

## Accidental Childhood Poisoning in Zaria

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### Summary

**Ango SS and Yakubu AM. Accidental Childhood Poisoning in Zaria.** *Nigerian Journal of Paediatrics* 1982; 9 : 105. . . Three hundred and twenty cases of accidental poisoning among children admitted into the ABU Hospital, Zaria, during a nine-year period, were reviewed. The percentage of paediatric admissions due to poisoning in the period under review increased from 6 per thousand in 1971 to 16 per thousand in 1980, with a peak of 35 per thousand in 1977. Kerosene poisoning accounted for 67% of the cases, while the remaining 33% were due mainly to therapeutic agents and domestic chemicals. Children, aged between one and two years, were most vulnerable. The most common complication resulting from kerosene poisoning was chemical pneumonitis. The overall mortality was 3.8%.

### Introduction

In developed countries, accidents have become the largest single cause of death in childhood and are the most common paediatric emergencies in general practice.<sup>1</sup> Several studies on paediatric emergencies in Nigeria have been reported,<sup>2-5</sup> but little information exists on accidental poisoning in childhood. The aim of the present retrospective study was to review the local pattern of poisoning among children seen at the Ahmadu Bello University (ABU) Teaching Hospital, Zaria.

### Materials and Methods

All the case notes of children admitted with poisoning from March 1971 to March 1980, were reviewed. The information extracted from these notes included age, sex, month of admission, presenting features, hospital management and the outcome. Where possible, the types of treatment given at home prior to admission into hospital, were also noted. The chi-squared test was used in the analysis of the results.

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### Results

There were 320 cases seen during the nine-year period, an average of 36 cases per year. The yearly admissions due to accidental poisoning as a percentage of total admissions are shown in Figure 1. It will be observed that there was a gradual increase from 6 per thousand in 1971 to 35 per thousand in 1977, but there was a drop in 1978 and in 1979.

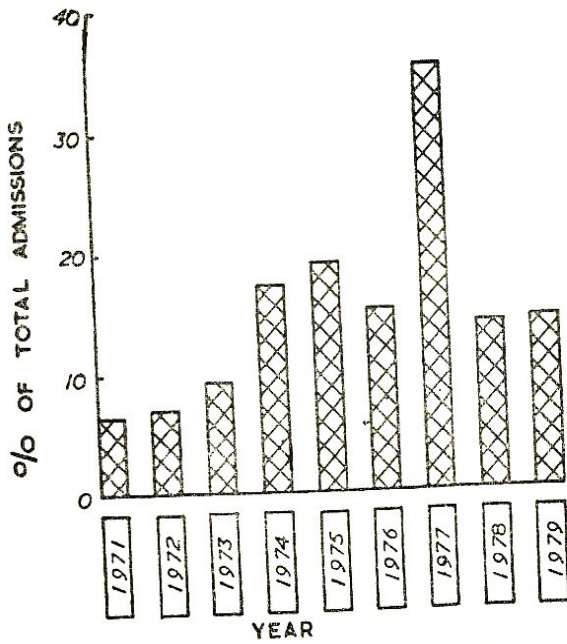


Fig. 1 Yearly admissions of cases of accidental poisoning expressed as percentage of total admissions.

