

East African Medical Journal Vol. 94 No. 11. November 2017

UNINTENTIONAL CHILDHOOD POISONING AND QUALITY OF HOME TREATMENT GIVEN BY CAREGIVERS AS REPORTED AT THE CHILDREN EMERGENCY ROOM OF A TEACHING HOSPITAL IN NIGERIA

Abhulimhen-Iyoha Blessing Imuetinyan, MBBS, MPH, FMCPaed, FWACP, Associate Professor, Department of Child Health, University of Benin Teaching Hospital, Benin City, P.M.B.1111, Edo State, Nigeria., Mbarie Imuwahen Anthonia, MBBS, FWACP. Consultant Paediatrician, Department of Paediatrics, Stella Obasanjo Hospital, Benin City, Nigeria.

Corresponding Author: Abhulimhen-Iyoha Blessing Imuetinyan, MBBS, MPH, FMCPaed, FWACP, Associate Professor, Department of Child Health, University of Benin Teaching Hospital, Benin City, P.M.B.1111, Edo State, Nigeria. Email: drblessing4ever@yahoo.com

UNINTENTIONAL CHILDHOOD POISONING AND QUALITY OF HOME TREATMENT GIVEN BY CAREGIVERS AS REPORTED AT THE CHILDREN EMERGENCY ROOM OF A TEACHING HOSPITAL IN NIGERIA

B. I. Abhulimhen-Iyoha and I. A. Mbarie

ABSTRACT

Background: Some children encounter and suffer the dreadful consequences of poisoning. In a bid to save life or at least prevent severe complications of ingested poisons, caregivers tend to give some form of home treatment before the victims are taken to the hospital. Such treatment, which may be beneficial or harmful, has not been sufficiently evaluated particularly in our study locale.

Objective: To evaluate the treatment administered by caregivers after episodes of unintentional childhood poisoning before presentation to hospital.

Design: Descriptive cross sectional study.

Setting: The Children Emergency Room (CHER) of the University of Benin Teaching Hospital, Benin City, Edo State, Nigeria.

Subjects: Caregivers who brought their children to the CHER of the University of Benin Teaching Hospital (UBTH) in Benin City, South-south Nigeria on account of ingestion of poisons were interviewed. A structured questionnaire was used to assess their biodata, type of poison, if treatment was given at home before presentation to CHER and if so, the sources of information that influenced the type of treatment they administered.

Results: Majority (87%) of the caregivers gave some form of treatment at home whereas 13% did not. The treatment mostly (80.4%) adopted was the oral administration of palm oil forcefully to the children, followed by induction of vomiting (26.1%) by sticking fingers into the child's throat. Some caregivers administered more than one form of treatment modalities. The treatment adopted by caregivers were influenced by the disposition of neighbours (41.3%), grandmothers (15.2%) and friends (6.5%). There was no statistically significant relationship between children's age, sex, socioeconomic class of the family and level of education of the caregivers (mothers) on one hand and forms of treatment given at home on the other.

Conclusions: Most caregivers embark on some form of treatment after episodes of unintentional poisoning in their children before taking them to the hospital. The treatment given is mainly non-beneficial or harmful. Therefore, there is need for public enlightenment programmes on preventive strategies as well as appropriate intervention

following episodes of unintentional poisoning (should they occur). The establishment of Poison Control Centres in the nation will be a step in the right direction.

INTRODUCTION

Unintentional childhood poisoning remains a major public health issue in both the developing and industrialized nations. In developing countries, however, they are of great importance even if overshadowed by infectious diseases and malnutrition. According to a WHO estimate, unintentional poisonings led to 300,000 deaths in the year 2000. Over 70000 deaths occurred in children up to 14 years old.¹ Despite several recommendations on the prevention and control of accidental poisoning in childhood, some children still encounter and suffer the dreadful consequences of poisoning.

In Nigeria, as in other developing countries, unintentional childhood poisonings continue to occur.^{2,3} A number of factors contribute to the high incidence of childhood poisonings in these countries. Some are traceable to low socioeconomic status of families and illiteracy.^{4,7} Improper storage of poisons has also been implicated.² As a result, thousands of children are admitted to emergency departments because they have inadvertently consumed some type of household product, medicine or pesticide.

The different agents of poisoning as well as the epidemiology and outcome of childhood poisoning have been comprehensively studied and documented in many studies from Nigeria^{2,8} and other parts of the world.^{3,9,10} The commonest agent of poisoning in Benin City is Kerosene and the children under five years are those at risk.^{2,8} Sometimes, even if one locks up the cleaning supplies and hide the hazardous chemicals out of sight and out of reach, a child might still find a way to get his hands on a poisonous product and then put it in his mouth.

