Patterns of acute poisoning among children admitted to maternity and children, teaching hospital, Al Diwaniyah city, Iraq

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الخلاصة:

يعد التسمم الحاد من الحالات الطارئة الشائعة لدى الاطفال . و أحد الأسباب الهامة للمراضة والوفيات بين الأطفال ولا سيما في البلدان النامية. وعادة ما تختلف أنماط التسمم من بلد إلى آخر ومن محافظة إلى أخرى داخل البلد نفسه.

وكان الغرض من هذه الدراسة الرجوعية هو توضيح خصائص حالات التسمم الكيميائية والدوائية الحادة التي تم إدخالها في قسم الطوارئ / مستشفى النسائية والأطفال التعليمي في مدينة الديوانية ومقارنة خصائص التسمم بين مختلف الفئات العمرية في المنطقة.

تتضمن هذه الدراسة مراجعة للسجلات الطبية 125 حالة تسمم تحت سن 7 سنوات، باستثناء حالات التسمم الغذائي ولدغة الثعابين ولسعات العقرب والحالات ذات البيانات غير الكاملة، والتي عرضت على قسم الطوارئ خلال عام 2016. وكان متوسط عمر جميع المرضى المسمومين (متوسط ± الانحراف المعياري) 2.26 ± 0.750. وكان مائة وخمسة وعشرون طفلا، يشكلون 2.2 في المائة (5494/125) من إجمالي حالات ا لدخول لوحدة الطوارئ لجميع المرضى دون السابعة من العمر. وكان عدد الفتيان71 (56.8 %) أكثر قليلا من الفتيات54 (43.2 %) بنسبة الذكور إلى الإناث 3.1: 1. وبسبب بعض ملفات المرضى غير مكتملة, لهذا تم تضمين 125 ملف فقط في هذه الدراسة. وتعزى معظم الحالات إلى التسمم العرضي. بلغ عدد المرضى الذين تقل أعمارهم عن سنة واحدة 23(18.4٪) من جميع حالات التسمم كانت نتيجة لخطأ علاجيا ، ومن سنة الى 3 سنوات 47(37.6%) ,ومن 4 الى 7 سنوات 55(44%). وكانت المواد الكيميائية أكثر العوامل شيوعا بنسبة (58.4٪) معظمها بسبب مادة الكيروسين (30.1٪)، والمبيدات الزراعية / المبيدات الحشرية (19.1٪) تم تخزين الغالبية العظمى من هذه المواد في حاويات غير أصلية ، تليها الأدوية بنسبة 41.6٪، ويرجع ذلك في الغالب إلى استعمال أدوية البرد والسعال (15.3٪),ودائما متوفرة في المنزل، ويجري استخدامها إما من قبل الطفل أو الآباء والأجداد. وكان أكثر الطرق شيوعا للتسمم ابتلاع السم فمويا (118 مريضا، 94.4٪) ومعظمهم تناولوها داخل المنزل (73.6٪). ولم يبلغ عن وقوع وفيات في فترة الدراسة. كانت هناك تباينات موسمية واضحة، ومعظم الحالات ادخلوا خلال فصل الصيف (42.4٪) والربيع (29.6٪). وكان المرضى من المناطق الريفية (57.6٪) أكثر من المرضى من المناطق الحضرية (42.4٪).

وتوجد علاقة بين مستوى تعليم الوالدين وحدوث تسمم للأطفال وخاصة الأمهات. وبما أن مستوى التعليم في هذه الدراسة كان أقل في الأمهات، وحيث أن الأمهات هن اللواتي يأخذن الرعاية الأولية للأطفال في المنزل، ينبغي تثقيفهن بشأن الرعاية والوقاية من الإصابات القاتلة لأطفالهن في المنزل.

