

## Research Article

## Prevalence of Headaches in Children in Schools: The Case of Primary Schools in Libreville

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### Abstract:

**Objective:** To study the prevalence of headaches in schools.

**Patients and methods:** This was a cross-sectional descriptive and analytical study conducted in the ten schools of Libreville, from November 2013 to May 2014. We proceeded by exhaustive recruitment of all the students of the framework, fulfilling the inclusion criteria. We interviewed 5837 school children from 4 to 19 years interviewed and examined children from these schools about

**Results:** The sample consisted of 2076 girls (51.0%) and 2861 boys (49.0%); the sex ratio was 0.96 for girls. Grade 5 students were the most represented. The prevalence of headache was 23.5%; 758 (25.6%) girls were prone to headache compared to 615 (21.5%) boys. The prevalence of headache increased with age, 10.6% at 5 years; 22.5% to 6-10 years; 25.9% to 11-15 years and 30.5% to over 15 years. The cephalalgic students were significantly older, ie  $10 \pm 2.4$  years compared to  $9 \pm 2.5$  years for the healthy students. Absenteeism was the most observed pass-through (68.7%), followed by lack of concentration (34.9%) and repetition (3.1%). Isolated headache accounted for 20.0%, compared to 80.0% of symptomatic headaches with the most commonly found oral lesions. Self-medication was the most common means of management (72.0%), with paracetamol as the molecule of choice (65.4%).

**Conclusion:** Headache is a current symptom that is common and disabling. It constitutes a public health problem and must be investigated and adequately addressed to reduce their negative impact on the student's schooling and social life.

**Keywords:** headache, child, prevalence, school environment

### INTRODUCTION

Headache or cephalalgia refers to any painful perception of part or all of the skulls that may radiate to the face and/or neck [1,2]. They may be primitive or secondary to certain affections. They are a common symptom in the general population but misdiagnosed. Their episodic occurrence and non-contagious nature contribute to their trivialization. According to the World Health Organization (WHO), more than half of all cephalalgia patients in developed countries do not consult a headache, practice self-medication and only a minority of patients have a professional diagnosis [3].

In pediatrics, headache episodes are occasional and harmless. Recurrent headaches are represented by primary headaches. Secondary causes must be sought because of their potential gravity and the need for appropriate management [4]. The International Classification of Headache Disorders (ICHD-III, beta), published in 2013 by the International Headache Society, gives the distribution of headaches in children taking

into account physiology and genetic aspects [5].

Headache is a global problem and is one of the ten most common causes of consultation in the practice of general practice [6]. The suffering they cause affects the quality of life on the social, family and professional level. In developed countries, tension headaches affect two-thirds of men and 80% of women. The considerable loss of productivity and the high cost of care make it a major public health problem [7]. In developing countries, headaches do not have the same priority as communicable diseases that affect people. In children, headaches pose the problem of the diagnostic difficulty and repercussions on school life. Their prevalence increases with age [8] and they are secondary in 77.5% of cases [9].

In Africa and in the world, few studies concern headaches in children in schools. Those performed in Mali and Togo reported results for children over 15 years of age [10, 11]. In Gabon, there are no studies in this sense; hence the

realization of this work on the initiative of the Movement Gospel and Health (MES) to progress in the search for the specificities of this segment of the population. The purpose of this inquiry was to determine the prevalence of headaches in school children, to describe the demographic characteristics of cephalalgic students, to assess the impact of headaches on student education, and to determine etiologies of headaches in children.

## PATIENTS AND METHODS

Our study was conducted in ten schools in the municipality of Libreville located in four of the six districts and governed by the National Directorate of Catholic Education. This is a prospective cross-sectional, descriptive and analytical study that took place over a 6-month period from November 1 to May 1, 2014.

The study population was represented by all students regularly enrolled for the 2013-2014 school year, in the selected institutions. The inclusion criteria were: regularly enrolled in the 2013-2014 school year in one of the institutions concerned; have the parents' prior consent and be able to answer the interviewers' questions. The criteria for non-inclusion were: being absent on the day of the survey and refusing to answer the questions of the investigators. The choice of the sampling was made by the exhaustive recruitment of all the pupils of the institutions constituting the frame. The sample size corresponded to all students meeting the inclusion criteria. The criterion for judgment was that any student who answered "yes" to the question "Are you subject to headaches? Was considered cephalalgic.

