Accidental poisoning of children in the United Arab Emirates

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حوادث التسمم بين الأطفال في الإمارات العربية المتحدة

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خلاصة : أجريت دراسة استباقية لحوادث تسمم الأطفال في منطقة العين بالإمارات العربية المتحدة . وتبين من النتائج أن حوادث التسمم كثيرة الحدوث ولكنها لا تسبب إلا القليل من المراضة ولا يموت بسببها أحد . ولوحظ أن نمط التسمم مماثل للنمط السائد في أوروبا الغربية وأمريكا الشمالية ، حيث يغلب التسمم بالكيماويات المنزلية والأدوية . وأكثر المواد ابتلاعا في هذه الحوادث هي المسكّنات ومضادات الهستامين . إن تواتر حوادث التسمم في منطقة العين يتطلب تنظيم حملة للتوعية الجماهيرية ، وزياده استعمال عبوات حريزة على الأطفال .

ABSTRACT A prospective study of childhood accidental poisoning was conducted in the Al-Ain district of the United Arab Emirates. The results showed that accidental poisoning was frequent but morbidity was low and there were no deaths. The pattern of poisoning is similar to that in western Europe and north America, with household chemicals and medicines predominating. Analgesics and antihistamines were most frequently ingested. The frequency of accidental poisoning in Al-Ain merits the introduction of a public awareness campaign and increased use of child-resistant containers.

Les intoxications accidentelles chez les enfants dans les Emirats arabes unis

RESUME Une étude prospective des intoxications accidentelles chez les enfants a été réalisée dans le district d'Al-Ain dans les Emirats arabes unis. Les résultats ont montré que les intoxications accidentelles étaient fréquentes mais que la morbidité était faible et qu'il n'y avait aucun décès. Le tableau des intoxications est semblable à celui de l'Europe occidentale et de l'Amérique du Nord, avec une prédominance des produits chimiques ménagers et des médicaments. Les analgésiques et les antihistaminiques sont les substances les plus fréquemment ingérées. Etant donné la fréquence des intoxications accidentelles, il est nécessaire de lancer une campagne de sensibilisation du public et d'intensifier l'utilisation des emballages de sécurité inviolables par les enfants.

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Introduction

The accelerated expansion and sophistication of the health services in a rapidly developing country such as the United Arab Emirates (UAE) have created many new problems. One of the unforeseen "diseases" is the occurrence of accidental poisoning in children with the introduction of a whole range of new and complex medicines and the availability of a wide selection of household cleaners and other chemicals. There are no regulations which require the use of child-resistant containers in the UAE. Many government hospitals and health centres dispense tablets in transparent nylon bags. There has not been any widespread dissemination of information about the dangers of medicines and household chemicals, although original packs of medicine are required to contain a patient information sheet.

We have thus had an opportunity to observe the pattern of childhood accidental poisoning and to determine the types of substances ingested and the ratio of the therapeutic agents to nontherapeutic agents taken. This type of study is now impossible in countries in which health and safety measures have been introduced. This paper reports the pattern of accidental poisoning of children in a medical district in the UAE by means of a prospective study, which was arranged to precede the start of a public awareness campaign and the introduction of child-resistant containers.

Methods

Al-Ain, in the Emirate of Abu Dhabi, is a university centre where the National Medical School for the UAE is located. The Al-Ain medical district of the UAE has a population of 300 000. There are two main hospitals (Al-Ain and Tawam) which provide the hospital care and emergency facilities for the area. Referrals from primary health care centres involving poisoning are referred to either hospital.

A prospective study was conducted, which involved daily visits to Tawam Hospital and Al-Ain Hospital. The study took place from 24 March 1996 to 23 July 1996. The records of all children (defined as under 16 years) admitted to the hospitals or attending the emergency department, who were diagnosed as accidental poisoning by the attending doctors, were accessed. Direct interviews were arranged with the parents and the attending medical staff to complete the data collection. The following information was obtained: age, sex and nationality of the child; time of poisoning; duration of ingestion prior to medical attention; type of substance ingested; amount and formulation of the substance ingested; container details; history of the event; first aid performed; hospital management details; outcome; and morbidity.

Results

During the study period, 134 children (77 males and 57 females) were seen at the hospitals after a poisoning event. Out of the total, 74 poisonings were due to medicines (55%) and 60 to household chemicals (45%). Table 1 indicates the frequency of poisonings and the type of poison involved by age. The 1–5 year-old age group had the most poisonings by therapeutic and nontherapeutic substances. Sixty children ingested household cleaners and chemicals, and the substances taken included: rat poison, chlorine, naphthalene, hydrogen peroxide, drain cleaner, insecticide, kerosene, petrol, sulfuric acid, super glue and paint.

Table 2 outlines the types of medicines ingested by all age groups other than the 1–5 year-old age group, which is listed separately in Table 3. Analgesics, non-steroidal anti-inflammatory drugs (NSAIDs) and antihistamines were the most commonly ingested substances in the 1–5 year-old age group.

