

Epidemiological Profile of Domestic Accidents among Children Aged 0 to 15 Years in Libreville

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Abstract

Domestic accidents (DA) are common in children and responsible for high morbidity and mortality in developed countries. **Objective:** This work aimed to describe the epidemiological profile of AD in children aged 0 to 15 years in Libreville. **Materials and Methods:** All children aged 0 to 15 years who were victims of unintentional trauma occurring at home or in its immediate surroundings were included. We studied the mother's age, family situation, socio-economic level, type of housing, age and sex of the child, characteristics of AD and their management. **Results:** The majority of mothers lived in an intermediate dwelling (80.6%). They were married (37.1%), middle managers (58.2%) and of average socioeconomic level (60.5%). The average age of the mothers was 39.9 ± 11.4 years. Families with more than three children were most exposed (39.2%) to the occurrence of AD. The average age of the children was 6.5 ± 3.3 years with a male predominance. The sex ratio was 1.8. The most common ADs were falls (34.7%), followed by cuts (22.3%) and burns (17.7%). Wounds (54.4%), followed by burns (33%) and fractures (5.1%) were the main types of injuries. The upper limbs were the most affected body part (33.9%) followed by the lower limbs (30.1%) and the head (27.3%). The yard was the preferred location for ADs to occur (51.1%), and particularly during the holiday period (48.4%). The risk factors related to the occurrence of AD were age, socioeconomic level, number of children and type of housing. Care was provided at home in 51.9% of cases. **Conclusion:** The occurrence of AD in children is not negligible; hence the need to implement preventive measures to minimize their frequency.

Keywords

Domestic Accidents, Child, Fall, Libreville

1. Introduction

A domestic accident is defined as an unintentional trauma, which is neither a work accident nor a traffic accident, occurring at home or in its immediate vicinity: the garden, the yard, the garage and other outbuildings [1]. Domestic accidents constitute a major public health problem in the world [2]. Due to their severity and frequency, they represent a significant cause of morbidity and mortality in developed countries. According to the World Health Organization (WHO), 9% of global mortality is related to trauma [1]. In France, 20,000 deaths were recorded in 1999, linked to accidental pathology [3]. In sub-Saharan Africa, health policies are generally focused on infectious and nutritional diseases, due to their impact on the population [4]. Little documented in our country and in developing countries, domestic accidents are likely to have different characteristics and to be just as serious. They therefore remain unknown or underestimated in our country; and their prevention measures remain absent. The aim of this work was to describe the epidemiological profile of domestic accidents among children aged 0 to 15 years in Libreville.

2. Methodology

This was a descriptive cross-sectional study, which took place over five months: from September 1, 2017 to January 31, 2018. The main objective was to describe the epidemiological profile of domestic accidents among children aged 0 to 15 years in Libreville. We included in our study, households with one or more children aged 0 to 15 years whose mothers or guardians agreed to participate in the study. The selection of neighborhoods was made on the basis of the lists of neighborhoods obtained by the various town halls of Libreville, Akanda and Owendo, we proceeded by drawing lots without replacement of the neighborhoods that were selected for our study. The number of neighborhoods per district corresponds to the number of clusters in each district. For the commune of Libreville we obtained: The first district five (5) neighborhoods: upper and lower gué-gué; Alibendeng; Okala-mikolongo and Okala-Egneng-Melene; Former SOBRAGA.

The second district has four (4) neighborhoods: Pleine Orey (Boirot camp); Avéa II; Ste Marie and Cocotier Nord.

The third arrondissement seven (7) districts: Petit Paris; Belle vue 1&2; Kinguélé; Montagne Sainte; Come see; Plein-ciel; Avenue de Cointet.

The fourth district has two (2) neighborhoods: Plaine Niger and Glass Oloumi.

The fifth district has seven (7) neighborhoods: Nyalie; Pk8; Lala on the right (corridor side); Ozangué; Mindoubé 1; Cité Damas; Beau Séjour.

The sixth district six (6) districts: New city; pk9; Fin goudron; nzeng-ayong; Ondogho; Sibang 1, 2.

For the commune of Owendo and Akanda we obtained:

The first district of Owendo two (2) neighborhoods: Akournam 1 and SNI rail.

The second district of Owendo two (2) neighborhoods: Alenakiri 2 and Virie Octra.