هناك حاجة إلى برامج ترويجية صحية فعالة للآباء والأمهات بشأن مخاطر التسمم لزيادة الوعي والحد من حدوث التسمم بين الأطفال في منطقتنا بالإضافة إلى التعامل الصحيح مع المواد الكيميائية. تم تخزين الغالبية العظمى من هذه المواد في حاويات غير أصلية

Abstract:

Acute poisoning, a common pediatric emergency, is one of the important causes of morbidity and mortality in children, especially in developing countries. The patterns of poisoning usually differ from country to country and from province to another within the same country.

The purpose of this study was to clarify the characteristics of acute chemical and drug poisoning cases admitted to the emergency department (ED) of maternity and children, teaching hospital in Al- Diwaniyah city and to compare poisoning characteristics between different age groups in the

region. A review of medical records of 125 poisoning cases under 7 years of age, except for cases of food poisoning, snake bite, scorpion stings and cases with incomplete data were not included in this study, presenting to the Emergency Department (ED) during 2016 were determined .The mean age of all poisoned patients (mean ± standard deviation) was 2.26 ± 0.750.One hundred and twenty five children, forming 2.2% (125/5494) of total emergency unit admissions of all patients, were under seven years of age. Slightly more boys 71 (56.8%) than girls 54 (43.2%) were intoxicated with the male to female ratio of 1.3:1. The majority of all cases were due to accidental poisoning. In patients younger than one year of age 23(18.4%), of all poisonings were due to therapeutically error, 1 – 3 year 47 (37.6%), 4 – 7 year 55(44%). Chemical agents (58.4%) mostly kerosene (30.1%), agricultural pesticides/insecticides (19.1%), were the most frequent offending agent, followed by drugs comprised (41.6%), mostly due to Cold and cough medication (15.3%), The vast majority of these materials was stored in non-original containers, These drugs were available at home, being used either by the child or the parents and grandparents. The most common route of poisoning was ingestion of the poison (118 patients; 94.4%) and most were ingested inside the house (73.6%). No deaths were reported.

There were obvious seasonal variations and most cases were admitted during in summer (42.4%) and spring (29.6%). Patients from rural areas (57.6%) were more than the patients from the urban areas (42.4%). Effective health promotional programs for parents regarding poisoning hazards are needed to increase the awareness and reduce the incidence of poisoning among children in our region in addition correct dealing with the chemical materials. A relationship exists between the parents' level of education and the occurrence of pediatric poisoning particularly mothers. Since the level of education in this study was lower in the mothers and for mothers are those

Who take primary care of children at home; they should be educated regarding care and prevention of lethal injuries to their children at home.

Keywords: Acute Poisoning, Organophosphorous, Children, Incidence, Chemical, Drug, Al Diwaniyah

Introduction

Acute poisoning remains an important health problem in children worldwide. Thousands of unwary children under the age of five years are poisoned accidentally every year throughout the world. The World Health Organization estimates that the total number of acute unintentional poisonings throughout the world ranges from 3.5–5.0 million cases annually, of which 3 million are severe poisonings resulting in 20 000 deaths annually, while the estimated annual intentional poisonings number 2 million resulting in200 000 suicides [1,2].

Poisons are substance capable of causing adverse effects in living beings. Chemical poisons are divided into two groups: those that come into direct human contact (foods and their additives, medications, cosmetics) and those that are not meant for human

contact (household or domestic products, industrial products. Agricultural pesticides, petroleum products, and non-pharmacological herbs).

Poisoning is injury or death due to a toxic substance. The extent of injury depends on the amount of the poisonous material, the extent of absorption and distribution, and the innate power of the poison. Poisonings may occur through local absorption (eyes, skin, lungs, or GI, tract), systemic absorption, or through both routes [3].

Poisoning is most commonly observed in 1-5 years of age and these children constitute 80% of all poisoning cases [4,5].

Despite advances such as childproof caps on medication bottles, childproof packaging, increased educational efforts, and increased awareness of commonly ingested substances, deaths due to unintentional poisonings still occur [6].

Various studies have identified kerosene, petrol, medicines, insecticides, and household cleaning products as major hazards for poisoning incidents among young children [1,7].