Young children are quite active, curious and fearless explorers. At their tender age, they learn to use chairs and climb up to reach things that are kept supposedly out of their reach. The highly active ones would strive to open the bolted doors, drawers and closets. In the process, they might

come across things that seem to attract them, but are hazardous for their health.¹¹ (Halperin, Bass, & Mehta, 2008).

Thus, the knowledge of the prevention of unintentional poisonings and what to do in case it occurs is imperative for child safety. In a bid to save life or at least prevent severe complications of ingested poisons, caregivers tend to give some form of home treatment before the victims are taken to the hospital. There may be indeed the need for first aid in case of acute poisoning.

The home interventions/therapies or first aid adopted by caregivers after childhood poisoning episodes, nevertheless, have not been sufficiently explored particularly in the study locale. These interventions may be beneficial or harmful. This study aims at highlighting caregivers' home treatment after episodes of poisoning occurring in their children and to bring to the fore lapses (if any) and recommend the way forward. It is envisioned that the knowledge of these home therapies could assist in structuring the content of health education campaigns against harmful interventions and reinforce beneficial ones.

SUBJECTS AND METHODS

This is a descriptive and cross-sectional study involving caregivers who brought their children to CHER of the UBTH on account of ingestion of poisons between October 2011 and June 2014.

A structured questionnaire was used to assess their biodata, type of poison ingested by their children, home interventions carried out prior to presentation and sources of information that influenced the interventions they adopted. Home interventions after episodes of accidental poisonings were classified as beneficial when it involved the oral administration of milk and/or water for ingested poisons and washing with soap and water in case of dermal poisons. Other forms of intervention even in combination with the aforementioned are adjudged as non-beneficial

and/or harmful. For example, the forceful oral administration of substances like palm oil, palm kernel oil, olive oil are potentially harmful interventions.

The socioeconomic status of the families were classified in accordance with the method described by Olusanya et al.¹². Ethical approval was gotten from the Ethics Committee of UBTH and informed consent was obtained from each participant. The data obtained was entered into the IBM Statistical Products and Servicing Systems (SPSS) version 20.0 spreadsheet and analyzed. The results obtained were cross tabulated as frequency, charts and contingency tables.

RESULTS

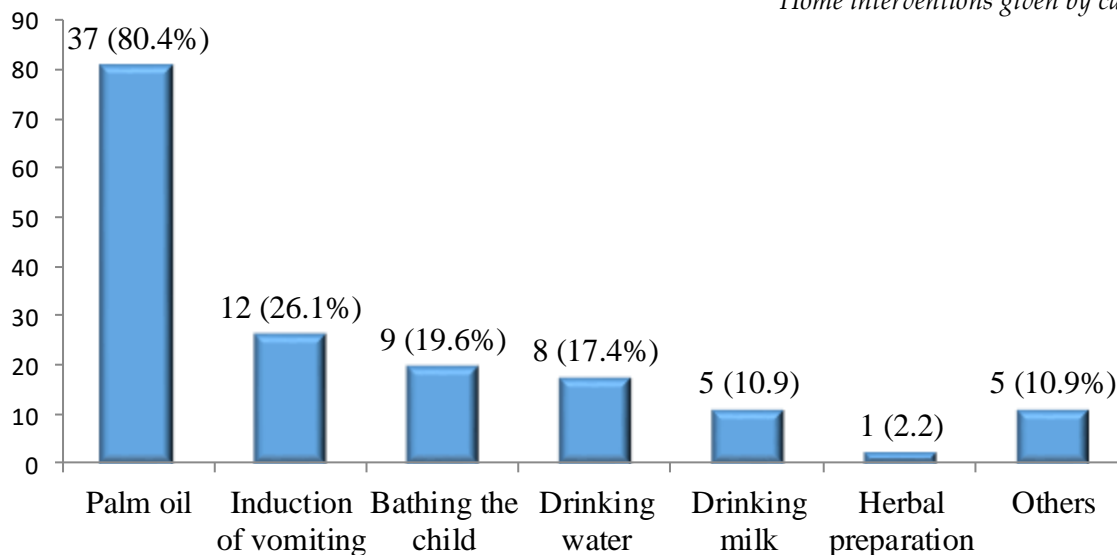
A total of 46 caregivers were studied. Half 23 (50.0%) of the respondents (mothers) had tertiary level of education, a third 16 (34.8%) had

secondary while 7 (15.2%) had primary level of education. Most 42 (91.3%) of them were married. The agents of childhood poisoning included kerosene, medicines, household agents such as insecticides, disinfectants/antiseptics and bleach, corrosives like caustic soda; and alcohol.

Majority (87%) of the caregivers gave some form of home treatment before presentation to hospital while a few (13%) did not attempt any form of first aid or intervention before presentation to the Children Emergency Room. The intervention mostly adopted by caregivers was the oral administration of palm oil forcefully to their children (80.4%), followed by induction of vomiting by sticking a finger into the child's throat (26.1%) [Figure 1].