For each district of Akanda one (1) neighborhood: Agondje and Premier campement.

Households were selected from pre-selected neighborhoods; upon arrival in the neighborhood, the survey team located the neighborhood's main crossroads, the street on which the survey should begin was indicated by the end of a bottle that was spun on itself, the number of homes spaced between two homes was drawn at random by writing on pieces of paper a number from 1 to 5. The survey team began their survey with the first household to the right of the indicated street and passed the number of homes indicated by the draw and interviewed the next home then crossed the street and interviewed the home opposite and so on until obtaining 30 homes in this neighborhood.

If at the end of the alley the number of homes is still not reached, the choice of the direction to take was determined by the end of a bottle which will be turned on itself.

If the street ends in a dead end or continues into another district, we return to the main crossroads to spin the bottle again while eliminating the alley we had already taken.

The households that were visited during our study were grouped into clusters of 30 households, the number of households per municipality was determined by applying to our sample the percentage of the population corresponding to each municipality and then rounding up to the upper margin of the multiple of thirty closest to the result obtained.

Libreville with 703,939 inhabitants represents nearly 86.1% of the study population. The number of households in Libreville was 930 households.

Owendo with 79,300 inhabitants represents almost 10% of the study population. The number of households in Owendo was 120 households.

Akanda with 34,548 inhabitants represents about 4% of the study population. The number of households in Akanda was 60 households.

The households being grouped into clusters of 30 households, we obtained:

Libreville 31 bunches; Owendo 4 bunches and Akanda 2 bunches.

The distribution of the different clusters in the six districts was made according to the representativeness of the population of each district. The first district with a population of 119,498 inhabitants, it represents 17% of the population of the commune of Libreville, so we obtain five (5) clusters. The second district with a population of 107,976 inhabitants which represents 15% of the population of the commune of Libreville, so we obtain four (4) clusters.

The third district with a percentage of 25.42% of the population of Libreville, we obtain seven (7) clusters.

The fourth district with a percentage of 5.64% of the population of Libreville so we obtain two (2) clusters.

The fifth district with 23.5% of the population, we obtain seven (7) clusters.

The sixth district with 21% of the population gives us six (6) clusters.

The commune of Owendo is divided into two districts which are themselves divided into several neighborhoods, the distribution of clusters will be done equitably between the two districts. The number of households in the commune of Owendo being 120 households, which gave us a number of 4 clusters in total including two clusters for each of the two districts. The commune of Akanda being divided into two districts, we will distribute the clusters as we distributed them in the commune of Owendo; which gives us one (1) cluster per district. All children aged 0 to 15 years who were victims of unintentional trauma occurring at home or in its immediate vicinity as well as their mother or guardian were included. We studied the age of the mother, family situation, socio-economic level, type of housing, age and sex of the child, number of children in the household, characteristics of domestic accidents and their management. Data were entered and collected on Epi Info 7.2. The threshold for significance is set at $p < 0.05$.

3. Results

During our study, we collected 1086 households; of which 499 households recorded a domestic accident, *i.e.* a prevalence of 45.9%. Of the 499 households that experienced a domestic accident, we recorded 645 domestic accidents, *i.e.* a frequency of 1.3 domestic accidents per household. The majority of mothers lived in an intermediate dwelling (80.6%). They were married (37.1%), middle managers (58.2%) and of average socio-economic level (60.5%). The average maternal age was 39.9 ± 11.4 years. It was noted that (39.2%) of domestic accidents occurred in families with more than three children at home.

Male children were the most affected with a sex ratio of 1.8. The mean age of occurrence of a domestic accident was 6.5 years \pm 3.3 years with a predominance of the age group of 6 to 10 years (41.1%). **Figure 1** illustrates domestic accidents according to their mechanism found during the study period.