The mortality rate due to poisoning is 3-5% [8,9,5]. The pattern and main risks of acute poisoning change with time according to age, and they differ from country to country. Thus epidemiological surveillance specific for each country is necessary to determine the extent and characteristics of the problem, according to which related preventive measures can be taken.

In the first year of life, the main causes of poisoning are medications given by parents. At 2-3 years of age, house cleaning products cause most cases of poisoning, at 3-5 years of age, the medications kept in the cupboard or left open are the main causes of poisoning, and at school age and during adolescence, medications used for committing suicide are the main cause of poisoning [5].

Typically, 95 to 97% of poisonings are accidental [(10)], which is the most common case for children under 5 years of age (45-75%). In this age group, boys are more frequently affected [(10, 11)]. In infants under 1 year of age, the most common cause of poisoning is medical error (74.2%). Intentional poisoning is more common in those above 13 years of age, occurs more often in girls (70%) than in boys, and is mostly due to medications or domestic products [11].

The occurrence of poisoning varies among different populations, according to their culture, knowledge, education, and socioeconomic status [10]. Despite a high prevalence of acute poisoning occurred among the pediatric population, none of the previous studies were retrospective. Therefore, none went through patients' records to include level of education, knowledge, and ages of their parents, which could be important variables affecting the prevalence of poisoning.

In the present study, our aim was to determine the correlation between prevalence of acute

Poisoning in children with the age and level of education of the parents in addition

to the frequency and demographic data of the pediatric population referred to emergency units. This would allow to reduce the occurrence of poisonings by educating the parents about keeping poisonous materials, especially insecticide, medications, and petroleum products, out of children's reach and about not self-prescribing medications for their children.

Material and methods:

The aim of this retrospective study was to determine the pattern of acute poisoning in the pediatric age group and frequency. The duration of this observational study was one year during 2016 .

All patients under 7 years who admitted the emergency department of maternity and children, teaching hospital in al-Diwaniyah city with a history of acute poisoning or clinical features suggestive of possible poisoning were included in the study. Data was obtained mainly by reviewed hospital records (patient files) , full information were collected.

Study Variables

The following data elements were collected: patient demographics (age, gender, region), etiological agents (like kerosene oil, organophosphorus and drugs, etc.), manner of poisoning (intentional or unintentional), place of poisoning; route of exposure, season, and outcome (discharge after observation or death). Cases with snake bite, scorpion stings, food
Poisoning and cases with incomplete data were not included in this study. The diagnosis of poisoning was made on historical information and physical findings. No laboratory
Identification of the offending agent was used.

Maternity and children, teaching hospital in al-Diwaniyah city is the only main hospital, which receives most referral cases from the peripheral areas and the center.

Al- Diwaniyah is a province in the middle of Iraq and the middle Euphrates region and famous for agriculture. Al-Diwaniya away from Baghdad, about 180 kilometers. The estimated population of the province by about a million and a half million people, according to the census of 2014.

Statistical analysis of the data:

The collected data were organized, tabulated and analyzed using SPSS version 23 software (Spaces Inc, Chicago, ILL Company). Data were presented as number and percentages. Chi square test (X2) of significance was used. The accepted level of significance in this work started at 0.05, (P <0.05 was considered significant).

Results:

Demographic Properties of the Poisoned Patients

During the year 2016, in the maternity and children, teaching Hospital, 5494 patients were hospitalized, 125 of them (2.2%) were admitted due to acute poisoning in the emergency unit.

The poisoned patients represented 2.2% (125/5494) of overall emergency unit admitted during the year 2016. Most of the patients were brought directly to the emergency unit, were referred from either primary health center, private clinic, nearby areas of the al-Diwaniyah province or directly to the hospital emergency unit.

Among 125 children, 71 (56.8%) cases were males and 54 (43.2%) were females. So the frequency of poisoning was more in male (56.8%) than females (43.2%). And the male to female ratio of 1.3:1. The mean age of all poisoned patients (mean ± SD) was 2.26 years,0.750.