Figure 1

Home interventions given by caregivers



Nine (19.6%) bathed their children while 8 (17.4%) made them drink water. It is important to note that some caregivers performed more than one action as intervention (Figure 1). The caregivers employed the use of different substances and

procedures in various combinations (Table I). No caregiver gave only water and/or milk. Some did so only in combination with other measures (Table I).

Table I*Procedures carried out and Substances used for Home Treatment after Unintentional Poisoning*

Procedures and Substances used for Home Intervention	Frequency (%)
Drinking Palm oil (alone)	17 (37.0)
No Treatment	6 (13.0)
Drinking Palm oil, induction of vomiting	3 (6.5)
Drinking Palm oil, bathing with water	3 (6.5)
Induction of vomiting	2 (4.3)
Drinking Palm oil, drinking water	2 (4.3)
Drinking Palm oil, induction of vomiting, bathing with water	2 (4.3)
Drinking Palm oil, drinking water, milk, bathing with water	2 (4.3)
Others	9 (19.6)

Other substances also used for treatment include olive oil, honey, coconut water, charcoal with water, herbal preparations and various other combinations of substances documented on the table.

All the respondents 8 (100.0%) with infants had intervened at home (Table II).

There was, however, no statistically significant relationship between children's age and interventions at home among caregivers ($p = 0.571$). Most 31 (91.2%) of the caregivers with male children intervened at home compared to those with female infants (75.0%) [Table II]. This association showed an increased tendency for home intervention among respondents with male

children but was not statistically significant ($p = 0.173$). Also, there was no statistically significant relationship between socioeconomic class of the family and level of education of the caregivers (mothers) on one hand and interventions at home on the other (Table II).

Table II
Relationship between Socio-Demographic Variables of Children and Caregivers and Home Treatment

N = 46

Variable	Home Treatment			p value
	Yes	No	Total	
	n (%)	n (%)	n (%)	
Age				
≤ 1 years	8 (100.0)	0 (0.0)	8 (100.0)	0.571
> 1 – 5 years	32 (84.2)	6 (15.8)	38 (100.0)	
Sex				
Male	31 (91.2)	3 (8.8)	34 (100.0)	0.173
Female	9 (75.0)	3 (25.0)	12 (100.0)	
Socioeconomic class				
Lower	20 (95.2)	1 (4.8)	21 (100.0)	0.198
Upper & Middle	20 (80.0)	5 (20.0)	25 (100.0)	
Mother's level of education				
At most 2 ^o	19 (82.6)	4 (17.4)	23 (100.0)	0.665
Tertiary	21 (91.3)	2 (8.7)	23 (100.0)	
<i>Fisher's Exact</i>				
2 ^o	=	<i>secondary</i>	<i>education</i>	

More than a third (41.3%) of the caregivers carried out interventions suggested by neighbours, 7 (15.2%) of them were influenced by the child's grandmothers as well as mothers contributing an

equal proportion (Table III). Other sources of information were friends 3 (6.5%), fathers 2 (4.3%), both parents 2 (4.3%) and a nurse (2.2%) [Table III].

Table III*Probable Sources of information that influenced the interventions carried out by caregivers*

Sources of information	Frequency (n = 46)	Percent
Neighbour	19	41.3
Grandmother	7	15.2
Mother	7	15.2
Friend	3	6.5
Father	2	4.3
Both parents	2	4.3
Nurse	1	2.2

DISCUSSION

The study echoes the fact that majority of accidental childhood poisoning are first treated at home by caregivers before presentation to CHER. Childhood poisoning causes considerable stress to parents and children and its acute distressing and terrifying nature prompts caregivers to take action prior to presentation to the hospital.

This is not surprising as a caregiver would likely make efforts to relieve the discomfort of his/her injured or 'ill' child as quickly as possible. The findings of the current study further revealed that the commonest intervention carried out by caregivers after episodes of childhood poisoning was forceful administration of palm oil orally to their children/wards. While oral administration of palm oil was the commonest home remedy recorded by Adejuvige et al⁴ in Ile-Ife in the

year 2002, Osaghae & Sule² in Benin City as well as Ugwu et al⁷ documented the administration of assorted oils such as palm oil, palm kernel oil and olive oil.

According to the later authors,^{2,7} other substances administered included milk, mixed magnesium trisilicate, bitter cola nut and water. The authors recorded fatalities which were due to massive aspiration pneumonitis resulting from attempts by parents and caregivers to induce vomiting at home through the administration of palm oil leading to further complications such as lipid pneumonitis.² This procedure is dangerous and tend to result in aspiration of the palm oil resulting in a condition called lipid pneumonitis. The condition is associated with marked respiratory distress which may proceed to respiratory failure and may become fatal. It is thus a home intervention that must be discouraged. Induction of vomiting is an intervention that is

no longer advised by medical practitioners. The procedure is laden with the risk of aspiration as well as a second burning of the oesophagus if the ingested poison is a corrosive.

