

# PREVALENCE OF COMMON VISUAL PROBLEMS AMONG PRIMARY SCHOOL CHILDREN IN CALABAR MUNICIPALITY, NIGERIA

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## ABSTRACT

A study to determine the prevalence, types and degree of severity of ametropia, hyperopia, myopia and astigmatism among 956 primary school children from 10 selected schools in Calabar, Nigeria was conducted. Pre-tested questionnaires were administered by two ophthalmic nurses. Penlight examination, Hirschberg's test, funduscopy with a direct ophthalmoscope without and when necessary, with pupillary dilation were performed by one optometrist. All subjects whose visual acuity were less than 6/6 in any eye, all who have at one time in their lives been given corrective glasses for error of refraction were refracted. When all cases of ametropia were considered, a prevalence of 14.9% was found. Hypermetropia predominated (7.8%), followed by myopia (3.6%) and astigmatism (3.5%). Ninety percent of the children with vision less than 6/6 in any eye could have their vision improved by refractive complication and disability. A total of 62.4% of these children with visual disability could have their functional vision in class improved without glasses by being moved to the front row in class.

**KeyWords:** Ametropia, Primary School Children, Calabar, Nigeria

## INTRODUCTION

Scapero defines vision as the special sense by which objects, their form, colour, position and other attributes in the external environment are perceived, the exciting stimulus being light from the objects striking the retina of the eye<sup>1</sup>.

It is estimated that about one million functionally blind children in developing countries have their low vision corrected by simple pair of glasses<sup>2</sup>. The advantages of improving vision for children are tremendous.

Good vision is well recognised as essential aids for learning<sup>3</sup>. Visual disabilities, especially error of refraction are very important in children, perhaps more than in any other group. Regrettably, baseline data on the prevalence and types of error of refraction among Nigerian school children are not available for many states of the

country. However, few studies on this subject have been reported in the country<sup>4,6</sup>. A study of ametropia in 850 new patients attending the eye clinic of the University of Calabar Teaching Hospital showed a prevalence of 79.5%.

A study in Scotland showed that ametropia was the second commonest cause of morbidity among school entrants and the commonest cause of morbidity among school children. This report seeks to provide information on the magnitude, types and the degree of severity of ametropia among primary school children in Calabar, Cross River State of Nigeria

## SUBJECT AND METHODS

A complete list of primary schools in Calabar Municipality, Cross River State was obtained. This sampling frame was stratified into public (government) and private (non-

government) schools. Schools were randomly selected to represent each strata. Headmasters of selected primary schools were approached and their consent obtained. A detailed explanation of the purpose and content of the study was given to them. The design of this study as a cross sectional survey involving one screening of primary school children aged 5-12 years who were pupils in these schools were used in the study as their names appeared in the school register.

Using a pre-tested and standardised protocol, interviews were conducted in the local language by two trained interviewers. Data obtained include name, school, class, age, row in class and gender. Questions asked during the interview included the following:

- (a) Are you able to see what is written in the blackboard from your seat in class?  
Where the answer was 'no', they were further asked if they had reported this to their parents or to any eye care personnel.
- (b) They were also asked if glasses have been prescribed for them and if they were using them. If not using prescribed glasses they were asked why.

Visual acuity was conducted by two ophthalmic nurses using Standard Snellen's Chart at 6 meters. Subjects who were already using glasses were examined without and with their glasses. Each eye was tested separately. Subjects whose visual acuity was less than 6/6 in any eye or who already used any form of refractive correction were then subjected to optometric review. This included history, Hirschberg's test, cover test, penlight examination of the anterior segment and fundoscopy. All examinations were carried out by one optometrist. These subjects were refracted by one optometrist. Errors of refraction were classified as mild, moderate and severe. An error was termed mild if it is less than one diopter. Error at one diopter or more but less than three diopters was classified as moderate. Any error three diopters or more was classified as severe.

## RESULTS

A total of 956 primary school children from selected schools. 5 public (government) and 5

private (non-governmental) were seen, screened and examined for common visual problems prevalent among primary school pupils in Calabar Municipality. Out of 956 pupils in the study, 496 (52%) were in public schools, while 460 (48%) were in private schools. The males were 487 (51%), while the females were 469 (49%).

Table 1 shows the type of eye defects identified. The female to male ratio of the common visual problems in selected public schools was 1:1.09 (118:129), whereas in selected private schools it was 1:0.85 (136:115). Some of the subjects with mild error on Table 1 had moderate to severe error in the second eye. That is some of them have anisometropic defects.