The patients were divided into 3 groups according to their ages: younger than 1 year, those between 1 and 3yr and those between 4 and 7 yr. The majority of cases 102 (81.6%) were between 1 and 7 years. In all age groups more male cases were found as compared to female cases. All poisoning cases occurred accidentally125 (100%) table 1**.**

Differences between age groups were statistically not significant ($\chi 2 = 0.447$, $df=2$, $p>0.05$).

Table 1: Distribution of poisoning by age and sex.

Age	No. of cases	Percentage %
< 1 year	23	18.4%
1 year – 3 year	47	37.6%
4 - 7 year	55	44%
Total	**125**	**100**
Gender		
Male	71	56.8%
female	54	43.2%
Total	**125**	**100**

$\chi 2 = 0.447$, $df=2$, $p>0.05$

Under one year of age, (23 patients; 18.4%) of all poisonings were due to therapeutically error, either faulty prescriptions or dosing by physicians and/or families (some mothers gave an overdose).

The regional distribution of the study showed that patients from rural area predominate that of urban areas. Patients from rural area constituted (72 patients; 57.6%) while the urban area constituted (53 patients; 42.4%) **table 2.**

Table 2: Place of residence rural areas and urban areas.

Place of residence	No. of cases	Percentage %
Rural area	72	(57.6%)
Urban area	53	(42.4%)

$\chi 2 = 0.122, df=1, p>0.05$

Routes of Poisoning

The most common route of poisoning was oral ingestion (118 patients; 94.4%) and (7 patients; 5.6%) poisoning was due to dermal exposures. The highest frequency of poisoning was resulted from a single agent table 3.

Regarding the place of poisoning, the majority of all patients (92/125) (73.6%) was inside the house, while 33 patients (26.4%) were outside the house (e.g. In park, farm, grandparent's house, street) table 3. $\chi 2 = 13.42$, $df=1$, $p<0.05$, significant relationship between place of poisoning and occurance of accidental ingestion of poisoning.

Table 3: place and route of poisoning

Place of poisoning	No. of cases	Percentage %
House	92	(73.6%)
Outside house	33	(26.4%)
Route		
Oral	118	(94.4%)
Dermal	7	(5.6%)

$\chi 2 = 13.42$, $df=1$, $p<0.05$

Poisoning Agents

In the present study, the most common causes of acute poisoning were chemical (73 patients; 58.4%), kerosene (22 patients 30.1%), Agricultural pesticides/insecticides (14 patients 19.1%), organophosphorus were involved in 12 cases (16.4%), zinc phosphide (rat poison) (6 patients; 8.2%), benzene (2 patients 2.7%) The vast majority of these materials were stored in non-original containers.

Cleaning and disinfectant agents were involved in (17 patients; 23.2%) of the cases; the most commonly involved agents were bleaches like sodium hypochlorite (Clorox) (7patients; 9.5%), disinfectant, like chloroxylenol (Dettol) (4 patients; 5.4%), laundry detergents (6 patients; 8.2%).

Drugs poisoning comprised (52 patients; 41.6%) of recorded cases , mostly due to Cold and cough medication (8 patients; (15.3%), Antiepileptic/Anticonvulsant (7 patients; (13.4%), tricyclic antidepressants (6 patients; (11.5%), antihypertensive (6 patients; (11.5%), benzodiazepines (5 patients; (9.6%), Antispasmoic drops (homeatropine methyl bromide 6 patients; (11.5%), Digoxin tablets (3 patients; (5.7%), metoclopramide(7,13.4%) , Unknown medications (unidentified tablets) in (4 patients; (7.6%). These drugs were available at home, being used either by the child or the parents and grandparents. There was significant relationship between types of poisoning substances and places of poisoning , seasonal variation, age of patient and not significant with rural or urban areas ($\chi 2 = 13.42$,$df=1$,$p<0.05$). The various agents responsible for poisoning are presented in **table 4**,