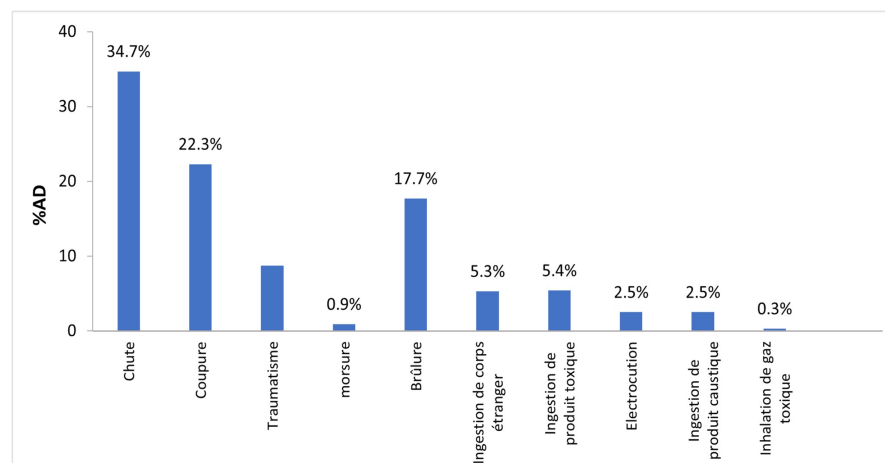


Figure 1. Distribution of domestic accidents according to mechanism.

The main injuries caused during domestic accidents were wounds (54.4%), followed by burns (33%) and fractures (5.1%). The upper limbs were the most affected part of the body (33.9%) followed by the lower limbs (30.1%) and the head (27.3%). The distribution of the different places in the house where these accidents occurred is summarized in **Figure 2**.

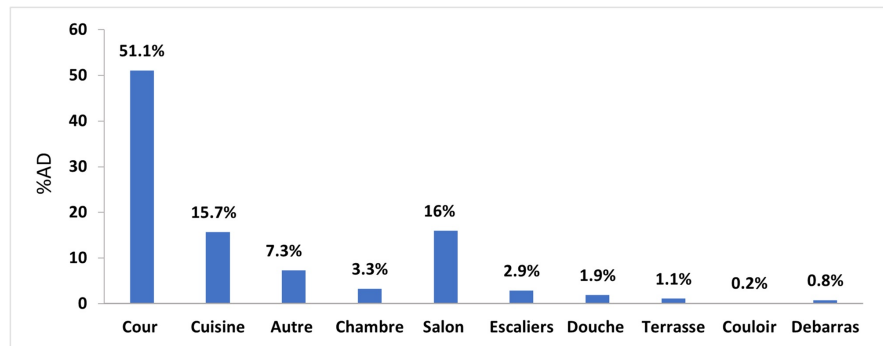


Figure 2. Distribution of domestic accidents according to place of occurrence.

Domestic accidents occurred during the holiday period (48.4%). Maternal age, average socioeconomic level of the family, intermediate type of housing, marital status and young age of children were the factors associated with the occurrence of a domestic accident. Care was provided at home in 51.9% of cases. No deaths were reported during the study period (**Table 1**, **Table 2**).

Table 1. Analysis of factors associated with the occurrence of a domestic accident according to the age of the child and the mother.

Age of the child	GOLD	95% CI	<i>p</i>
[0 - 2]	-	-	
[3 - 5]	1.6	[1.44 - 1.76]	0.04
[6 - 10]	0.7	[0.54 - 0.86]	<0.001
[11 - 15]	0.5	[0.34 - 0.66]	<0.001
Mother's age			<i>p</i>
[15 - 32]	0.9	[0.7 - 1.1]	<0.001
[32 - 40]	1.5	[1.3 - 1.7]	0.003
[40 - 47]	1.5	[1.3 - 1.7]	0.003
[47 - 83]	0.7	[0.5 - 0.9]	<0.001

Table 2. Analysis of factors associated with the occurrence of a domestic accident according to the type of habitat and the level of study.

HOME CSE	GOLD	95% CI	<i>p</i>
Type of habitat			
Precarious	1.4	[1.2 - 1.6]	<0.00001
Intermediate	0.7	[0.5 - 0.9]	<0.001
Comfort and luxury	0.4	[0.2 - 0.6]	<0.00001
Education level of mother or guardian			
Primary	0.9	[0.7 - 1.1]	<0.001
Secondary	1.4	[1.2 - 1.6]	<0.001
University	0.7	[0.5 - 0.9]	<0.001

4. Discussion

Domestic accidents are a common cause of trauma in children. They are multifactorial and their type varies depending on the child's psychomotor and cognitive development and the family environment. They constitute a major public health problem in our society, mainly for young people [2]. From the age of one to over 30 years, they represent a major cause of mortality, morbidity and permanent disability [5]. They occupy the third place among causes of death in Europe, after cancers and cardiovascular diseases [6]. The incidence of domestic accidents is difficult to estimate in our country, due to the absence of national statistics. Nevertheless, we emphasize that domestic accidents among children remain a significant event in the lives of parents; therefore an event that is difficult to forget.