The teaching in case of dermal poisoning is bathing the victim with soap and water. This was carried out by one of the caregivers whose child attempting to drink saponated cresol (disinfectant) poured it on herself.¹³ Although the caregiver reduced the degree of burns which the child eventually developed, she forcefully administered palm oil orally- a procedure that is discouraged because of attendant risks.¹³ Findings showed that the motivators of the home remedy are mainly neighbours, grandmothers and the parents themselves.

In the developed nations, Poison Control Centres (PCCs) which are multifunctional medical facilities provide immediate, free, and expert treatment management advice in the case of poisoning events.¹ Their job of quick response and immediate help to distress calls from caregivers of victims of poisoning is being carried out in developing countries by neighbours, grandmothers, friends, etc. The content of the help provided by these persons, however, is questionable, not evidence-based and potentially harmful. The present study revealed the fact that caregivers carry out non-beneficial and potentially harmful interventions in an attempt to give first aid to their children/wards.

This finding provides sufficient evidence to support the need for an aggressive campaign to reduce accidental poisoning by strategies of information, education and the introduction of safety containers. In conclusion, most caregivers would intervene after episodes of accidental childhood poisoning in their children. However, these interventions are either non-beneficial or harmful.

The need therefore arises for public enlightenment programmes, using the mass media (electronic and print) and health talks in health facilities among other means; targeting not only caregivers of children but also

secondary audience like their neighbours, grandmothers, friends as well as healthcare workers. Preventive strategies should include legislation requiring child-resistant packaging for all medications and household products including petroleum distillates. Appropriate intervention following episodes of accidental poisoning (if they occur) is also advocated. The establishment of Poison Control Centres in the nation will be a step in the right direction.

ACKNOWLEDGEMENT

The caregivers of the children are acknowledged for their cooperation.

REFERENCES

1. Guidelines on the Prevention of Toxic Exposures: Education and Public Awareness Activities.(2004).http://www.who.int/ipcs/features/prevention_guidelines.pdf Accessed 3rd January, 2014.
2. Osaghae DO, Sule G. Accidental childhood poisoning in Benin City: still a problem? *JMBR* 2013; 12:19-26.
3. Kouéta F, Dao L, Yé D, Fayama Z, Sawadogo A. Acute accidental poisoning in children: Aspects of their epidemiology, aetiology, and outcome at the Charles de Gaulle Paediatric Hospital in Ouagadougou (Burkina Faso). *Cahiers Santé* 2009; 19: 55-59.
4. Adejuyigbe AE, Onayande AA, Seknbanjo IO, Oseni SE. Childhood poisoning at the Obafemi Awolowo University Teaching Hospital Ile Ife, Nigeria. *Niger J Med* 2002; 11: 183-6.
5. Osaghae DO, Sule G. Socio-demographic factors in accidental poisoning in children. *J Med Med Sci* 2013; 4:13-16.
6. Orisakwe OE, Egenti L, Orish C. Childhood non-drug poisoning in Nnewi Nigeria. *Trop Doct*, 2000; 30: 209-211.
7. Ugwu, G., Okperi, B., Ugwu, E. & Okolugbo, N. (2012). Childhood poisoning in Warri, Niger Delta, Nigeria: A ten-year retrospective study. *African Journal of*

- Primary Health Care & Family Medicine*, North America, 2012. Available at:<http://www.phcfm.org/index.php/phcfm/article/view/321/406> Accessed on 22 October, 2014.
8. Olomu IN. Accidental childhood poisoning in Benin City. *Nig J Paediatr*, 1992; 19:24–29.
 9. Sarker AK, Ghosh S, Barik K. A study of accidental poisoning (in children) in a rural medical college Hospital of West Bengal. *Ind. J. Public Health*, 2002; 34:159–62.
 10. Petridou E, Kouri N, Polychronopoulou A, Siafas K, Stoikidou M, Trichopoulos D. Risk factors for childhood poisoning: a case-control study in Greece. *Injury Prevention* 1996; 2:208-11.
 11. Halperin SF, Bass JL, Mehta KA. Knowledge of accident prevention among parents of young children in nine Massachusetts towns. *Public Health Rep.* 2008; 98:548-53.
 12. Olusanya O, Okpere E, Ezimokhai M. The importance of social class in voluntary fertility control in a developing country. *W Afr J Med* 1985; 4:205-12.
 13. Abhulimhen-Iyoha BI, Monday P. Saponated Cresol Poisoning in Childhood. *Journal of Medicine and Biomedical Research* 2014; 13:129-136.