Table 4: Types and frequency of poisoning

Types of poisoning	No. of cases	Percentage (%)
Chemical		
Kerosene	22	30.1%
Agricultural Pesticides Insecticides	14	19.1%
Organophosphorus	12	16.4%
Zinc phosphide (rat poison)	6	8.2%
Benzene	2	2.7%
Cleaning & Disinfectants	17	23.2%
Sodium hypochlorite (Clorox)	7	9.5%
chloroxylenol (Dettol)	4	5.4%
Detergents	6	8.2%
Total	**73**	**58.4%**
Drugs		
Cold and Cough medication	8	15.3%
Antiepileptic/Anticonvulsant	7	13.4%
Tricyclic antidepressants	6	11.5%
Antihypertensive tablets	6	11.5%
Benzodiazepine	5	9.6%
Antispasmodic drops	6	11.5%
Digoxin tablets	3	5.7%

metoclopramide	7	13.4%
Unknown drug	4	7.6%
Total	**52**	**41.6%**

$\chi 2 = 13.42$,$df=1$,$p<0.05$

Seasonal variation

Data showed that the majority of poisonings occurred in summer 53(42.4%) and spring 37(29.6%), followed by autumn 19(15.2%) and winter16 (12.8%). Poisoning due to organophosphorus compounds, detergents and pesticide were more frequent in the spring and summer seasons while kerosene more common in winter season. **Table 5.** A significant relationship ($p<0.05$) exists between the poisonous substance and the season in which poisoning occurred ($\chi 2 = 46.08$, df=3 , $p<0.05$).

Table 5: Distribution of cases according to seasons.

$\chi 2 = 46.08$, df=3 , $p<0.05$

Season	NO.	Percentage (%)
summer	**53**	(42.4%)
spring	**37**	(29.6%)
autumn	**19**	(15.2%)
winter	**16**	(12.8%)
Total	**125**	**100%**

Educational level (mother)

The frequency distribution showed that the majority of parents (especially the mothers) of poisoned patients had literacy below the grade school level 57 (45.6%), read and write 31(24.8%), Primary school 20 (16%), Secondary school 10 (8%), while only 7 (5.6%) of parents had university **table 6.** Significant relationship between maternal educational level and the acute cases of poisoning , ($\chi 2 = 19.72$, df=4,$p<0.05$).

Table 6: Level of education of the parents in the study (mothers)

Education	Mothers	Percentage (%)
Illiterate	57	45.6%
Read and write	31	24.8%

Primary school	20	16%
Secondary school	10	8%
University	7	5.6%
Total	**125**	**100%**

($\chi 2 = 19.72$, df=4, p<0.05

Admission Status

54 (43.2%) of cases were discharged from hospital within 2 days, while 39 (31.2%) cases were discharged within 3 to 5 days. 18 (14.4%) cases were discharged after 5 days, 11 (8.8%) had left the hospital against medical advice. The majority of cases recovered, while 3 (2.4%) cases were referred to the ICU, where they remained until their recovery. No children died during the study period table 7 (x^2 =9.120 , df=2 , p<0.05).

Table 7: Types of management of patients

Management	No. of cases	Percentage (%)
Admitted	111	88.8%
Left the hospital against medical advice	11	8.8%
Referred to the ICU	3	2.4%
Died	-	-
Total	**125**	**100**

x^2 =9.120 , df=2 , p<0.05

Discussion

Acute poisoning is a common problem in pediatric age group and is one of the most prominent causes of emergency unit admissions and produce clinical diagnostic problems for the general pediatricians. Identification and documentation of epidemiological aspects and other variables in childhood poisoning are of great importance for the determination of proper preventive measures. However, it is very difficult to estimate the total number of childhood poisonings in al-Diwaniyah governorate, due to these reasons;

1.not all patients with acute poisoning referred to the main hospital.

2.simple and mild cases treated in hospitals in the districts and sub-districts of al-Diwaniyah

3. limited information in the patient files. This study was performed in one of the important teaching hospital in the governorate which is draining both rural and city areas. This study provides valuable information about the demographic characteristics and common toxic materials which cause childhood poisoning in al-Diwaniyah province.

