

## Pediatric Ophthalmic Diagnoses at the Yaounde Central Hospital

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### Abstract

**Background:** Ophthalmic disorders in children can seriously impact development, vision, education and quality of life. The aim of this study was to determine the pattern of ophthalmic diagnoses of children seen at the Yaoundé Central Hospital.

**Methods:** A prospective descriptive study was carried out over a 3 months period (February 2 to April 30 2016). Children aged 0 to 15 years, were included after informed consent was obtained from their parents. Variables studied include age, sex, presenting complaint, visual acuity (in school aged children) and the diagnosis. Blindness was defined as corrected distant visual acuity of  $<1/20$ .

**Results:** During the study period, 393 children were seen. We included 301 in this study, amongst whom 153 (50.8%) girls and 148 (49.2%) boys. The mean age was  $7.8 \pm 4.2$  years. The most frequent presenting complaints were pruritus (12.8%), pain (11.3%) and decreased visual acuity (10.7%). Refractive errors (40.2%), conjunctivitis (33.9%) and strabismus (8.6%) were the most frequent diagnoses. Monocular blindness was present in 2.3% of cases ( $n=7$ ).

**Conclusion:** Refractive error was the most frequent childhood ophthalmic diagnosis in this study. We recommend the putting in place of school-based screening programs.

**Keywords:** Ophthalmic diseases, children, blindness, Yaoundé

children aged 0 to 15 years seen in a tertiary hospital in Cameroon.

### Introduction

Pediatric ophthalmic diseases may impact education, development and quality of life. Some, if left untreated can lead to blindness. Childhood blindness is one of the priorities in Vision 2020: the right to sight. The prevalence of blindness in children varies from approximately 0.3/1000 children in wealthy regions of the world, to 1.2/1000 in the poorer regions [1]. The causes of blindness vary from region to region. In developed countries, lesions of the optic nerve and higher visual pathways predominate, while corneal scarring is the main cause of blindness in developing countries [1-4].

Knowledge on the distribution of pediatric ophthalmic pathologies will enable better planning of pediatric ophthalmology services and better implement strategies to fight against childhood blindness. The distribution of ophthalmic pathologies varies with age groups. Two studies in different pediatric age groups (0-5 years and 6-15 years) have been done in our setting [5,6]. The aim of our study was to describe the spectrum of pediatric ophthalmic conditions in

### Patients and Methods

A prospective descriptive study was carried out at the ophthalmic unit of the Yaoundé Central Hospital over a 3 months period (February 2 to April 30 2016). Our study was reviewed and approved by the Institutional Ethical Committee on the Research for Human Health of the Faculty of Medicine and Pharmaceutical Sciences - University of Douala. Sampling was consecutive and all children aged 0 to 15 years who came for consultation during the study period were included after written informed consent from the parents.

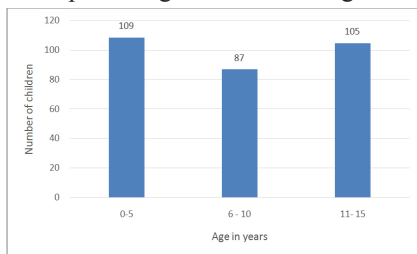
Patients underwent ophthalmic examination that comprised measuring uncorrected distant visual acuity in verbal children, evaluation visual behaviors in preverbal children, oculomotor examination, slit lamp examination, cycloplegic refraction when necessary, and funduscopy. Cycloplegia was obtained by alternatively instilling one drop of cyclopentolate 0.5% and one drop of tropicamide 0.5% at intervals of 5 minutes for a total of three drops per cycloplegic agent. Refraction was measured 20-30

minutes after the last drop. Cycloplegia in patients was achieved after administering atropine eye drops (0.3%, 0.5% or 1% according to age) twice daily for 7 days. Further investigations were conducted when necessary to elicit a diagnosis, and management commenced accordingly. Blindness was defined as corrected distant visual acuity of <1/20. Variables studied include age at presentation, sex, presenting complaint, visual acuity (in school-aged children) and the clinical diagnosis.

Data analysis was done using SPSS 20.0 (IBM Corporation, Armonk, NY, USA) and Office Excel 2013 (Microsoft Corporation, Redmond, WA, USA). Chi square test was used to compare proportions and threshold for statistical significance was set at  $p < 0.05$ .

## Results

During the study period, 393 children were seen. We included 301 in this study, amongst whom 153 (50.8%) girls and 148 (49.2%) boys. The mean age was  $7.8 \pm 4.2$  years. Children aged 0 to 5 years were the most represented (36.2%). The distribution of the study population with respect to age is shown in Figure 1.



**Figure 1:** Distribution of the study population with respect to age

The most frequent presenting complaints were pruritus (12.8%), ocular pain (11.3%) and decreased visual acuity (10.7%). Overall, refractive errors (40.2%), conjunctivitis (33.9%) and strabismus (8.6%) were the most frequent diagnoses (Table 1). The prevalence of refractive errors was 78.7% ( $n=85/105$ ) amongst children aged 11-15 years. The difference between the prevalence in this age group and those of the other age groups was statistically significant. There was also a statistically significant difference in the prevalence of conjunctivitis and strabismus between the different age groups. They were highest amongst the 0-5 years age group (Table 2). Allergic conjunctivitis accounted for 74.6% of cases of conjunctivitis ( $n=76/102$ ), with vernal kerato-conjunctivitis being the most frequent form ( $n=46$ ).

