

Risk Factors For Unintentional Childhood Poisoning

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Abstract

Objectives: To identify child or family related risk factors for unintentional childhood poisoning in Sulaymaniyah, Iraq and to suggest possible causes and preventive measures.

Methods: This is an epidemiological description and a case-control study. The study was undertaken in Sulaymani ,in 2004-2005. Cases were 200 children who were admitted to the hospital for treatment of poisoning. For every case two controls were selected. All parents of the children were interviewed by using a questionnaire that included demographic and poisoning characteristic information.

Results: Kerosene poisoning was more common among children (60%) and most poisoning occurred inside the home (88%).

Boys (65%), and children aged 1-5 years (79%) had most poisoning than others. In 75% of cases, poisonous products were accessible. Children without adult supervision and those with previous poisoning were at increased risk of poisoning ($P < 0.05$)

Conclusion: Adequate parental supervision and safe packing, storage and disposal of potentially hazardous substances could be the most important activities for the prevention of childhood poisoning. Furthermore, child resistant containers for drugs and household products is one of the most important interventions in the reduction of childhood poisoning incidence.

Keywords: Poisoning, children, risk factors

Introduction

Poisoning is one of the most common pediatric medical emergencies resulting in over 2 million emergency visits a year (1-2). About 80% of childhood poisoning occurs in children under five years of age (2). Most ingestion occurs in child's own home, when supervision is inadequate. Supervision entails not only reacting to a dangerous situation but prevention through anticipation (3).

Poisoning responsible for about 5% of all injury deaths in developing countries (4). Therefore, the pediatricians are often faced with the need to determine the likelihood of toxicity and to initiate appropriate interventions.

The pattern of poisonings has changed during the past years (5,6).

This change follows due to new poisonous products, higher accessibility and exposure of children and the increasing of new consumer products (5). The fatality rate of poisoning is about one in 1000 (7,8). Previous studies have reported that characteristics of children and their environment are risk factors for poisoning(9-13).

The main risk of acute poisoning change with the time according to age, and they differ from country to another (14-17). 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. There is little research on epidemiology of unintentional childhood poisoning in Iraq, and no previous study identified child and family related risk factors by using a case-control study. In this study, the related risk factor for childhood poisoning is presented and the epidemiology of such injuries among children living in Sulaymaniyah is described.

Patients and Methods

All poisoned children under 15 years of age, except for cases of food poisoning, presented to the emergency department at sulaymaniyah children hospital, from October 2004 to March 2005, were enrolled in this study. The hospital is the only pediatric hospital in the province of sulaymaniyah with a population of 1,600,000 of which about 400.000 children.

For every case, two controls were chosen among children who were brought to the out patient clinic of the hospital due to a respiratory infections or diarrheal disease. Controls were matched regarding to age, sex and date of hospital attendance.

An interviewed questionnaire was completed for every parent. It covered demographic, behavioral and risk factors of accidental poisoning. Information was also obtained concerning type and conditions of poisoning for cases. The definitions of external causes of injury and poisoning used in this study followed the International Classification Of Diseases (E800-E999). Risk factors were analyzed using stepwise conditional logistic regression in stata software (18). A p value of 0.05 or less was considered to be of statistical significance.

Result

In this study, 200 poisoned children (aged 0-15years) , and 400 controls were studied.

Table(1) shows the distribution of cases by place of poisoning ,storage status , parental supervision, and type of poisoning.

Kerosene was the most commonly ingested substances (60%),followed by drugs (25%) and most poisonings occurred inside the home(88%).

In 75% of cases , poisonous products were accessible and not supervised by their parents when they were poisoned.

Table (2) shows the distribution of poisoned children and control group by age, sex , maternal occupation and education, parental smoking status, family size and child's previous poisoning.

In 79% of cases were children aged 1-5years and boys were more likely poisoned than girls (65% vs.35%, $P<0.001$). There was a significant difference between poisoning occurrence and parental supervision ($P<0.01$) and previous poisoning of the child ($P<0.05$). More poisonings occurred among children whose parents were not smoking and schooling years of 6 or less. However, adjusted data using the logistic regression showed no statistical differences between the children's poisoning occurrence and these variables Table (3) . There were also no significant differences between cases and controls regarding to different variables used in this study .

Children without adult supervision (odds ratio(OR) = 4.8, p=0.01),and those with previous poisoning (OR=5.2,p=0.05) were at increase risk of poisoning. There were no deaths in this study.

Discussion

Identification and documentation of epidemiological aspects and other variables in childhood poisonings are of great importance for treatment plan and determination of proper preventive measures. However , it is very difficult to estimate the total number and epidemiology of childhood poisonings in Iraq as well as in most other developing countries due to the lack of centralized data collection. The spectrum of commonly ingested substances that was observed in the present study seems at marked variance with those of a previous report ,as well as reports from USA . In our study ,kerosene ingestion was most common , followed in decreasing order by drugs and household items. By contrast , in a previous report, in children below 5 years of age, drugs were most commonly ingested (19-20). Similarly, the USA drugs were the most commonly ingested cause of poisoning in children ,although amongst a military population , hydrocarbons were the most common cause of poisoning , followed by drugs(21-22). The reasons for such global and regional patterns are not clear and require further prospective epidemiological studies .