The majority of the children (81.6%) with accidental poisoning in this study was less than seven years of age (especially 4-7 y). Which corresponds with the findings of similar studies conducted in India [12], Turkey [13], Saudi Arabia [14] .
Children at this age are not able to differentiate between safe or dangerous objects and have a greater tendency to explore their environments and to put any things into their mouth [15]. In addition, those less than 6 yrs. Do not attend school and so stay at home where lack of appropriate supervision and poor storage of chemicals and drugs can result in toxic exposures.

The male predominance (56.8 %) of poisoning in this study (male to female ratio patients 2.7%), bleaches (Clorox) (7patients; 9.5%), chloroxylenol (Dettol) (4 patients; 5.4%), laundry detergents (6 patients; 8.2%) A result which is just similar to other studies conducted in Iraq by Rabab H. Baker and in some developing countries[17, 22,23], unlike other studies done by Afrah Kashmar from Saudi Arabia[24], Turkey[20] and Afshari from Iran[25] where consider the drugs represent the most common

of 1.3: 1) was also supported by other studies conducted in Pakistan[16], Kuwait [17,18], and Oman [19], this could be explained as males are more active and more curious than females, less dutiful to their parents' orders, and are more likely to explore the world around them. Some other studies conducted in Turkey by Andiran N, Sarikayalar F showed more poisoning in girls (79%) [20], found it to be a significant variable.

The oral route was the most common route of poisoning (94.4%) in current study in agreement with the results of other studies in Saudi Arabia and other countries [21].

In the present study, we found the chemical agents are the most common hazardous substance ingested accidentally by children 73 patients (58.4%). 30.1% of the studied cases were poisoned by kerosene followed by agricultural pesticides/insecticides (14 patients 19.1%), organophosphorus 12 cases (16.4%), zinc phosphide (rat poison) (6 patients; 8.2%), benzene (2

while drugs involved in only 52 (41.6%) cases.

Causative agent of poisoning, in a pattern similar to that of developed countries. A possible explanation for this is that in recent years chemical agents, especially agricultural pesticides/insecticides have become more wide used, and can be found in every house. On the other hand, some studies have shown drugs to be very important cause of poisoning, but not

necessarily the leading one. A study from Japan has reported household to be the leading cause of pediatric poisoning [26].

Kerosene is implicated as a major cause of chemical acute poisoning in children (30.1%) and this is consistent with other studies done in Pakistan, Sri Lanka, Jeddah, New Delhi and Baghdad [16,27,12,28] because of kerosene are a common multipurpose household chemical that represents the major source of heating fuel, lightening and cooking in Iraq. It is available in all houses of Iraqi families and it was found to be improperly stored and kept at reachable levels, in addition children usually drinks by mistake since children may not distinguish between kerosene and water, in fact that kerosene or other petroleum product stored in drinking bottles ,otherwise these finding was not seen in United Arab Emirates, Oman, Turkey, and Greece where drugs was implicated as the major and principle cause , due to changing in habits (kerosene is not the main source of energy for heating and cooking), changing in life styles of most of the surrounding countries except Iraq, beside improvement in the socioeconomic state. Also the type of drug reflects the common drugs used in each community[23,22].

The second commonest chemical poisoning substances were agricultural pesticides/insecticides (14 patients 19.1%), organophosphorus 12 cases (16.4%), zinc phosphide (6 patients; 8.2%). agricultural pesticides have become a common household products in many rural areas of the al-Diwaniyah province.
One of the reasons for the high number of poisonings by these agents because of Al-Diwaniyah is an agricultural society and the use of these products were very common by farmers for planting rice, wheat, vegetables and to protect the stored cereals from insect and rodents .These materials are found in an open barrel without any label, not in its original container and easily reachable and ingested by children living in rural area .These findings are consistent with reports from Moghadamnia and Abdollahi studies in northern Iran [29] Asia Pacific regions[30] , Malaysia [31] and other studies .

