

ORIGINAL PAPER

Evaluation of the causes of poisoning with addictive agents (narcotics, stimulants, alcohol) among children admitted to Abouzar Hospital from 2016-2019

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ABSTRACT

Aim of the study: We aimed to determine the causes of poisoning with addictive agents (narcotics, stimulants, alcohol) among children admitted to Abouzar Hospital from 2016-2019.

Material and methods: This is a descriptive cross-sectional study which had conducted on 424 children those were poisoned with narcotics, stimulants and alcohol referred to Abouzar Hospital in Ahvaz city during 2016-2019. After we took permission of Ethics Committee of the University of Medical Sciences, the researcher referred to Abouzar Hospital to identified the eligible children criteria, and collected all the required information using a checklist. Data analysis was carried out using SPSS ver. 24 and p -value < 0.05 was considered as the significance level.

Results: A total of 245 (57.8%) of participants were boys. Alcohol, tramadol, opium, crystal, methadone, and heroin poisoning accounted for 12 (2.8%), 2 (0.5), 178 (42%), 34 (8%), 194 (45.8%), and 4 (0.9%) of cases, respectively. A total of 276 people (65.1%) aged less than 3 years old, 414 people (97.6%) lived in the city, and 404 people (95.3%) had no previous history of poisoning. The poisoning occurs at night in 276 (65.1%) of cases and accidental poisoning accounted for 258 (60.8) of cases. Children had access to addictive agents through their parents (both parents) in 144 (34%) of cases. A total of 272 patients (64.2%) discharged and 11 patients (2.6%) died. There was no significant relationship between the cause of poisoning with sex, year and month of referral, place of residence and history and time of poisoning ($p > 0.05$), but there was a significant relationship between the cause of poisoning with age, type and outcome of poisoning and access ($p < 0.05$).

Conclusions: Finding has suggested that appropriate information be provided to parents and inform them of the dangers of poisoning with additive agents among their children.

KEY WORDS:

children, narcotics, stimulants, poisoning, addictive agents.

INTRODUCTION

The extent and trend of poisoning over time and in different countries is closely related to the substances and drugs available, as well as the culture of drug prescription by physicians. Poisoning is strongly influenced by

changing cultures, available materials, and environmental factors as a whole. This poisoning share seems to be increasing in recent years with the expansion of the use of psychedelics and the introduction of new materials and synthetic pills [1]. On the other hand, approximately one million cases of severe accidental pesticide poison-

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ing occur in the world every year, and during this period, about two million admissions occur due to suicide with pesticides, most of which occurred in countries with agriculture-based economy [2].

Access to drugs and chemicals in Iran is not a difficult task. Therefore, it will not be far from expectation if there is a lot of related poisoning [3]. Poisoning is one of the most important medical emergencies and one of the most common causes of referrals to medical centers, so that it accounts for 15 to 20% of referrals. More than half a million people worldwide die each year from poisoning, 99% of which occur in developing countries, according to the World Health Organization (WHO) [4].

Poisoning is on the rise due to changes in lifestyle and social behaviors that are affected by several factors including geographical, social, economic, religious and cultural factors. Today, the development of societies leads to greater access to drugs, increasing use of detergents, disinfectants and insecticides, which has led to an increase in the burden of poisoning. Poisonings can be divided into two general categories of non-accidental and accidental poisoning in terms of intention and cause [5].

Unintentional poisoning is defined as the non-accidental use toxins with the intent to harm oneself or another, which is more common in adults and is often seen in other forms of sadism or suicide. Unwanted or accidental poisoning, on the other hand, occurs when people are mistakenly poisoned without the intention of harming themselves by substance abuse or drug overdose [6].

Some of intentional poisoning include food, fungal, pharmaceutical, chemical, narcotics and insecticides poisonings, which have become more important due to the increasing development of various toxins and drugs. In the last century, drugs- and toxins-related poisoning has been more prevalent due to the introduction of different formulas and combinations of chemicals to the market, which has led to the patient death in most cases [7].

On the other hand, the pattern of poisoning may vary from country to country and also within the existing regions of a country. This difference may be due to the level of access to chemicals, drugs and toxins, socio-economic characteristics, social beliefs, customs, education and family economic conditions [8].

Acute poisoning is a known health problem that puts everyone at risk. Among them, children, adolescents, women of childbearing age, and the elderly are reportedly more at risk. Poisoning is reported to be one of the most important medical emergencies and a common cause of death in children, especially in developing countries and Iran, so that it accounts for 70% of all poisonings of all age groups [9]. Children are often poisoned due to curiosity or imitation, and more than 90% of these cases happen by accident. Poisoning in adolescents is also doubly important considering special physical and psychological conditions. Moreover, considering the young population of Iran, poisoning in adolescent groups ac-

counts for up to 22% of patients referred to poisoning wards, which is very significant as compared to European countries [10].