The data was collected by MES staff and students from Omar BONGO ONDIMBA University who received training on the subject of the study. Two to three passages per week were made during which students were interviewed and examined. The interview included: family history of headache, pain characteristics (intensity, location, triggers, associated signs, follow-up or management) and the impact of headache on school attendance (lack of concentration, absenteeism, repetition). Anthropometric measurements were made for each student according to WHO recommendations, with weight gain: two electronic and mechanical scales and two toises for size measurement.

The clinical examination involved the examination of various devices, including the ophthalmological sphere with the search for lacrimation. We also looked for hyperemia and the evaluation of visual acuity by optotypes; of the otorhinolaryngological sphere (ENT) with the search for the pain of the ears, throat and the presence of adenitis and the oral sphere. The search for dental pain and the presence of cavities. These spheres were chosen because of their cephalic localization. Headaches were considered isolated when the clinical examination was normal and symptomatic when the examination revealed the involvement of a device. The observed lesion was considered a probable etiology.

The variables studied were for the dependent variable:

headaches and for independent variables: demographic (age and sex), academic (school and class or grade level), and clinical data.

The data was collected and entered using the Epi-Info software version 3.5.1. They were presented as a percentage of the qualitative variables and on average with standard deviation for the quantitative variables. The association between the independent variables and the dependent variable was estimated by the chi-square test or Fisher's test as appropriate. For these tests, a  $p < 0.05$  was considered statistically significant. Confidentiality of the data has been respected as well as anonymity.

## RESULTS

The number of students examined and included during the study period was 5837. More than half of the students were between 6 and 10 years of age (61.0%), with an average of  $9.6 \pm 2$  years, 5 years for extremes of 4 years and 19 years. The sex ratio was 0.96 for girls. Most of the students came from Saint Michel School and were enrolled in grade 5 (Table I). Of the 5837 students selected, 1373 were prone to headache, a prevalence of 23.5%. Among the cephalalgic students, the mean age was  $9.9 \pm 2.4$  years and  $9.5 \pm 2.5$  years in non-headache patients.

Headaches were related to age, class (Table II) and school attended. For the latter, they met more often among the students of Notre Dame des Apôtres schools ( $n = 334$  students or 32.5%) and Sainte Thérèse ( $n = 184$  students, or 31.9%), followed by those of Mount Fort ( $n = 221$ , or 25.9%) and Immaculate Heart ( $n = 139$ , or 25.2%).

Headaches were isolated in 20.0% of cephalalgic students and were associated with most (80.0%) with single or multiple impairments of the devices examined. In isolated headaches, 37.4% ( $n = 103$ ) of cephalalgic students had a family history of which more frequently the female parent and 136 students (49.4%) had no cephalalgic relatives. The clinical features showed that in most cases the pain was diffuse and of moderate intensity; lack of sleep was the triggering factor and the most frequently identified associated sign was phono and/or photophobia. In most cases (91.6%), the students had no medical follow-up, the majority ( $n = 200$ , 72.7%) indicated that medication was used, and more than half used paracetamol for the treatment of their headache (Table III).

The clinical examination of the cephalalgic pupils revealed that visual disturbances were the most recurrent ophthalmological involvement. More than one in ten had adenitis on the ENT examination and in the oral sphere, 40.8% of students complained of dental pain, with dental caries (43.2%), especially in students over 6 years of age and cheek cellulitis (12.8%). Visual disturbances consisted of disturbances in the quality of vision and distance vision. In symptomatic headaches, oral lesions were most frequently found when each device was examined separately. The same finding of predominance was found when the attacks were multiple and affected several devices (Table IV)

The impact of headache on school attendance was dominated by absenteeism. It affected more than half of students (n = 943, or 68.7%) with an average of  $2 \pm 2.4$  days in days of absence, followed by lack of concentration (n = 479, 34.9%) and repetition (n = 43, or 3.1%).

## DISCUSSION

The validity and reliability of the results of our study are due to the selection of the representative sample of the population of Catholic primary schools. The affirmative answer to the question does you have headaches that gave the student the status of cephalalgic did not necessarily reflect the lived reality.

This is a low-level study because of its declarative nature. Classification of different primary headaches according to IHS criteria was not used. The absence of additional examinations limited the diagnosis of secondary headaches reported by default to the presence of attacks on different devices.

The difficulties were academic due to faculty strikes during the study period and the vacation schedule; technical with the transport problems of the investigators; or related to the study by the requirement of several passages in the institutions.