Residential areas

In this study, it was so obvious that the rural environment (57.6%) is more hazardous than urban (42.4%) and this is probably due to increased use and availability of chemical agents in agricultural areas, hence easy accessibility by children, and unsafe storage of harmful substances. Therefore, most cases of poisoning admitted came from the periphery of Diwaniyah. This result was not seen in most studies conducted in the neighboring countries except one study by Keka Alije from Kosovo [32].
The present study, 73.6% of poisonings occurred at home, 26.4% outside the home (i.e., in farm, parks, garden etc.) a result which is just similar to a study done by Talebian and Vazirian Sh in kashan shahid beheshti and Kermanshah Razi hospitals in Iran [33,34].

Seasonal Distribution

It was found that most cases of poisoning in Diwaniyah were mainly due to chemical agents (organophosphorus, pesticide) during the summer (42.4%) and spring seasons (29.6%), because of the

abundant use of these compounds for agricultural purposes. Some poisoning cases which occur in autumn (15.2%) may be attributed to more drugs consumption following weather changes. While frequent use of kerosene in the winter season (12.8%) due to heating purposes.

The present results showed that most of the parents, and especially the mothers, had low levels of education (45.6%), only (5.6%) of parents had a college education. According to current results, a relationship exists between the parents' level of education and the occurrence of pediatric poisoning. The housewife mothers in rural areas usually illiterate and has large family size provide inadequate supervision for their children, especially for the youngest one that is usually

In current community, on the other hand children of educated and working mothers were at lower risk of acute poisoning than housewives a finding similar to Chatantiprapa et al from Thailand, and Koueta et al[35, 36].Other studies reported that the majority of cases, mothers were uneducated [37,16.]

Admission Status

54 (43.2%) of cases were discharged from hospital within 2 days, while 39 (31.2%) cases were discharged within 3 to 5 days. 18 (14.4%) cases were discharged after 5 days, 12 (9.6%) had left the hospital against medical advice. The majority of cases recovered, while 3(2.4%) cases were referred to the ICU for further management, where they remained until their recovery. No children died during the study period. In this study, the need for admission was higher compared to other reports in Turkey [33,34,13] and this is because of the routine admission policy for any poisoning cases, sever tired cases referred from the surrounded areas and medico-legal reasons.

There are some limitations in this study, including it was done retrospectively. So, it is possible that not all medical data have been recorded in the files of patients in the emergency unit, the Maternity and Children's teaching hospital is the only referral pediatric hospital in Diwaniyah government were surveyed and thus cases presenting at a private clinic or other health facilities will have been missed and the rate of pediatric poisoning may be higher than observed. So, these results don't reflect the whole poisoning events throughout the year 2016. Future studies should clarify the role of various factors involved in childhood poisoning, In order to improve the quality of this type of research. Nonetheless, this study provides valuable information about the demographic characteristics and common toxic materials which cause childhood poisoning in Diwaniyah government.

Conclusions:

A small percentage of children presented with acute poisoning in this study. On the basis of present study, we can decide that chemical materials were a common source of poisoning in children. The literacy rate of mothers correlated significantly with

poisoning cases with the highest 45.6% poisoning cases in children with illiterate mothers, in fact, that ignorance, carelessness, poor socioeconomic status and lack of education lead to cases of accidental poisoning. Change in the seasonal distribution of poisoning was also observed. We need recent studies in other Iraqi cities are strongly recommended to evaluate this problem . Therefore a poisoning prevention program should be an integral part of the health plan in Iraq.

Recommendation

On the basis of the study, we recommend that:

1-Community education should be implemented to increase public awareness about these substances and to advise parents to keep chemicals and medicines out of reach of children.

2-Governmental organizations should take prompt action to combat the distribution and consumption of these substances.

3-Effective health promotional programs for parents and carers regarding poisoning hazards are needed to increase the awareness and reduce the incidence of poisoning among children.

4- Fully functional poison control centers are the need of the time.

5- Correctly administering of drugs prescriptions

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