



Asian Journal of Epidemiology

ISSN 1992-1462

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Pattern of Acute Poisoning in Shahrekord (Western Iran)

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Abstract: To identify the intoxicated patients admitted to Shahrekord Kashani Hospital in Chaharmahal and Bakhtyari Province located in Western Iran, all admitted acutely self-poisoned cases hospitalized during one-year period, were evaluated. A total number of 638 self-poisoned patients (324 male and 314 female) were identified and hospitalized. The majority of cases (47%) were in the adult age range 20-45 years. In all groups, most of poisoning (69.3%) occurred intentionally particularly in adult group. Case Fatality Ratio (CFR) was 1.2% and organophosphate was the main reason of poisoning related death. On the other hand multiple drugs were the main reason of self-poisoning in the region. The result of this study suggests that we would consider establishing poison centers in different part of Iran so as to pay more attention to intoxicated patients.

Key words: Poisoning, Chaharmahal and Bakhtyari Province, Shahrekord, intoxication

INTRODUCTION

Self-poisoning is a common clinical problem around the globe. It seems that it predominantly occurs among young people in the developed countries (Eddleston *et al.*, 2005). The Global Burden of Disease study reported that 593000 people killed themselves in the developing worlds during 1990 (Eddleston, 2000). Another study demonstrated that 14% of all death amongst 10-15 year old women in Bangladesh was due to poisoning, the majority following suicidal ingestion of pesticides (Yusuf *et al.*, 2000). Pesticides are the most important poison throughout the tropical region, associated with a high mortality rate, particularly in the rural area. On the other hand medicines are the first popular poison in the developing world (Eddleston, 2000).

Patterns of acute poisoning may be different even within a region or country. A recent study showed that amongst 10206 intoxicated patients admitted to a referral hospital of poisoning in Tehran, Iran, 79% were intentional and the most important cause of acute poisoning was drugs (69.13%), especially sedative-hypnotic drugs (Shadnia *et al.*, 2007), whereas another study demonstrated that during 3 year period, organophosphates and opiates were two major killers in adults and children followed by sedative drugs, in Northern Iran (Sobhani *et al.*, 2000).

We believe that there are differences in patterns of poisoning in different part of our country probably due to geographic and cultural condition. We were therefore interested in determining the pattern of acute poisoning in a mountain-area (Chaharmahal and Bakhtyari Province) in the west of Islamic Republic of Iran.

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MATERIALS AND METHODS

After confirming the project by local ethic committee, the cross-sectional study was carried out by data collection from medical records of a total number of 638 intoxicated patients hospitalized in a referral poisoning center hospital of Shahrekord during a one year Period between 2006 and 2007. The referral hospital is located in Chaharmahal and Bakhtyari Province, a mountain-area with estimated total population of 900000, located in the west region of Iran. Almost all self-poisoned patients from this province who need to be hospitalized are referred to this hospital.

All hospitalized intentional and accidental poison patients were enrolled in this study. Demographic data including age, sex, agent causing intoxication and the type of poisoning as well as mortality and morbidity were investigated. Data was analyzed statistically using SPSS package 15.0 for windows.

RESULTS

Altogether 638 patients with acute self-poisoning identified and hospitalized over the study period, which was 3.35% of total hospitalized patients and 0.07% of total population of this province. Males accounted 324 cases (50.8%) and females accounted 314 cases (49.2%). The age distribution was as follows: (a) children (<12 year) 27 cases (4.23%) (b) teenagers (12-19 year) 157 cases (24.61%) (c) adults (20-45 year) 408 cases (63.95%) (d) middle ages (46-65 year) 37 cases (5.80%) and (e) old ages (>65 year) 9 cases (1.41%). We found that the majority of intoxicated patients were in adult group (63.95%) and the overall median age was 22 years (Table 1).

Data in Table 1 show that most poisoning occurred intentionally (69.3%) most frequently in adult group (47%), followed by accidents (30.7%). However, two third of children were poisoned accidentally.

Eight cases died (7 male and 1 female) and Case Fatality Ratio (CFR) was 1.2% which was 2.1% in male patients compared with 0.3% in female patients, remembering that most frequent death occurred in adult group ($p < 0.05$).

Multiple drug poisoning was the main reason of intoxication (89.34), followed by organophosphates (5.33), opiates (3.14), detergents (1.25) and alcohol (0.94) (Table 2).

The mean length of stay in hospital was 1.55 days and 95.30% were hospitalized for duration of up to three days and 4.70% for more than three days (Table 3).