The limitations of our study concern the data collection, which was based on the parents' memories. It is possible that some domestic accidents were forgotten by the mother or the person in charge of the household at the time of the interview. Also, this memory bias did not allow us to determine exactly the time, day and month of the domestic accident as in other published studies. These different parameters would have allowed us to enrich our suggestions regarding means of prevention in homes.

In most studies on childhood accidental pathology, the age group between 0 and 5 years was the most affected [7]-[10]. In our work, children aged 6 to 10 years were the most affected by domestic accidents. The young age of most victims of domestic accidents in our context, as elsewhere, could be explained by the fact that young children are difficult to supervise, because of the awakening of their curiosity and because they spend more time at home. The adage often says that at this age, "the child goes to discover the world and danger". The male predominance reported in our study is similar to other studies [10]-[12]. This could be explained by the aggressive character and turbulence of boys unlike little girls. Domestic accidents occurred most often in homes with the greatest number of children and in couples. This result can be justified by the fact that the presence of a large number of children at home, in addition to increasing play time, makes it difficult for parents to supervise, on the one hand, and by the distribution of tasks within couple households, on the other hand. Indeed, in our African societies, it is customary for the man to take charge of the financial aspect of the home and for the woman to devote herself to the organization of the home, the education and safety of the children. The majority of families of children who have had domestic accidents are from modest socio-economic conditions. There is a link between socio-economic status and certain risks of exposure to domestic accidents, such as housing conditions and a lack of information for the acquisition of useful knowledge in the prevention of domestic accidents [12]. Other risk factors such as the type of housing, marital status and the age of the mother have been identified as risk factors for the occurrence of domestic accidents in our work. Traumas caused by falls occupied a prominent place in our series. The explanation could be the frequency of cases of falls that occur especially in older children, due

to the fact that boys most often engage in dangerous games, causing falls from height (tree, upper floor/stairs, hand/back of an adult, bed, etc.). Other authors also place falls as the main domestic accident, such as Ategbo *et al.* [10] [11] [13]. The yard was the preferred location, followed by the living room and the kitchen. This finding is similar to that of the study published by Ategbo *et al.* in Libreville, which also found the yard followed by the bedroom and the kitchen. Zidouni *et al.* found different results with a predominance of domestic accidents in the bedroom; then in the yard and in the kitchen, agreeing with French data [14] [15]. These results are probably related to the fact that, in our country, most homes have a courtyard and that it represents the ideal place for children to play. But in France and Algeria, most people live in buildings, which explained the fact that the bedroom was the preferred location for domestic accidents. Injuries were the most common injuries in our study. However, other studies have reported other injuries in the foreground, such as fractures [11], contusions [16], burns [17]. This variability may be related to the age of the child. In our study, we did not observe any cases of death. The observation was the same for Zidouni, who found no deaths in their survey of 847 cases [14]. However, a review of child accidents in sub-Saharan Africa estimates mortality due to child accidents at 5%, demonstrating their potential seriousness [18].

5. Conclusion

Domestic accidents represent a real public health problem. They are very common in children, with a male predominance. They most often occur in the yard and falls are the most common mechanism. They generally have a better prognosis.