In addition to increasing the poisoning incidence rate, unfortunately, adolescent mortality is high and worrying. Women of childbearing age are also important strata of society and poisoning is the most common form of failed suicide attempt with debilitating complications among them. Poisoning is the third leading cause of injuries resulting in hospitalization (16.40%), among women of childbearing age and they are considered as the most vulnerable group are at risk of unintentional drug poisoning, especially neuropsychiatric drugs with suicidal ideation [11].

In this regard, the incidence of poisoning among the elderly is one of the most significant serious problems in the health of the elderly. This group is prone to unintentional or intentional poisoning due to special conditions such as poor health, chronic diseases, multiple disabilities, cognitive impairments, retirement, death of spouse, loss of independence, and depression [12].

Each year, a large number of vulnerable groups suffer from illnesses, hospitalization or death due to unintentional or intentional poisoning, and identifying poisonings and related factors in each region can help to plan and find prevention and health recommendations [13].

Therefore, considering that age, education level and other demographic variables have been effective on the rate of poisoning in previous studies, on the one hand, the high burden of poisoning and the lack of a similar study in Ahvaz in recent years, on the other hand, so, the present study aims to determine the causes of poisoning with addictive agents (narcotics, stimulants, alcohol) among children admitted to Abuzar Hospital during 2016 to 2019.

MATERIAL AND METHODS

STUDY LOCATION

This study has done in Ahvaz city Khuzestan province, which has located in sought west of Iran [14].

STUDY DESIGN

This descriptive cross-sectional study was performed in 2020 on all children poisoned with narcotics, stimulants, and alcohol referred to Abuzar Hospital of Ahvaz in 2016-2019. After approval of the research project by the Ethics Committee of Ahvaz Jundishapur University of Medical Sciences, the researcher referred to the study setting (Abuzar Hospital in Ahvaz) under the number IR.AJUMS.HGOLESTAN.REC.1399.041 He then included 424 eligible children using census sampling. Inclusion criteria included children with unintentional and inten-

tional poisoning who referred to Abuzar Hospital of Ahvaz during four years (2016-2019) who were poisoned by three agents: narcotics, stimulants, and alcohol.

Exclusion criteria also included poisoned children with incomplete medical records so that the checklist could not be completed and children poisoned with other causes.

After referring to Abuzar Hospital in Ahvaz, the researcher identified the children based on the inclusion criteria from 2016 to 2019, and collected all the required information using a checklist. The checklist included demographic and poisoning characteristics of children. The collected data were analyzed using SPSS ver. 22 and p -value < 0.05 was considered as the significance level. Mean and standard deviation were used to express quantitative variables, and distribution and frequency were also used in the case of qualitative variables. The data normality was evaluated using Kolmogorov-Smirnov test and t-test was also used for quantitative data and chi-square test was used for qualitative data.

RESULTS

Table 1 shows percentage and frequency distribution of demographic variables.

According to the results obtained from Table 1, there were 245 boys (57.8%) and 179 girls (42.2%). Alcohol, tramadol, opium, crystal, methadone, and heroin poisoning accounted for 12 (2.8%), 2 (0.5), 178 (42%), 34 (8%), 194 (45.8%), and 4 (0.9%) of cases, respectively. A total of 276 people (65.1%) aged less than 3 years old, 115 people (27.1%) aged 3-6 years old, 29 people (6.8%) aged 7-12 years old, 4 people (0.9%) aged more than 12 years old. Participants referred to the above hospital 2016, 2017, 2018, and 2019 in 87 (20.5%), 120 (28.3%), 104 (24.5%), and 113 (26.7%) of cases, respectively. A total of 414 (97.6%) and 10 (2.4%) of the participants lived in the city and village, respectively. A total of 404 patients (95.3%) had no previous history and 20 patients (4.7%) had a previous history of poisoning. Poisoning occurs during night and day for 276 (65.1%) and 148 (34.9%) patients, respectively. The addictive agents were available to the patients through friends, relatives, father, mother, unknown source, and parents (both parents) in 10 (2.4%), 47 (11.1%), 102 (24.1%), 3 (0.7%), 118 (27.8%) and 144 (34%) of cases, respectively.

There was no significant relationship between the cause of poisoning with sex, year of referral, place of residence, history of previous poisoning, and time of poisoning ($p > 0.05$). However, there was a significant relationship between the cause of poisoning and age ($p < 0.05$). The highest poisoning rate was observed among children under 3 years. There was also a significant relationship between poisoning rate and access ($p < 0.05$). The most important sourced of access to narcotic agents for children included parents and then fathers.