**Table 1: Spectrum of diagnoses recorded**

Diagnoses	Number (n)	Percentage (%)
Refractive error	121	40.2
Conjunctivitis	102	33.9
Strabismus	26	8.6
Trauma	14	4.6
Blepharitis	5	1.7
Glaucoma	4	1.3
Chalazion	4	1.3
Congenital lacrimal duct obstruction	3	1
Orbital cellulitis	3	1
Retinoblastoma	3	1
Uveitis	3	1

Post traumatic optic neuropathy	3	1
Keratitis	2	0.7
Congenital cataract	2	0.7
Others	6	2.0
Total	301	100

**Table 2: Prevalence of refractive error, conjunctivitis and strabismus in the various age groups**

	0-5 years (n=109)		6-10 years (n=87)		11-15 years (n=105)		p
	n	%	n	%	n	%	
Refractive error (n=121)	6	5.5	30	34.5	85	78.7	<0.00001
Conjunctivitis (n=102)	59	54.1	30	34.5	13	12.4	<0.00001
Strabismus (n=26)	17	15.6	5	5.7	4	3.8	0.0047

Trauma accounted for 4.6 of cases ( $n=14$ ). Amongst these, were 8 cases of contusion and 6 cases of penetrating globe injury.

Monocular blindness was present in 2.3% of cases ( $n=7$ ). Causes of blindness were post traumatic optic neuropathy ( $n=2$ ), retinoblastoma ( $n=2$ ), congenital cataract ( $n=2$ ) and retinal detachment ( $n=1$ ). No case of binocular blindness was seen.

## Discussion

Different age groups were equally represented in this study. Onakpoya, *et al.* in Nigeria reported a higher frequency of consultations in older children [7]. They explained this by the greater ability of being more articulate in older children and the chronicity of some pathologies. The absence of a significant difference in the age group distribution in this study is probably due to the fact that complaints can originate either from the child, the parents, the primary care physician, or teachers [8].

Pruritus was the most common presenting complaint, due to the preponderance of allergic conjunctivitis. This is similar to the findings of Adenome, *et al.* in Niger where the most common pathology was allergic conjunctivitis [9]. Ocular pain and decreased visual acuity were the 2<sup>nd</sup> and 3<sup>rd</sup> most common symptoms respectively. Eballo, *et al.* reported decreased visual acuity, pruritus and pain as the three most common symptoms in children aged 6 to 15 years [6].

The most common pediatric ophthalmic disorders in this study were refractive errors, conjunctivitis and strabismus. Banayot reported a similar finding in Palestine [10]. Refractive error has been reported as the most common childhood ocular morbidity by several authors [10-13]. Uncorrected refractive error is the leading cause of vision impairment and the second leading cause of blindness worldwide [14]. It is a risk factor for poor school performance. In the absence of regular preschool or school eye-screening for refractive errors in our setting, many children with refractive errors go unnoticed. In this hospital-based study, there is a risk of underestimating the magnitude as only children with obvious complaints are brought to hospital. This could also explain why the prevalence was highest amongst the 11-15 years age group.

Conjunctivitis was the second most frequent diagnosis. Similar

findings were reported by other others [10,11,13,15]. In some studies, conjunctivitis, especially allergic conjunctivitis was the most frequent diagnosis [5,9,16]. Communities with a dusty environment may present higher prevalence of allergic conjunctivitis. Epee, *et al.* in a study on vernal kerato-conjunctivitis in children, reported dust and exposure to sun as risk factors [17].

Strabismus was the third most frequent diagnosis in this study. In studies cited above, it was not amongst the most frequent pathologies. With the presence of a specialized team in the management of strabismus, our unit serves as a referral center. Darraj, *et al.* in Saudi Arabia reported strabismus as being the most common eye disease in children [18]. This is a rare finding and may be linked to genetics [19,20]. Ebana, *et al.* reported that 28.7% of strabismus cases had a family history of strabismus [21]. Resultant amblyopia in the deviating eye can lead to visual impairment. Initiating school screening can help in early diagnosis. Amblyopia can hence be prevented or treated.

Trauma was the 4<sup>th</sup> most common diagnosis. Other studies report trauma as the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> most common cause of ocular morbidity in children [7,12,16,18,22]. Eye injuries remain a major cause of unilateral visual impairment worldwide [23]. Managing childhood eye injuries is challenging due to late presentation and to lack of facilities such as general anesthesia in remote areas. Health education for the prevention of childhood eye injuries, as well as early presentation of children to eye care centers should be given to parents and guardians.

There were 4 cases of glaucoma and 2 cases of congenital cataract. These are blinding conditions and early management is required as well as post-operative management for amblyopia.

## Conclusion

Refractive errors, conjunctivitis and strabismus were the most frequent diagnoses in children aged 0 to 15 at the Yaounde Central Hospital. There is need to improve existing refractive services to manage these children and also to do school screening.

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