those of selective-serotonin re-uptake inhibitors. *Journal of affective disorders*. 2000;60(2):97-100.