Conflicts of Interest

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

References

- [1] World Health Organization (WHO) (2017) Injuries. WHO.
- [2] World Health Organization (2021) Injuries and Violence. <https://www.who.int/news-room/fact-sheets/detail/injuries-and-violence>
- [3] Thélot, B. (2010) Épidémiologie des accidents de la vie courante chez l'enfant. *Archives de Pédiatrie*, **17**, 704-705. [https://doi.org/10.1016/s0929-693x\(10\)70069-5](https://doi.org/10.1016/s0929-693x(10)70069-5)
- [4] Ruiz-Casares, M. (2009) Unintentional Childhood Injuries in Sub-Saharan Africa: An Overview of Risk and Protective Factors. *Journal of Health Care for the Poor and Underserved*, **20**, 51-67. <https://doi.org/10.1353/hpu.0.0226>
- [5] Rafai, M., Mekkaoui, N., Chouaib, N., Bakkali, H., Belyamani, L., Koraichi, A.E., *et al.* (2015) Épidémiologie des accidents domestiques graves de l'enfant admis en réanimation pédiatrique polyvalente à l'hôpital d'enfants de Rabat-Maroc. *Pan African Medical Journal*, **20**, Article 28. <https://doi.org/10.11604/pamj.2015.20.28.5760>
- [6] Lasbeur, L. and Thélot, B. (2012) Mortality from Everyday Accidents in Metropolitan France, 2000-2012. *France Santé Publique*.

- [7] Usha Rani, S. and Swetha, R. (2022) Pattern of Domestic Accidents among Children in Tumkur City—A Cross Sectional Study. *National Journal of Community Medicine*, **11**, 196-200. <https://doi.org/10.5455/njcm.20200319050247>
- [8] Maaloul, I., Kmiha, S., Yaich, S., Thouraya, K., Damak, J., Aloulou, H., *et al.* (2019) Epidémiologie des accidents domestiques de l'enfant: Expérience d'un Service de Pédiatrie Générale du sud tunisien. *Pan African Medical Journal*, **33**, Article 108. <https://doi.org/10.11604/pamj.2019.33.108.12022>
- [9] Ahmed, A., Abubakar, S., Farouk, Z., Gadanya, M. and Jimoh, M. (2018) Prevalence and Pattern of Unintentional Domestic Accidents and Trauma Amongst Children Attending Public Hospitals in Kano, Nigeria. *Sahel Medical Journal*, **21**, 6-12. <https://doi.org/10.4103/1118-8561.232787>
- [10] Judicaël, K., M., Gildas, O.A.P., Leticia, L., Boubakar, D., Alphonse, M., *et al.* (2020) Prospective Study of Domestic Accidents of the Child in Brazzaville, Congo. *Open Journal of Pediatrics*, **10**, 175-184. <https://doi.org/10.4236/ojped.2020.101017>
- [11] Mohamed, A.S., Sagna, A., Fall, M., Ndoye, N.A., Mbaye, P.A., Fall, A.L., *et al.* (2019) Epidemiology of Domestic Accidents in Children in Dakar (Senegal). *Health Sciences and Diseases*, **20**, 18-23.
- [12] Al Rumhi, L., Al Awisi, H., Al Buwaiqi, M. and Al Rabaani, S. (2020) Home Accidents among Children: A Retrospective Study at a Tertiary Care Center in Oman. *Oman Medical Journal*, **35**, e85-e85. <https://doi.org/10.5001/omj.2020.03>
- [13] Ategbó, S., Minto'o, S., Koko, J. and Mba-Meyo, S.M. (2012) Aspects épidémiologiques des accidents domestiques de l'enfant à Libreville (Gabon). *Clinics in Mother and Child Health*, **9**, 1-3. <https://doi.org/10.4303/cmch/c120201>
- [14] Zidouni, N. (2000) Domestic Accidents among Children in Algeria. Zidouni, Domestic Accidents of Children in Rural Areas. Results of the Survey Carried Out in 2000 by the INPS. <https://www.santemaghreb.com>
- [15] Bombaci, H. (2008) Childhood Injuries, Their Etiologies, and Preventive Measures. *Acta orthopaedica et traumatologica turcica*, **42**, 166-173. <https://doi.org/10.3944/aott.2008.166>
- [16] Pedrono, G.B. and Thélot, B. (2016) Permanent Survey on Everyday Accidents (EPAC). 2010 Results in Metropolitan France. Institute of Public Health Surveillance, 100.
- [17] Piffer, S., Demonti, S., Ramponi, C., Giustini, M. and Pitidis, A. (2021) Domestic Accidents in the Province of Trento. Ten Years of Observations on Admissions to the Emergency and First aid Department. *Annali di Igiene. Medicina Preventiva e di Comunità*, **33**, 152-162.
- [18] Nordberg, E. (2000) Injuries as a Public Health Problem in Sub-Saharan Africa: Epidemiology and Prospects for Control. *East African Medical Journal*, **77**, S1-S43.