TABLE 1. Percentage and frequency distribution of demographic variables

Statistical indices	n (%)	p value
Age		
Less than 3 years	276 (65.1)	0.0001
3-6 years	115 (27.1)	
7-12 years	29 (6.8)	
More than 12 years	4 (0.9)	
Sex		
Boy	245 (57.8)	0.081
Girl	179 (42.2)	
Year of referral		
2016	87 (20.5)	0.227
2017	120 (28.3)	
2018	104 (24.5)	
2019	113 (26.7)	
Place of residence		
City	414 (97.6)	0.918
Village	10 (2.4)	
History of previous poisoning		
Yes	404 (97.6)	0.363
No	20 (4.7)	
Time of poisoning		
Day	276 (65.1)	0.750
Night	148 (34.9)	
Access		
Friends	10 (2.4)	0.001
Relatives	47 (11.1)	
Father	102 (24.1)	
Mother	3 (0.7)	
Unknown	118 (27.8)	

Table 2 shows the percentage and frequency distribution of the poisoning agent in the subjects.

According to the results obtained from Table 2, methadone, has mentioned more than others.

TABLE 2. Percentage and frequency distribution of poisoning agent

Statistical indices	n (%)
Alcohol	12 (2.8)
Tramadol	2 (0.5)
Opium	178 (42)
Crystal	34 (8)
Methadone	194 (45.8)
Heroin	4 (0.9)

TABLE 3. Distribution (percentage) of the frequency of the poisoning agent according to the final outcome and type of poisoning

Statistical indices	Discharged	Expressed their personal	Escaped	Died	p value
	n (%)				
Alcohol	7 (58.3)	5 (41.7)	0	0	0.003
Tramadol	1 (50)	1 (50)	0	0	
Opium	110 (62.8)	59 (33.1)	1 (0.6)	8 (4.5)	
Crystal	17 (50)	17 (50)	0	0	
Methadone	136 (70.1)	52 (26.8)	3 (1.5)	3 (1.5)	
Heroin	1 (25)	2 (50)	1 (25)	0	
Total	272 (64.2)	136 (32.1)	5 (1.2)	11 (2.6)	
	non-accidental – child	non-accidental – parents	accidental		p value
	n (%)				
Alcohol	3 (25)	2 (16.7)	7 (58.3)		0.0001
Tramadol	0	0	2 (100)		
Opium	12 (6.7)	102 (57.3)	64 (36)		
Crystal	1 (2.9)	9 (26.5)	24 (70.6)		
Methadone	13 (6.7)	22 (1.3)	159 (82)		
Heroin	0	2 (50)	2 (50)		
Total	29 (6.8)	137 (32.3)	258 (60.8)		

Table 3 shows the percentage and frequency distribution of the poisoning agent according to the final outcome and the type of poisoning in the subjects.

Results from Table 3 has shown that 272 patients (64.2%) were discharged, 136 patients (32.1%) expressed their personal consent and were discharged, 5 patients (1.2%) escaped, and 11 patients (2.6%) died. There was a significant relationship between the cause of poisoning and the final outcome ($p < 0.05$).

Also, the type of poisoning was unintentional – child, unintentional – parents, and intentional in 29 (6.8%), 137 (32.3%), and 258 (60.8%) patents, respectively. There was a significant relationship between the cause of poisoning and the type of poisoning ($p < 0.05$) and prevalence of accidental poisoning was more than that of non-accidental poisoning.

DISCUSSION

In a study on patients diagnosed with opium poisoning in the Children’s Medical Center Hospital, Kadivar (2000) examined 34 patients from 1991 to September 1998. The minimum and maximum age range was 7 days old and 3.5 years old, respectively (mean: 7 months). In most cases, opium was administered orally by relatives. The presence of an addicted person in the family was emphasized in 38.2% of these patients [15]. In the present study, more than 50% of children were under 3 years old. Opium was the most common cause of poisoning, and parents were the most important sources of access of the child to the addictive drug, which is consistent with

the results of the Kadivar’s study. A finding of investigated on 67 children in a study. The minimum and maximum age range was 6 days and 5 years, respectively. There were also four deaths. Also, 61.2% of poisoned children lived in rural areas. Pure opium was the most highly consumed addictive drug (63.6%) [16]. In the present study, more than 50% of children were under 3 years of age. The most common cause of poisoning was opium, which is consistent with the results of the Besharat’s study’ however, in the present study, the number of children living in cities were more than those living in villages, and the number of deaths was higher. A study on children referred to the Emergency Department of Imam Khomeini Hospital in Jiroft. They showed that 53.7% of participants were boys and the most common age group was less than three years old. Also, 45% of the children lived in the city. The most common poisoning agents were human drugs (36%), followed by methadone (28%) and other narcotics (13%) [17], which were consistent with the present study in terms of the frequency of sex, age and place of residence, but not consistent in terms of most commonly poisoning drug. This inconsistency can be due to differences in narcotics and common stimulants used in different cities. Other study carried out a study on 5064 patients admitted to the Poisoning ward, Emergency Department of the Imam Reza Hospital in Mashhad. The results showed that out of 5064 patients studied, 2635 (52%) were females and the rest were males. The mean age of patients was 27.3 ± 14.6 years and the highest cases of poisoning were observed in the 20-29-year age group (41.4%). The most common causes of poisoning included