This case-control study showed that lack of parental supervision and previous poisoning are the major risk factors for childhood poisoning in Sulaymaniyah.

Previous studies showed that accidental poisoning in children were related to the life style of the households, and the environmental factors (23-24).Therefore ,the difference between these findings and others's results might be because of the variation in different communities . The importance of parental supervision on control and prevention of childhood poisonings has been studied by other authors (25), reinforced by this study.

The study demonstrated that boys and children (1-5years of age were more likely to be poisoned compared to girls and other age groups which is similar to other reports (26). In this study as in others(25-28), children

with poisoning experience were at increased risk for current poisoning .However , more studies are needed to show these implications.

Lack of safe storage of poison products for about 75% of cases in this study would be an essential risk factor for childhood poisoning. As a prevention strategy , parents must ensure that all medications, chemical households and toxic products are kept in a safe place out of the reach of children, and teach them how to recognize toxic products .Furthermore , child resistant containers for drugs and household products are one of the most important interventions in the reduction of childhood poisoning incidence .

On the other hand, public education about poisoning which is of major importance should be provided.

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Table (1) Distribution of cases by type of poisoning agent ,place, storage and parental supervision at the time of poisoning (n=200)

	NO.	(%)
Type of poisoning agent		
Kerosene	120	(60)
Medications	50	(25)
House cleaning products	10	(5)
Pesticides	6	(3)
Others	14	(7)
Place		
Home	176	(88)
Yard\garden	14	(7)
School	4	(2)
Other places	6	(3)
Storage		
Accessible\unsafe	150	(75)
Not accessible\safe	50	(25)
Parental supervision		
Present	150	(75)
Absent	50	(25)

Table (2) Distribution of cases and control group

	Cases (n=200)		Controls (n=400)	
	NO.	(%)	NO.	(%)
Age (year)				
<1	28	(14)	60	(15)
1-5	158	(79)	306	(76.5)
>5	14	(7)	34	(8.5)
Sex				
Male	130	(65)	260	(65)
Female	70	(35)	140	(35)
Family size				
≤5	76	(38)	156	(39)
>5	124	(62)	244	(61)
Maternal occupation				
Housewife	174	(87)	346	(86.5)
Else	26	(13)	54	(13.5)
Maternal education				
≤primary	120	(60)	240	(60)
> Primary	80	(40)	160	(40)
Parental smoking status				
Not smoker	132	(66)	346	(86.5)
Smoker	68	(34)	54	(13.5)
Previous poisoning				
Yes	34	(17)	10	(2.5)
NO	166	(83)	390	(97.5)

Table (3) Odds ratio and confidence interval derived from a logistic regression

	Odds ratio	95% CI	P.Value
Family size			
≤5	—		
>5	1.2	0.6-2.0	0.73
Maternal occupation			
Housewife	—		
Else	1.4	0.6-2.6	0.64
Maternal education			
≤ primary	—		
> primary	1.1	0.6-1.8	0.85
Previous smoking status			
Not smoker	—		
Smoker	1.2	0.7-2.1	0.45
Previous poisoning			
Yes	—		
NO	5.2	1.1-26.5	0.05
Parental supervision			
Yes	—		
NO	4.8	0.9 - 26.0	0.01

دراسة العوامل المسببة للتسممات غير المعتمدة بين الاطفال

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الخلاصة

الهدف: تعيين العوامل المتسببة للتسممات غير المعتمدة للأطفال وابرار الاسباب المحتملة واساليب الوقاية منها.

الطريقة: دراسة وصفية بوساطة تعبئة استمارة من قبل الوالدين تمت في اقليم كردستان/ السليمانية في عام 2004-2005 وشملت 200 حالة تسمم من الاطفال الذين نقلوا لقسم الطوارئ في مستشفى السليمانية.

النتائج: كانت نسبة التسمم بالنفط الاكثر شيوعا وحدثت غالبية حالات التسمم في داخل البيوت، كانت نسبة تسمم الاطفال ما بين 1-5 سنوات عالية حيث كانت المواد السامة في متناول يد الاطفال اذ ان الاطفال الذين ابتعدوا عن مراقبة الوالدين الكافية كانوا اكثر خطرا للتعرض من باقي الاطفال.

الخاتمة: ان مراقبة الوالدين الكافية والتعليب المناسب وطريقة تخزين المواد السامة هي الامور التي يمكن ان تكون واقية من تسمم الاطفال.

مفتاح الكلمات: تسمم الاطفال، عوامل الخطورة، السليمانية/ العراق.