

## ACCIDENTAL CHILDHOOD NON- FOOD POISONINGS IN AMINU KANO TEACHING HOSPITAL KANO, NORTHERN NIGERIA

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### ABSTRACT

**Background:** Childhood poisonings has been reported from several centers in Nigeria in the past 4 decades. Despite the periodic presentation of children with poisonings to the various health facilities in Kano state, there has been no reported study from Kano and adjoining catchment areas.

**Objectives:** The objective of the study was to determine the pattern of non-food childhood poisonings and outcome.

**Method:** The case notes of children admitted to the emergency paediatric unit (EPU) and paediatric medical ward (PMW) with history of accidental Poisoning during a 7-year period (January 1999- December 2005) were reviewed. Relevant data extracted included the patient's age, sex, date of admission, poison ingested, clinical features and outcome.

**Results:** During the 7-year period under review, there were 4900 paediatric admissions of which 74(1.6%) were cases of accidental poisoning. The commonest poisons were kerosene (74.3%), organophosphate insecticide (9.5%) and detergent (2.7%). Thirty-nine (52.7%) of the 74 cases of poisoning were in children below 2years of age. There were 43 males and 31 females, a male to female ratio of 1.4: 1. The mortality rate was 8.1%.

**Conclusion:** The study has shown that accidental non food poisoning is a notable health problem in Kano and that kerosene was the most frequent cause of poisoning. The role of prevention of poisoning through government policies and health education is imperative.

**KEYWORDS:** *Accidental, non-food poisoning, Kano-Nigeria*

### INTRODUCTION

Children are a vulnerable group and accidental ingestion of chemical in the home is not uncommon.<sup>1</sup> For an accidental poisoning to occur in a young child, there must be an available poison, a susceptible host and a facilitating environment.<sup>2</sup> Accidental poisoning is an important cause of childhood morbidity and mortality.<sup>3</sup> Childhood poisonings has been reported from several centers in Nigeria over the past 4 decades<sup>3-6</sup> but there has been no previous report on accidental childhood non-food poisoning in Kano and adjoining catchment areas. The objective of this retrospective study was therefore to review the local pattern of childhood poisonings trusting that such information will provide insight into the basis for prevention of poisoning accidents especially in the homes.

### MATERIALS AND METHODS

The case notes of children admitted to the Emergency Paediatric Unit (EPU) and paediatric medical ward of Aminu Kano Teaching Hospital (AKTH) with accidental poisoning during a 7 – year period (January 1999 to December 2005) were reviewed. The data extracted from the records included the patient's age, sex, date of admission, poison ingested, clinical features and outcome.

### RESULTS

During the 7 – year period under review, there were 4, 490 paediatric admissions of which 74(1.6%) were cases of accidental poisoning. The yearly admissions due to poisoning and the percentage of total paediatric admissions are shown in table I. The number of cases admitted each year varied from 5 in 1999 to 14 in 2005.

#### Age and sex distribution

The children were aged between 4 months and 10years, with a peak at one year. Thirty nine (52.7%) of the 74 cases were below 2years of age. There were 43 males and 31 females, a male to female ratio of 1.4:1.

#### Types of poison

Kerosene was the commonest poisoning agent accounting for 55(74.3%) of the 74 cases (Table 3). This was followed by organophosphate (insecticide) popularly referred to as 'ota pia-pia' constituting 7(9.5%) of the cases of poisoning. Other poisons ingested/inhaled included the following: detergent (2.7%), diesel (1.4%), hair dressing chemical (1.4%), carbon monoxide (1.4%) caustic soda (1.4%), methylated spirit (2.7%), aspirin (1.4%), herbal concoction (1.4%), chlorpheniramine (1.4%) and iron tablets (1.4%). The ages of patients in relation to the types of

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poisons are shown in Table IV.

#### **Clinical features.**

It was difficult to quantify with reasonable accuracy the amount of the poison ingested and symptoms could not exactly be related to the quantity taken.

#### **Kerosene**

In cases of kerosene poisoning, commonest presenting symptoms were cough, fever and difficulty in breathing. A few other patients presented with loss of consciousness, diarrhea and vomiting. Three patients died from complications of kerosene poisoning.

#### **Organophosphate Insecticide**

Children who had organophosphate (insecticide) poisoning presented mostly with coma, dizziness, excessive salivation, abdominal pain and vomiting. There were two deaths.

#### **Caustic soda**

The patients presented with drooling of saliva, excessive salivation, dysphagia and jaw swelling.

#### **Methylated spirit**

Patient presented with cough and difficulty in breathing.