Error of refraction was a common ocular problem with a prevalence of 14.9%. It was responsible for 76.2% of total ocular morbidity, while conjunctivitis was responsible for 10.6% of ocular morbidity.

Out of 148 pupils who had errors of refraction, 75 (52.8%) had hyperopia, 34 (24%) had myopia while 33 (23%) had astigmatism. When all the errors of refraction were put together, 94 (66%) out of 142 were mild, 34 (24%) were moderate while 14 (10%) were severe.

Further statistical design to test the hypothesis that sex was not associated with common visual problems of pupils selected from primary schools in Calabar showed that sex influenced visual problems ( $P < 0.05$ ). It was further tested if the difference between the proportion of common visual problems in males and females in the selected public and private primary schools were statistically significant ( $P < 0.05$ ).

It was observed that the females were more affected than males in the ratio of 1:0.73 and that females developed these problems earlier in life.

## DISCUSSION

Yoloye<sup>2</sup> in a study of a comparable population of primary school children in Ibadan, Oyo State of Nigeria found that the prevalence of hypermetropia was 4.2%, myopia 2.9% and astigmatism 1.8%. Also Nkanga (1998) in a

**TABLE 1: DISTRIBUTION OF AMETROPIC EYE TYPE AND SEVERITY AMONG SELECTED PRIVATE AND PUBLIC PRIMARY SCHOOLS, CALABAR MUNICIPALITY, MARCH 2000**

## AMETROPIC EYE TYPE

SEVERITY	HYPEROPIA	MYOPIA	ASTIGMATISM	TOTAL (%)
MILD	60	16	18	94(66)
MODERATE	12	10	12	34(24)
SEVERE	3	8	3	14(10)
TOTAL	75	34	33	142
%	53.0	24.0	23.0	100

similar study of comparable population of primary school children in Enugu, Nigeria found that the prevalence of hypermetropia predominated 3.9% followed by myopia 1.8% and astigmatism 1.7%. When all cases of ametropia were considered a prevalence of 7.44% was found. Hypermetropia predominated in both studies. Their results were similar to ours. The prevalence of common visual problems among primary school children in selected schools in Calabar Municipality, Cross River State of Nigeria were hypermetropia 7.8%, myopia 3.6% and astigmatism 3.5%. When all cases of ametropia were considered, the prevalence of 14.9% was found. These are expected for these age group because at birth and during pre-school years almost all eyes are hypermetropic.

The prevalence of myopia in this study is high when compared with those of Yoloye (1980) and Nkanga (1998). However our findings are comparable to other reports from Nigeria and parts of sub-Saharan Africa. (Ar-Shalom, 1980) Despite its low prevalence, myopia in this age group should not be ignored. It tends to present sufficient impairment of vision which could affect the child's ability to see what is written on the chalk board in the classroom. With normal growth of the eye, this condition tends to progress resulting in worsening vision unless corrected.

In this study, there is a slight female preponderance among subjects of ametropia.

Yoloye in Ibadan had reported female preponderance as well as Nkanga in Enugu, Nigeria. These seem to be the generally observed trend. Very few studies give different results like Tansirikongkoi<sup>10</sup> in his survey of visual function among primary school children in which the reverse was the case. The rapid growth spurt at about puberty may be important. A large number of children tend to become more myopic at about that age of 11. Since girls reach puberty earlier between 11-12 years than boys between ages 12 years and above. It would seem reasonable that females tend to have more error of refraction, especially myopia than males since they reach puberty earlier than boys.

The findings in this study suggest that there is more ametropia among private primary school pupils than public primary school children. Incidence of ametropia has been linked to social class such as degree of urbanisation and level of economic development and place of residence. (Wangaspa, 1982).

However, more community based surveys of children for error of refraction should be done before one can say that ametropia is more in private than in public primary schools in Calabar. There may be as many children with error of refraction who drop out of school in public schools as there are in private schools. The low prevalence of error of refraction in public schools in this study, could occur because public school

children even for their ametropia have been denied education because of incessant closure of schools and strike by their teachers so they do not have to disturb their eyes by reading regularly.

This study has also shown that there is a high prevalence of error of refraction among primary school children in Calabar Municipality. While these problems are amenable to treatment and refractive correction, children with these visual problems do not present themselves for care. The positive effect of moving a child with error of refraction from the back seat to a front seat should not be underestimated. Nearly 70% of the children with error of refraction could benefit from such cost free school health programme as occasional visual screening among primary school children in order to detect those of them that have refractive error.

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