drug use (64.6%) and narcotics (22.9%) (18), which were not consistent with the results of the present study. This inconsistency may be due to differences in age groups in the two studies. Also carried out a study on 260 poisoned patients referred to the Emergency Department in the Hospital. The results showed that the mean age of patients was 23.10 ± 15.16 years and most of the participants were in the 11-30-year age group, male, single, Iranian and living in the city. Most poisoning cases were non-accidental (58.1%). Drugs, methadone, pesticides, and opium were the most common causes of poisoning, respectively. The majority of accidental poisoning (68.3%) occurred among children under 10 years old and methadone was the most common cause of accidental poisoning. The mortality rate was 1.9% and pesticides were the cause of 60% of deaths [19], which was not consistent with the results of the present study. This inconsistency can be due to differences in the studied age groups. Most of the children were in the < 3-year-age group in the present study and opium was the most common cause of poisoning, which is not consistent with the results of the Tor-kashvand's study.

Rahmani investigated 1007 poisoned patients referred to Razi Hospital in Ahvaz. They found that 46.7% of the study population were women and 53.3% were men. Also, most of the participants (64.2%) were in the 15-30-year age group and 78% of cases had used the drug in order to commit suicide and there was a history of mental problems in 20.2% of cases [20], which was not consistent with the results of the present study. This inconsistency can be due to differences in the studied age groups. A study has investigated 97 children with methadone poisoning referred to the Pediatric Emergency Department of Ali Ibn Abitaleb Hospital. They found that out of 97 poisoned children, 57 (58.76%) and 40 (41.24%) were boys and girls, respectively. Also, 7 (7.2%) of these children, 67 (69.1%) of fathers and 16 (16.5%) of mothers were addicted. Accidental poisoning occurred in 71 cases (73.2%). The highest number of referrals occurred during night shifts and autumn [21], which is consistent with the results of the present study in terms of prevalence in male sex, access to poisoning agents by the father, more referrals during night shifts, and accidental poisoning. Izadi studied 184 patients with tramadol poisoning. They found that 141 patients were male and 43 were female. The mean age of the patients was 24 ± 7 years. Also, 41% of the patients had a history of addiction [22], which is not comparable with the results of the present study. Izadi study only investigated patients with tramadol poisoning. In a study in the state of Uttarakhand, Kylie examined 156 patients with acute poisoning. They found 53 patients (33.9%) were in the elderly age group (60 years). The maximum number of patients belonged to the 71-80-year age group (26%, 16.6%). The prevalence of the acute poisoning was higher among men than women. The most

common poisoning agents in the elderly age group was alcohol poisoning and then pesticide poisoning (organophosphate), which is not comparable with the results of the present study. Patients of all age groups were studied in Kylie's study.

Nestor showed in a study that 480 children were hospitalized with accidental poisoning. Most of them were in the 1-2-year age group ($n = 120$ people). The causes of these poisonings were household chemicals, carbon monoxide and insecticides [23], which were consistent with the results of the present study in terms of age groups and accidental poisoning, but not in terms of the type of poisoning agents. In a study at the Ally hospital in Tanzania, Mobarook investigated 8827 patients and 106 (1.2%) patients met inclusion criteria. The mean age of patients was 28 years and 81 (76.4%) were male. Causes of poisoning included alcohol ($n = 42$ cases, 50%) and a combination of different drugs ($n = 12$ cases, 14.3%). Most exposures were non-accidental (63.4%) and occurred through the oral route (88%). The most common abnormal physical findings included mental state (66%) and one patient died [24], which is not consistent with the present study in terms of the study population; however, the number of boys was more than girls and most exposures were non-accidental in two studies. In the present study, the number of deaths was higher.

Some of the limitations of the present study included that if the study ranged conducted during longer time period on larger sample size, we could comment on the results with more certainty. Also, there was a few publications related to this topic as compare in discussion section.

CONCLUSIONS

Findings of the present study showed no significant relationship between the cause of poisoning with sex, year of referral, place of residence and history and time of poisoning; however, there was a significant relationship between the cause of poisoning with age, type and outcome of poisoning and access. According to the results, it should be noted that narcotic and stimulant poisoning in children can have impacts on their future and impose heavy costs on the family and society in adulthood. In this regard, it is suggested to provide parents with appropriate information and inform them of the dangers of poisoning children with these substances. On the other hand, there were some cases of hospital discharge with personal consent in the present study and the child fate was not known.

DISCLOSURE

The authors declare no conflict of interest.

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