#### **Acetylsalicylic acid (Aspirin) tablets**

Patient presented with abdominal pain, haematemesis and anaemia

#### **Chlorpheniramine (Periton) tablets**

Patient presented with weakness, somnolence and confusion.

#### **Herbal concoction**

The patient presented with fever and respiratory distress and found on evaluation to have developed pneumonia, subcutaneous emphysema and heart failure.

#### **Detergent (omo)**

She presented with drowsiness, respiratory distress and drooling of saliva.

#### **Iron tablets**

The patient presented with vomiting, diarrhea, dyspnoea and fever. He later progressed to coma and died.

#### **Hair dressing chemical (name unknown)**

Child presented with cough, respiratory distress, fever and subsequently developed convulsion while on admission.

#### **Diesel**

He presented with cough, fever and respiratory distress.

#### **Mortality**

There was a total of 6 deaths; 3 from kerosene, 2 from organophosphate ("ota-piapia") while 1 was from iron tablets. Hence, the mortality was 8.1%.

**Table 1: Yearly admissions of 74 cases of accidental poisoning**

Year	No. of cases	Total paediatric admissions	% of Total
1999	5	377	1.3
2000	1	520	0.2
2001	19	615	3.1
2002	2	557	0.4
2003	15	769	2.0
2004	18	795	2.3
2005	14	857	1.6
<b>Total</b>	<b>74</b>	<b>4490</b>	<b>1.6</b>

**Table 2: Age distribution in 74 cases of accidental poisoning**

Age (yrs)	No. of cases	% of total
<1	5	6.8
1	34	45.9
2	11	14.9
3	12	16.2
4	3	4.0
5	3	4.0
>5	6	8.1
<b>Total</b>	<b>74</b>	<b>100</b>

**Table 3: Types of poison and yearly admission**

Poison	1999	2000	2001	2002	2003	2004	2005	% of Total
Detergent	1						1	2.7
Kerosene	4	1	17	1	10	11	11	74.3
Diesel			1					1.4
Hair chemical			1					1.4
Carbon mono.				1				1.4
Caustic soda					1			1.4
Organophosphate					2	4	1	9.5
Methylated spirit					1	1		2.7
Aspirin					1			1.4
Herbal concoct.						1		1.4
Piriton						1		1.4
Iron tablets							1	1.4
<b>Total</b>	<b>5(6.8%)</b>	<b>1(1.3%)</b>	<b>19(25.7%)</b>	<b>2(2.6%)</b>	<b>15(20.3%)</b>	<b>18(24.3%)</b>	<b>14(18.9%)</b>	<b>100</b>

**Table 4: Age related to types of poison**

Poison	<1	1	2	3	4	5	>5	Total No. of cases
Detergent	-	1	-	-	-	-	1	2
Kerosene	5	29	11	4	1	1	4	55
Diesel	-	1	-	-	-	-	-	1
Hair dressing chemical	-	-	-	1	-	-	-	1
Carbon monoxide	-	-	-	-	-	-	1	1
Caustic soda	-	-	-	-	1	-	-	1
Organophosphate (Insecticide)	-	3	1	1	1	-	1	7
Methylated spirit	-	-	-	2	-	-	-	2
Aspirin	-	-	-	-	-	1	-	1
Herbal concoction	-	-	1	-	-	-	-	1
Piriton	-	-	-	1	-	-	-	1
Iron tablets	-	-	1	-	-	-	-	1
<b>Total</b>	<b>5</b>	<b>34</b>	<b>14</b>	<b>8</b>	<b>4</b>	<b>2</b>	<b>7</b>	<b>74</b>

**DISCUSSION**

The study has revealed that accidental poisoning accounted for 1.6% of paediatric admissions over the 7 year period. This finding is slightly higher than the 1% found in Ilorin by Fagbule and Ojuawo.<sup>2</sup> The higher percentage in the present study may be due to the fact that the study period covers the time of the most irregular supply of petrol and kerosene which necessitated that families would store these items in the house thereby exposing the young people at home.

Kerosene was the commonest cause of accidental poisoning in our series accounting for 74.3% of cases. The figure is higher than the 68%, 51.9%, 19.8%, 62%, 50% and 57.8% found in Zaria,<sup>5</sup> Ilorin,<sup>4</sup> Lagos,<sup>6</sup> London,<sup>7</sup> Ibadan<sup>8</sup> and Calabar<sup>9</sup> respectively. The figure however similar to the 75% is reported from South Africa.<sup>10</sup> Kerosene is used for heating, cooking and lighting in the homes. In a situation of irregular supply of this product as was the case in Nigeria as covered by the period of study, families make frantic efforts to ensure kerosene security in the homes. In the process, all manner of familiar containers (particularly

beverage containers) are used for storing kerosene most often carelessly in the homes. In the Kano environment, due to high temperatures, children easily go thirsty and in the absence of proper supervision, they lift any liquid within easy reach to drink. The combination of factors above most probably explains the higher percentage when compared to other parts of Nigeria.