The vast majority of children were brought directly from home to hospital (83%); 23% within half an hour of recognition of the event and 50% within one hour. Open containers were the source of the poison in 52% (70/134) of cases and blister packs in 16% (22/134). In only one case was a child-resistant bottle the source of the poison. In all but 14 cases of poisoning

Table 1 Total number of children with poisoning in Al-Ain and Tawam hospitals by age and type of poison

Age (years)	Substance		Total
	Medicines	Household chemicals	
0–1	3	5	8
1–5	57	44	101
6–10	5	5	10
11–16	9	6	15
Total	74	60	134

Table 2 Medicines ingested in the age groups <1, 6–10, 11–16 years

Substance	Age group (years)		
	<1	6–10	11–16
NSAIDs/non-opioids	1	1	6
Bronchodilators	–	2	–
Anticonvulsants	–	1	2
Antibiotics	–	1	2
Antemetics	1	–	2
Antiulcer	–	–	1
Parasitioidals	–	–	1
Antiseptics	1	–	–
Total medicines	3	5	14
Total children	*3*	*5*	*9*

3 children took more than one drug:
1 child took an ulcer healing drug, an antispasmodic and an analgesic (non-opioid)
1 child took an NSAID, an antibacterial and an analgesic (non-opioid)
1 child took an antibacterial drug and an analgesic (non-opioid)

Table 3 Medicines ingested in the 1–5 year-old age group

Substance	Number
NSAIDs/non-opioids	12
Antihistamines/cough supressants	11
Antibiotics	6
Hormones	5
Surgical spirits	3
Antispasmodics	3
Laxatives	2
Parasiticidals	2
Bronchodilators	2
β-blockers/calcium blockers	2
Thiazide diuretic	2
Tricyclics	2
Aluminium/magnesium antacids	1
Appetite supressants	1
Anticonvulsants	1
Anti-Parkinson	1
Iron	1
Vitamins	1
Medicated shampoo	1
Total medicines	59
Total children	*57*

2 children took more than one drug:
1 child took an antihistamine and a tricyclic
1 child took an analgesic (non-opioid) and a diuretic

with therapeutic substances, the medicines were prescribed for the parents.

In only 14 cases was pre-hospital first aid offered to the child in the form of milk or the induction of vomiting. In all, 100 children remained under observation or in hospital for one day or less (75%); however, 6 children were hospitalized for more than five days. There were no deaths or apparent long-term consequences of the incidents and no child lost consciousness, but 9 were regarded as having a serious poisoning event. In terms of hospital management, 2 children were given a specific antidote, 33 had gastric lavage, 37 were given intravenous fluids and 6 were given charcoal orally. Of the 36 children who had a laboratory test, e.g. liver function test or test for plasma drug level, 17 test results were regarded as abnormal. With regard to the volume of ingestion, 2 children swallowed 20 tablets, 6 swallowed up to 100 ml of a "medicinal" liquid and 3 swallowed up to 50 ml of a nontherapeutic liquid.

Discussion

Many previous studies have shown that children under five years of age are particularly at risk from accidental poisoning [*1*,*2*]. Our study is in keeping with this finding. However, unlike the findings in Japan [*3*], poisoning below the age of one year was rare in our study. In a study in Denmark [*1*], 180 of 524 children (34%) admitted to hospital with poisoning were admitted because of a household chemical poison. Cleansing agents were the most common, with dishwasher detergents outnumbering all other chemicals. In our study, household chemicals accounted for 45% of the poisoning episodes. However, some culturally unique poisons were taken such as henna, herbal laxatives and frankincense. Household chemicals are thus an important source of poisoning for children and these tend to be kept in easily opened or open bottles. Insecticides have considerable potential for harm, but they were encountered in only two cases, both without fatal outcome. Common therapeutic agents such as analgesics and anti-inflammatory drugs were found to be the most potent source of poisoning in our study, particularly in the 1–5 year-old age group.

Children who had ingested a poison were transported quickly to hospital. Most people in the district lived close to an emergency department where paediatric expertise was available.

Fortunately, no deaths occurred in our study, although nine children had a prolonged period in hospital and severe illness as a result of the ingestion. As far as can be determined, no long-term morbidity has arisen in the children within this study.

In the UAE, medicines are not commonly dispensed in child-resistant containers although many are supplied in blister packs, which offer a certain degree of child resistance, especially if opaque. It is difficult to assess the danger from lack of child-resistant closure because of the varying sources of medicine, including that obtained from overseas medical care.

Previous work has suggested that the epidemiology of poisoning varies according to the development status of the country [*4*], with developing countries having a pattern of insect stings and ingestion of paraffin and traditional medicines. The UAE clearly has the pattern of countries such as those in western Europe and north America with household products and pharmaceuticals predominating. Fortunately, the pattern of low mortality and morbidity is also present in the UAE.

Substances that are usually associated with death from poisoning are antidepres-

sants, benzodiazepines and analgesics [5]. In the present study, non-opiod analgesics were well represented but there were no cases of poisoning with opioid analgesics, which are widely available in the UAE. It is perhaps significant that all leading brands of paracetamol tablets are presented in opaque blister packs.

In summary, over the short intensive observation period, accidental poisoning in children in Al-Ain, UAE, was frequent and was due mainly to therapeutic agents and household cleaners. While morbidity was low and mortality absent, accidental poisoning causes considerable stress to parents and children and utilizes hospital time and resources. This study provides sufficient evidence to support the need for an aggressive campaign to reduce accidental poisoning in this area by strategies of information and education and the introduction of safety containers.

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References

1. Johannsen HG, Mikkelsen JB, Larsen CF. Poisoning with household chemicals in children. *Acta paediatrica*, 1994, 83:1317–8.

2. Kasilo OM, Nhachi CF. The pattern of acute poisoning in children in urban Zimbabwe: ten years experience. *Human and experimental toxicology*, 1992, 11:335–40.

3. Goto K et al. Accidental poisoning in Japan: a report from the Japan Poison Information Contor. *Acta paediatrica Japonica*, 1993, 35:193–200.

4. Meredith TJ. Epidemiology of poisoning. *Pharmaceutical therapy*, 1993, 59: 251–6.

5. Obafunwa JO, Busuttil A. Deaths from substance overdose in the Lothian and Borders region of Scotland (1983–1991). *Human and experimental toxiology*, 1994, 13:401–6.