

Factors Associated with Home Accidents in Childhood at Regional Teaching Hospital of Ouémé Plateau

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Abstract

Introduction: Home accidents (HA) are often unknown in Benin compared to infectious pathologies. The aim of this work was to determine the prevalence and the factors associated with HA in children admitted to the CHUD-OP.

Method: This was a cross-sectional study conducted from August 1st to October 31th 2021. We studied children aged 0 to 18 who presented with HA to the pediatrics and emergency reception and triage departments at CHUD-OP. We defined HA as “any event occurring inside the home or in the immediate vicinity of the home that resulted in an injury which was not done deliberately.

Results: The hospital frequency of HA was 8.4% (61/725). The median age was 5 years with a male to female ratio of 1.6. Trauma was the leading cause of HA (59%) followed by poisoning (23%). Falling was the main mechanism of trauma (80.6%). The toxins causing poisoning were dominated by caustics (28.6%). The age of the children ($p = 0.02$), the level of education of the mothers ($p < 0.03$), and the area they occur (kitchen with $p = 0.04$ and on the stairs with $p = 0.03$) were statistically associated with the occurrence of trauma. **Conclusion:** HA are common among children admitted at CHUD-OP and factors associated with HA are identified. Measures to prevent home accidents among children in the community should be considered.

Keywords

Caustic Soda Poisoning, Home Accidents, Unintentional Home Accidents, Trauma at Home, Associated Factors

1. Introduction

In developing countries, home accidents (HA) are becoming an increasingly important part of childhood pathology, but they are still underestimated and neglected by the population and by health systems. The World Health Organization defines an accident as an event that occurs unwillingly and causes physical and mental damage by sudden external force [1]. The focus of this study was on home accidents, which are defined as “any event occurring inside the home or in the immediate vicinity of the home that resulted in injury” which was not done deliberately [2]. In this paper, the terms “home accidents” and “unintentional home accidents” will be used interchangeably. In Morocco, serious HA count for 15.5% of admissions to the multipurpose paediatric intensive care unit of the University Children’s Hospital in Rabat [3]. In Senegal, HA count for 28.8% of all consultations and 16% of admissions in the emergency unit of the paediatric surgery department of the CHU Aristide-le-Dantec [4]. Socio-demographic and environmental factors influence the occurrence of HA. These risk factors may be related to the child himself, his material environment, and to the products involved in the accident. Given the lack of data on HA in children in Benin, this study was initiated to investigate the different factors associated with HA in children admitted to the CHUD-OP with the aim of ensuring their prevention.

2. Methods

This was a cross-sectional study conducted from August 1st to October 31, 2021, at CHUD-OP. This study included all children aged ≤ 18 years presented at CHUDOP due to an unintentional home accident, after obtaining informed consent from the parents/guardians/child himself (in the case of an adolescent).

Children with motor vehicle accidents and children with home accidental injuries suspected to be related to domestic violence were excluded.

A home accident was defined as “any event occurring inside the home or in the immediate vicinity of the home that resulted in injury” which was not done deliberately. The data collected were the characteristics of the child victim of HA (age, sex, education level), the characteristics of his/her parents, his/her home, and the accident. Data analysis was done with IBM SPSS Statistics version 26.0.0.0. The association between the variables was determined by crossing them using the Karl Pearson Chi-square test or Fischer test at the 5% significance level. The prevalence ratio (p-value) allowed us to determine the degree of association

3. Results

Of the 725 children admitted to the paediatric ward and emergency department of the CHUD-OP, there were 61 cases of HA, *i.e.* a hospital frequency of 8.4%.

3.1. Characteristics of the Children and Their Parents

The 0 - 4 age group was the most represented (**Table 1**). The median age of the children was 5 years. The study population was composed of more males ($n =$

Table 1. Distribution of home accidents by age groups and sex.

	Effectifs	Pourcentages (%)
Age (ans) (n = 61)		
[0 - 4]	28	45.9
[5 - 9]	11	18
[10 - 14]	15	24.6
≥15	07	11.5
Sexe (n = 61)		
Masculin	38	62.3
Féminin	23	37.7

38; 62.3%) than females (n = 23; 37.7%) with a male to female ratio of 1.6 (**Table 1**). The majority were not attending school (50.8%). More than half of the children were living in a single-family home (59%) and there was an average of 5 ± 2.2 children per household.

The most common age group was 25 - 40 years (68.9%) for fathers and under 25 years (60.5%) for mothers. The fathers were more often artisans (37.7%) and the mothers tradeswomen (32.8%). The fathers had primary education or less in 17 cases (27.8%) and the mothers in 26 cases (42.6%). Most of the parents were married (81.9%).

3.2. Characteristics of the Accident

According to the results, the most common type of HA were trauma (59.0%) and poisoning (23%), followed by burns (6.6%), foreign bodies in orifices (4.9%), bites/scratches/stings (4.9%) and drowning (1.6%). The areas of occurrence of HA were the yard and the surroundings of the house (36.1%), the kitchen (23%), the bedroom (13.1%), the living room (11.5%), the stairs (9.8%), and the bathroom (6.6%). The children were alone at the time of the HA in 70.5% of cases. Most HA occurred in the afternoon (42.6%) and when the children were unsupervised (70.5%). We focused on trauma and poisonings because they were the main types of home accidents in this study.