Organophosphate insecticide locally called 'Ota – pia pia' is the next commonest cause of poisoning in our series accounting for 7(9.5%) of the cases of poisoning. It is marketed extensively in Nigeria as insecticide against mosquitoes, cockroaches etc. These insects abound in Kano environment and most families that use the insecticide attest to the superior efficacy compared to the more costly insecticide sprays (Mobil, Rambo etc.). Of course, leaving them carelessly in the homes attract toddlers.

Drug poisoning (Aspirin, chlorpheniramine and iron tablets) was prominent in this series accounting for 4.2% of the cases. This figure is however smaller than the 27.9% reported from Ilorin.<sup>4</sup> Uncontrolled and indiscriminate sale

and purchase of drugs from chemists and medical stores both of which abound in the country are contributory. Careless keeping of drugs on tables or shelves in the homes rather than under lock and key makes drugs and household chemicals available to children who are often attracted by the colours and sweetness of some drugs.

A case of carbon monoxide poisoning is reported in our series. The index case was actually the most severely affected in a family which slept at night with the generator as the light source. It was observed that the child could not wake up in the morning while other members of the family had variable degrees of central nervous system depression. This particular case brought to the fore the danger associated with inadequate light supply to communities and highlights the need for caution in handling of exhaust fumes in the homes. In keeping with reports from other centres,<sup>4,5,11</sup> the age distribution in our series showed the toddler age group to be the most vulnerable. The preponderance of males over females is equally in consonance with findings elsewhere<sup>4,5</sup> and may be attributable to the more adventurous nature of boys. The mortality of 8.1% is higher than the 1.9% and 3.8% from Ilorin<sup>4</sup> and Zaria<sup>5</sup> respectively. The higher figure may be

related to more deaths from kerosene poisoning in our series. "Ota – pia pia" as a significant cause of death (2 out of 6 deaths) is quite worrisome. More people are likely to continue to patronize it as insecticide if the poverty situation in the country does not decline. The general trend over the 7-year period is increasing number of cases of poisoning. This may reflect in cases of kerosene poisoning improved supply and increased usage in the homes but may equally be mirroring social tensions engendering poor supervision of the vulnerable group. Measures that will help to curtail poisonings in children have become imperative. Government should through appropriate agencies make kerosene cheaper and more readily available as this will reduce tendency of people to store the product in their homes. Health education of parents/guardians using all possible means (print and electronic media, churches, mosques, concert halls, village meetings etc) will help minimize accidental poisoning. In particular, safe keeping of house hold chemicals and use of child –resistant containers should be encouraged. Efforts should be made towards the establishment of zonal poison centers to help in early identification and treatment of cases.

## REFERENCES

- 1 Belonwu R O. Accidental ingestions and poisonings. In: Belonwu R O (Ed). A short guide to safe paediatric practice Kano: Debisco Press Kano. 2003:56-65
  - 2 Kent R Olson, Michael A Mc Guigan. Toxicology and Accidents. In Abraham M Rudolph , Julian I E Hoffman, Collin D Rudolph eds. Rudolph's Paediatrics. USA: Appleton and Lange 1996:805-856
  - 3 Ransom-Kuti O. The problem of Paediatric emergencies in Nigeria. Nig Med J 1972; 2:62-70.
  - 4 Fagbule D, Ojuawo A. Accidental Childhood Poisoning in Ilorin. Nig J Paediat. 1986; 13:21-25.
  - 5 Ango S S, Yakubu A M. Accidental Childhood poisoning in Zaria. Nig J Paediat 1982; 9:105-109
  - 6 Ogundipe O. Poisoning in children in an urban area of Nigeria. Nig Med J 1975; 5:341-344.
  - 7 Douglas S. Accidental Poisoning of young children. Arch Dis Child 1953;28:26-29
  - 8 Onedeko M O. Domestic Accidents among rural and urban children in Nigeria. Nig J Paediat 1983; 10:10-23.
  - 9 Ochigbo SO, Udo J J, Antia Obong OE. Accidental childhood poisoning in Calabar at the turn of the 20th century. Nig J Paediat 2004;31:67-70.
  - 10 Baldachin B J, Melmed R N. Clinical and therapeutic aspects of kerosene poisoning. A series of 200 cases. Br Med J 1964; 2:28-30.
- Fagbule D O, Joiner K T. Kerosene poisoning in childhood: a 6year prospective study at University of Ilorin teaching hospital. W Afr J Med 1992; 11:116-121.