Table 1: Frequency (%) of accidental and intentional self poisoning and related death among different age groups

Age groups	Accidental poisoning (%)	Intentional poisoning (%)	Total (%)	No. of death	
				Male	Female
Childhood	18 (2.8)	9 (1.4)	27 (4.23)	0	0
Adolescence	49 (7.4)	108 (16.9)	157 (24.61)	0	0
Adulthood	108 (16.9)	300 (47.0)	408 (63.95)	4	1
Middle age	16 (2.5)	21 (3.3)	37 (5.80)	1	0
Old age	5 (0.8)	4 (0.6)	9 (1.41)	2	0
All groups	196 (30.7)	442 (69.3)	638 (100.00)	7	1

Table 2: Distribution of poisoning by poisonous substances and number of related death

Type of poisoning	No. of patients (%)	No. of related death
Multiple drugs	570 (89.34)	2
Organophosphates	34 (5.33)	6
Opiates	20 (3.14)	0
Detergents	8 (1.25)	0
Alcohol	6 (0.94)	0

Table 3: Frequency (percent) of intoxicated patients and length of stay in hospital

Age group	No. of patients (%)	Length of stay in hospital	
		Up to 3 days	More than 3 days
Childhood	27 (4.23)	27	0
Adolescence	157 (24.61)	152	5
Adulthood	408 (63.95)	387	21
Middle age	37 (5.80)	34	3
Old age	8 (1.41)	8	1
All groups	638 (100.00)	608 (95.30%)	30 (4.70%)

DISCUSSION

With respect to the rule of admission of intoxicated patients in our hospital, patients defined as self poison are being hospitalized for at least 24 h for further evaluation. Regarding to this point, all patients established as self-poisoned patient admitted to other hospitals in Chaharmahal and Bakhtyari Province in Iran, are referred to the poisoning center in Kashani Hospital located in the center of the province.

In this study, we found that the total incidence of poisoning in adult group was higher than other age groups. This is in part similar to those studies related to poisoning in Tehran and northern part of Islamic Republic of Iran as well as other investigation of developing world (Abdollahi *et al.*, 1997; Afshari *et al.*, 2004; Eddleston, 2000; Shadnia *et al.*, 2007). Other similarities of present study are the agent and the type of poisoning. Although, Shadnia *et al.* (2007) reported opiates as the main cause of death in their study, we found that the majority of death related to self poisoning was due to organophosphates (75%) and the remainder (25%) of patients' death was related to drugs. In spite of this differences, this study supports the view that pesticides are presumably the most important causes of fatal self poisoning in some regions of Asia as reported by Eddleston *et al.* (2005) and Soltaninejad *et al.* (2007).

Considering the result of present study, we agree in part with the study of Camidge which pointed out that there is variation in the type of medicine products in developed countries. The result of this study which was conducted in the period of 1989-1992 in Europe showed that sedatives and analgesics are commonly used for self harming (Camidge *et al.*, 2003). Although we, were not able to differentiate these drugs in our hospital, we believe that either availability of these drugs or cultural behavior may be the main reason of using multiple drugs as self poisonous substances in our country. Despite opiates smuggling from opium producing area of Afghanistan and Central Asia to the Europe through Iran which may increases the availability of opium which could influences the prevalence of opium usage in Iran (Westermeyer, 2004; Karbakhsh and Salehian, 2007), the result of present study showed that opiates were not the main group causing poisoning. Answering the question whether those opium-addicted patients may affect CFR, is very difficult, as they may not transferred to the hospital before they died.

In a few studies, the CFR was high and rose steeply with age in both men and women. We found out a lower CFR which was significantly lower in female patients remembering that serious poisoning occurs in men but not women in our society, as was found in northern Iran (Moghadamnia and Abdollahi, 2002). Moreover, CFR was more related to the adult and middle age group and less to the old age group. Having done more studies may reveal the notion that younger adults have more psychological and economical as well as social problem in our country.

Short lengthening of stay in our hospital is one of the merit of managing intoxicated patients vs. other investigations that reported a longer in-hospital length of stay (Karbakhsh and Salehian, 2007; Kapur *et al.*, 2005).

Unfortunately, pattern of self poisoning in all region of our country have not been reported so far. Moreover, analytical toxicology facilities are not available in all areas of the country. These are the

main disadvantages of future studies related to intoxication. We completely agree with Moghadamnia *et al.* (2002), that physicians should vigorously consider establishing poison centers in different part of our country.

CONCLUSION

Regarding to the result of this study, pattern of acute self-poisoning in western Iran can be described as follow: self-poisoning occurs amongst adult group more than other age groups while the most important cause of poisoning is multiple drugs and organophosphates is the main cause of poisoning-related death. Limitation on analyzing multiple toxic drugs is the main demerit of this study, on the other hand Case Fatality Ratio (CFR) is less in this major poisoning group. It seems that analytical toxicology labs should be facilitated in the future in our country; also, more epidemiological studies in other parts of the region are strongly recommended.

ACKNOWLEDGMENTS

The research was supported by Research Committee of Shahrekord University of Medical Sciences. We would like to tank Dr. H. Yousefi as well as Kashani Hospital staff for their assistance.

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