3.3. Trauma Characteristics

The trauma rate was significantly higher in the 5 - 9 and 10 - 14 age groups than in the 0 - 4 and over 15 age groups ($p = 0.02$) (**Table 2**). The mechanism of injury was fall in 29 cases (80.6%), crushing in 6 cases and a sharp object wound in one case. More than half of the injuries (52.5%) were located in the upper limbs, nine in the lower limbs, five in the trunk, and five in the head. Most injuries were fractures (21; 46.7%). Other injuries were contusions (12 cases), wounds (8 cases), internal injuries (2 cases), sprain (1 case), and disturbance of consciousness (1 case). Trauma accounted for more than two-thirds of domestic accidents regardless of the level of education of the mothers ($p < 0.03$). The kitchen ($p = 0.04$) and the

Table 2. Distribution of trauma and poisonings according to age group.

	Age groups (years)				P
	0-4 n (%)	5 - 9 n (%)	10 -14 n (%)	≥ 15 n (%)	
Trauma	11/28 (39%)	9/11 (81.8%)	12/15 (80%)	4/7 (57%)	P = 0.02
Intoxication	13/28 (46%)	0/11 (0%)	0/15 (0%)	1/7 (14.3%)	P < 0.001

Table 3. Distribution of trauma and poisonings according to mother's education level.

	Mother's education level				P
	No education	Primary	Secondaire	University	
Trauma	7/17 (41.2%)	9/9 (100%)	13/22 (59.1%)	7/13 (53.8%)	<0.03
Poisoning	5/17	0/9	5/22	4/13	<0.37

stairs ($p = 0.03$) were the places where trauma was most likely to occur.

3.4. Characteristics of Intoxications

Intoxications were more frequently reported in 0 - 4 age group compared to over 15 years age group (46% and 14.3%, respectively; $p < 0.001$) (Table 3). The majority of intoxications were due to ingestions (85.7%). The injuries caused were respiratory (38.1%), but also neurological (6 cases), hepatobiliary (5 cases), and ocular (1 case). The toxic substances involved were caustic products (4 cases), drugs (3 cases), hydrocarbons (2 cases), pesticides (2 cases), a household product (1 case), cement (1 case), and alcohol (1 case). Characteristics of the parents or the environment were not associated with the occurrence of intoxication.

4. Discussion

The collection of data only in hospitals and the small sample size may be a limitation of this study but the results obtained are valid. The in-hospital incidence of HA in children admitted to the CHUD-OP was 8.4%. Two recent studies, one in Dakar and the other one in Oman, revealed a hospital prevalence of 6.91% ($n = 103$) [5] and 7.7% ($n = 1333$) [6]. HA are common in children in several countries.

Children under 4 years of age were most affected by HA (45.9%). Before the age of 5, the child spends more time at home. They are in the midst of psychomotor development with the discovery of the environment, the conquest of autonomy, and the exploration of their environment, and new experiences. The male to female ratio was 1.6 in the study. This male predominance has been noted by other authors [5] [6] [7]. Boys are more aggressive, and tend to be more oppositional to prohibitions on one hand, and on the other hand, they are more athletic and their curiosity and impulsiveness are greater. In the study, most of the mothers were under 25 years of age (60.5%). The relationship between the age of the parents and the occurrence of HA could be explained by the fact that older parents have more experience than younger parents and are more aware of situ-

ations that put their children at risk of accidents. Trauma accounted for more than two-thirds of HA regardless of the level of education of the mothers. The educational level of the mothers was significantly associated with the occurrence of trauma ($p < 0.03$). In 2004, a Mexican author [8] noted that the mother's level of education was an important risk factor for HA. A low level of education predisposes the child to accidents because the parents are not enough informed about the risks taken by the children.

Households had an average of 5 ± 2.2 children. Ategbo in Gabon found that the average number of children living at home was 5 ± 2.9 [9]. The more young children a mother has in her care, the less attention she can give to each of them. The more children there are, the more games they play, especially if they are boisterous, which makes them more prone to accidents. Trauma was the leading cause of injury in this series (59.0%). Falling was the most involved mechanism (80.6%). Mohamed in Senegal [5] found that falling was the main mechanism of trauma (63.75%). Playing, the main activity of children at home often consists of running and jumping, which can lead to falls. In the present study, the main injuries were also fractures (46.7%). In the majority of cases, the upper limbs were the main location of injury in a home accident (52.5%). Elsewhere, the head was the main part of the body affected by HA, especially in children under the age of five [10] [11]. Poisoning was the second most common cause of HA (23.0%). Caustic products were the most frequent toxicants (28.6%) as reported by three other African authors [12] [13] [14]. Caustic soda was the most commonly used product. It is a product present in many households in the African sub-region as it is used in artisanal soap making. The most frequent place of occurrence of HA was the yard and the surroundings of the house as reported by other authors [4] [9]. The yard and its surroundings are the preferred playing area, especially for children under five. HA often take place between 12 pm and 6 pm (42.6%). Children engage in HA-while playing and parents are less vigilant during these hours.

5. Conclusion

The most common type of home accidents in children was trauma. The factors associated with trauma in this study were the age of the children, the mothers' level of education, the kitchen, and the stairs. It would be useful to take these factors into account when developing awareness messages to the community to reduce HA.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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