The prevalence rate in our study is lower than that found by Ulla Boussa in 2013 in Gabon [12]. It is comparable to that reported by Bad Rachid in 2006 in Bamako [13]; higher than the rates reported by Belo et al in 2009 in Togo and Ofovwé et al in 2010 in Nigeria which were respectively 11.4% and 19.5% [11,14] and lower than that found by Boubacar in 2009 in Mali [15]. The observed differences could be explained by the size of our sample and the range of age groups from 4 to 19 years old.

The female-related headache exposure factor is found in the literature as in the works of Shivpuri et al. in India [16], Bugdayci et al. in Turkey [17] and Mohammed et al. in Qatar [18]. This specificity can be explained by the hypothesis of the involvement of hormonal factors in the genesis of headaches.

The association of headaches with age is found by other authors such as Lateef et al. [19], Rho et al. [20] or Karli et al. [21] who show a prevalence of headaches increasing with age. This result may be due to the immaturity of young people who have difficulty describing their symptom and the number of activities whose rate increases with age. The association of school level with headache could not be compared with the results of other authors. This relationship we report could be related to the workload of the class. In the 3rd year, the old programs were paired, forcing the students to perform more intellectually for their assimilation. Also, the high prevalence observed in some schools could be related to the large size of these schools and the presence of older students. The low prevalence can be explained by the teachers' strike during the recruitment period resulting in a significant absenteeism rate.

The high prevalence of symptomatic headaches is contrary to the result found by Belo et al. [11]. Our results are comparable

to those reported by Poyraglu et al. [22] who showed 21.0% of primary headaches and a predominance of secondary headaches.

The rate about the presence of family history in cephalalgic students is lower than that reported by Maïga et al. [10] which was 78.0%, and that of Siddiqui [23] with 52.2% noted a predominance of a female parent.

Diffuse localization has been described in lower proportions than ours by the work of Maïga et al. [10], while Cuvellier et al. [24] found a bilateral location in 78.1% of cephalalgic students. This difference can be explained by larger age groups and the volume of our sample.

The value of pain intensity in Azharul et al. [25] was found close to our results; while in the study by Cvetkovic et al. [26], the intensity of headaches was moderate for the majority of students. The triggers for cephalalgia in cephalalgic students were the same as those found by other authors but at varying frequencies. Azharul et al. [25] found in Bangladesh a predominance of sunshine and noise; sleeping disorders occupy the fifth row. Bessisso Mohammed et al. [18] noted lack of sleep as the second triggering factor. These results can be explained by the length of classes that last throughout the day, preventing an afternoon nap. On the other hand, students have the habit of returning from school to watch television and revise their classes for the next day late at night.

The predominance of phono and / or photophobia has been found by several authors [10, 23, 26] confirming our results.

Observations that most cephalalgic students were not followed by a doctor and practiced self-medication are reported by other authors [23, 25]. These results corroborate the trivialization of headaches and the extent of self-medication as they are usually felt.

The use of paracetamol as first-line treatment for headache episodes is reported by Siddiqui et al. [23] and by Azharul et al. [25]. In our environment, this product is available over the counter in conventional pharmacies.

The importance of visual disturbances could be related to the inadequacy of the child's post-natal medical care, the lack of respect for the distance to the television screens and the strong sunshine of the city.

Adenitis was considered to be an ENT problem because of the presence of cervical lymphadenopathy in the ears and throat. The frequency of otalgia could be due to the lack of auricular hygiene illustrated by the presence of wax plug or related to consequences of microtrauma. The high rate of oral involvement may be due to poor parental monitoring of oral hygiene, dietary imbalances or excessive consumption of sweets. This finding is confirmed by the frequency of involvement of the oral cavity in secondary headaches.

The impact of headaches on the school life of cephalalgic students with high absenteeism rates has been confirmed by other studies [10, 11, 27] showing productivity and academic

performance.

## CONCLUSION

Childhood headaches in schools are a public health problem. They are associated with the female sex and their prevalence increases with age. They lead to a decline in the pupil's productivity and academic performance, increasing the failure rate.

The student's headaches can be debilitating, and special emphasis should be placed on modifiable triggers.

Their etiologies must be sought systematically reducing the use of self-medication. The epidemiology of headaches in children, especially in schools, must be well known to allow an optimal clinical and therapeutic approach.\*

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