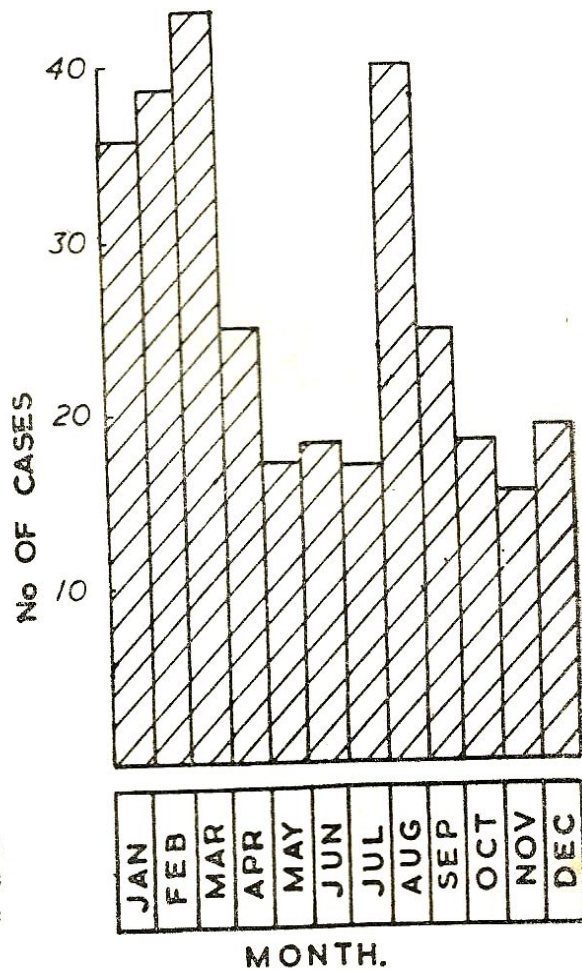


Fig. 2 Monthly admissions of cases of accidental poisoning.

#### Monthly Admissions

The number of cases admitted per month is shown in Figure 2. The average number of cases was three per month. There were peaks in the months of January to March and in August.

#### Age and Sex Distribution

The children were aged between one month and 14 years (mean age, 20 months), with a peak between one and two years of age (Table I). There were 169 males and 151 females, a male:female ratio of 1 : 0.9; this ratio was not different from that of the general paediatric admissions in the institution.

#### Types of Poison

Kerosene was the most commonly ingested poison when compared with all other types of poisons ( $p < 0.001$ ) and this was followed by drugs (Table II). The drugs included salicylates (aspirin, Robb liniment), chlorpromazine, sedatives, ferrous sulphate and others which could

TABLE I

Age Distribution in 320 Cases of Poisoning in Childhood

Age group	No of Cases	% of Total
Neonates	1	0.3
1 month-1 year	78	24.4
1 to 2 years	160	50.0
2 to 3 "	32	10.0
3 to 4 "	12	3.7
4 to 5 "	15	4.7
5 to 14 "	22	6.9
Total	320	100.0

TABLE II  
Types of Poison Ingested by 320 Children

Poison	No of Cases	% of Total
Kerosene	216	67.5
Drugs	43	13.4
Domestic chemicals	33	10.3
Food poisoning	16	5.0
Insecticides	7	2.2
Cow's urine	5	1.6
Total	320	100.0

$$\chi^2 = 12.4 \quad p < 0.001$$

not be identified. Ingested household chemicals included *Izal*, *Dettol*, *Parozone*, *Lux*, and *Robin blue* used for dyeing cloths. Food poisoning, insecticide and cow's urine poisoning were also encountered.

#### Clinical Features

##### Kerosene

A history of kerosene ingestion was given in all the 216 cases of poisoning with this substance, while vomiting was present in 80% of the cases. The interval between ingestion and hospitalization ranged from 30 minutes to two days. Of the 216 cases, 194 (90%) presented within two hours of ingestion. One hundred and twenty-nine (60%) of the 216 cases smelt of kerosene, on admission. Clinical signs of pneumonitis were present in 159 (73.6%) of the 216 cases. The signs included dyspnoea, subcostal recession and crepitations. Chest radiograph showed bilateral scattered opacities especially in the lower zones in 20 (62.5%) of 32 cases. There were no neurological manifestations.

##### Other Poisons

The clinical features varied, depending on the nature and amount of poison ingested. Most patients were asymptomatic although a few were comatose on admission. Drugs which produced coma were aspirin, *Robb* liniment and cow's urine.

##### Home Treatment

Domestic treatment was given to 37 (11.6%) of the 320 cases. The treatment consisted of oral administration of palm oil to 28 patients. Other treatments included milk, raw egg, coconut water and in one case, pounded yam ingestion.

##### Hospital Management

Gastric lavage was performed in 62 (59.6%) of 104 cases with non-kerosene poisoning. Of the 216 patients who ingested kerosene, 143 (66.2%) received antibiotics which included penicillin, ampicillin and chloramphenicol, while 76 patients (35%) received intramuscular hydrocortisone. The indications for antibiotics and hydrocortisone therapy were evidence of chemical pneumonitis or intercurrent infection. Other treatment given included milk, liquid paraffin and oxygen.

##### Mortality

There were 12 deaths, an overall mortality of 3.8%. The mortality according to type of poison is shown in Table III. Kerosene poisoning carried the highest mortality of 1.6% followed by traditional medicine poisoning with a mortality of 0.62%. Factors which appeared to have influenced the mortality included concurrent illness such as measles and convulsions and the quantity of poison ingested. The mortality rate attributed to kerosene alone was higher ( $p < 0.001$ ) than that associated with all other forms of poison.

#### Discussion

The present study has shown that kerosene ingestion, accounting for 68%, is a major form of accidental poisoning in children in Zaria. This

TABLE III  
Mortality According to Type of Poison

Poison	No of deaths	% of Total
Kerosene	5	1.56
Aspirin	1	0.31
Robb liniment	1	0.31
DDT	1	0.31
Cow's urine	1	0.31
Unidentified insecticides	1	0.31
Traditional medicine	2	0.63
Total	12	3.74

compares with 75% of cases of poisoning reported from South Africa<sup>6</sup> and that of 62 reported from London<sup>7</sup> but is much higher than 19.8% reported from Lagos.<sup>8</sup> The present study has clearly shown that kerosene ingestion constitutes a major public health hazard in childhood. Several reasons for this may be advanced. Kerosene is used for cooking, heating and is stored in household utensils, cups, tins and soft drinks bottles. It is therefore, not surprising that these are easily mistaken for beverages, by toddlers. The relatively small percentage of poisoning by drugs in the present study compared with the series by Douglas<sup>7</sup> is probably a reflection of a relative lack of sophistication in our community. The role of siblings in kerosene ingestion should not be underestimated as this hydrocarbon can be presented to a younger sibling in the belief that it was water.

A contributory factor to drug poisoning in the present series may be due to the indiscriminate sale of drugs by quacks and chemists. These drugs are therefore easily available in many households without prescription. This may compound the problem of drug ingestion by making identification and therefore, appropriate remedy, difficult.

Evidence from the literature suggests a low mortality from kerosene poisoning. Deichman *et al.*<sup>9</sup> and Gerarde<sup>10</sup> showed that the LD<sub>50</sub> of kerosene was 15g/kg body wt and that a child of 27kg would need to ingest 570 cc of kerosene to develop fatal pneumonitis. The cause of death from this substance appears to be due to severe pulmonary haemorrhage and oedema. It is significant that five deaths resulted from kerosene ingestion in the present series.

In the present study, there was a seasonal variation with two peaks, the first occurring between January and March and the second in August. The first peak may reflect increased use of kerosene for heating during the cold harmattan season, while the second peak in August occurring during the rainy season may be a reflection of an increased use of kerosene for cooking instead of fire-wood and possibly due to interruption in electricity supply.

The age distribution in our series showed that children between one and two years, were the most vulnerable. The number of cases in this age group was equal to that of all other ages put together. The decline in the number of cases in 1978 and 1979 could possibly reflect a scarcity of kerosene which was witnessed about that time.

In the present study, the increasing number of cases annually was evident and unless there is prompt public alertness to this problem, it may be predicted that large numbers will occur in future. In Ibadan, poisoning is reported to be the sixth commonest cause of death in the age group, 1-5 years.<sup>11</sup>

Primary prevention of childhood poisoning may be achieved by enacting legislation banning the storage of kerosene in beverage containers as suggested by McNally.<sup>12</sup> Secondly, it will be helpful to keep kerosene as well as drugs out of reach of children. Lastly, health education of the public through the news media, in different languages, will certainly help in controlling accidental poisoning in childhood.

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