

# SOCIO-ECONOMIC BACKGROUND AND PREVALENCE OF VISUAL DEFECTS AMONGST STUDENTS IN PUBLIC AND PRIVATE SECONDARY SCHOOLS IN CALABAR MUNICIPALITY, CROSS RIVER STATE, NIGERIA

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## ABSTRACT

The thrust of this study is to examine the socio-economic background and prevalence of visual defects among students in public and private secondary schools in Calabar municipality in Cross River State. The main objective of the study is to screen for and present information on the prevalence of visual defects amongst the students in public and private secondary school in Calabar Municipality with reference to socio-economic background of their parents. The design of the study was a cross sectional survey involving one time screening of secondary school students aged 10- 19 years. The multi stage sampling was used. A random sample of 938 students was drawn from a population of 9380 secondary school students enrolled in ten public and private secondary schools in Calabar Municipality. Four hypotheses were formulated and tested using the chi-square ( $X^2$ ) with a test of significant at 0.05 level. Finding showed that visual defects viz hyperopia, myopia and astigmatism suffered by students in public and private secondary schools in Calabar Municipality is not dependent on the socioeconomic background of their parents. Furthermore the study revealed that myopia has a prevalence of 41% followed by hyperopia with 31% and astigmatism with 28%. Also, students from families with university background has more prevalence from agricultural families. The females suffer more ametropia than their male counterparts. Those with visual defects were given appropriate lenses to alleviate their problems. More visual defects were found among private secondary school students than in public schools. To avoid visual defects, there are two possibilities, the visual performance level can be increased by proper optometric services and the individual can restrict his/her vision environment and thereby decrease environment demand.

**KEYWORDS:** Socio-economic, visual defects, Ametropia, secondary school students; Calabar Municipality.

## INTRODUCTION

Vision can be defined as the special sense by which objects, their form, colour and position in the external environment are perceived, the exciting stimulus being light from the objects striking the retina of the eye (Schapero, 2004). Normal vision also known as emmetropia has been defined as an eye so constructed that parallel rays of light come to a focus in the retina without any effort of accommodation. Thoring (2008). Any individual whose vision did not correspond to any of the definitions above constitutes visual defect. Vision is the dominant function in all the actions of the organism in relation to its space world.

There are two assumptions regarding visual defects commonly encountered, they are that all visual defects are problems of acuity, defined as the power to see clearly and to discriminate the contour and details of an object. The second one is that when the refractive error is corrected all visual defects must cease. Zoethout

(2008). John (2010) reported that visual defect is caused by erroneous visual behavior that arises from the stresses imposed upon man because of the socially compulsive near centred task. A visual defect is a decrement in visual performance which is not acceptable to the patient or to his socio-economic environment (Alwell, 2009). Where there are two subjects with the same visual measurements, one working in an environment with limited demand and the other in an environment of intensive demand, the former would not have a visual defect while the later would have a visual defect. Thus, measurement by itself is not sufficient for the diagnosis of a visual defect. A careful and complete case history must be taken in order to determine the environmental demand factor. It is for this reason that we frequently will have a subject with grotesque distortions in his visual measurements who will have no subjective complaints, another individual with sight deviation from the normal measurements will have serious complaints. A visual defect cannot exist in

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isolation it can only be measured in relationship to the environmental demand (Joe, 2008).

Near point tasks do not create visual defects because of the risk distance. It is not the increased muscle effort at this near distance that is imposing stresses upon accommodation and convergence. Near point tasks have become synonymous with the existence of visual defects. It is the continuous concentration within a restricted area of movement, a two-dimensional plane that creates visual affects at near points. When the same conditions exist at some other distance, 'we will have visual defects arise from that activity. (Nelly 2010). For example many patients became aware of unsatisfactory achievement when they start watching television. What causes one individual to give one type of response and another individual of the same age to give an atypical response depends upon many factors which include heredity, growth, diet, previous infection, injury, emotional and environmental demand — intensity of demand, area of concentration, intensity of illumination, contrast and body pressure required (Tom, 2012).

## MATERIALS AND METHODS

This study is a cross-sectional survey involving a structured questionnaire and a one-time vision screening of secondary school student age between 10 and 19 year in Calabar Municipality. The research population was made up to nine thousand three hundred and eighty secondary school students registered in ten selected public and private schools in Calabar Municipality during the 2011/2012 academic session.

The population sampled' was divided into well defined sub-groups or strata of 10, that is 5 public and 5

private secondary school. Public school were zoned A, B, C, D and F and similarly, five private school were zoned the same. The systematic sampling method in a series of stages known as multi-stage sampling was used since the sampling fraction was 1 in 10, the students that were included in the sample were systematically selected through the register compiled from the school enrolment register. Ten pieces of paper were number 1-10 and after wrapped and put in a basket and shaken. If one was picked and that one happened to be 4, so from the register as the starting number was 4, the following number were picked systematically 14, 24, 34, 44...n and the students who had these numbers were clinked in the sample of 938 then they were grouped by school type, age in years between 10 and 19 years old as well as by sex, male and female.

## RESULTS

Table 1 shows the distribution of error of refraction among students of public and private secondary schools in Calabar Municipality. Out of 246 students from private schools, 103 (23.3%) had myopia, 75 (16.9%) hyperopia and 68 (15.5%) had astigmatism. Of the 197 students from public secondary schools, the distribution of errors of refraction were as follows 77 (17.4%) had myopia, 62 (14.0) had hyperopia and 58 (13.1%) had astigmatism. Generally, there are more students in private secondary schools with refractive errors than those in public (government) schools. This may be due to the fact that students from private secondary schools do more intensive studies and have access to good health facility are ability to attend good hospitals than their counterparts from public schools.

**Table 1:** Distribution of errors of refraction among students of private and publics secondary schools in Calabar Municipality.

Error of refraction	Private schools No. (%)	Public schools No. (%)
Myopia	103 (23.3)	77 (17.4)
Hyperopia	75 (16.9)	62 (14.0)
Astigmatism	68 (15.3)	58 (13.1)
Total	246 (55.5)	197 (44.5).

**Table 2:** shows the socio-economic background and prevalence of ametropia among students in public and private secondary schools in Calabar Municipality.

Socio-economic background	Myopia	Hyperopia	Astigmatism	Total (%)
Low	79	64	57	200 (45.1)
High	101	73	69	243 (54.9)
Total	180	137	126	443 (100)
%	40.6	30.9	28.5	100

**Table 3:** shows the distribution of ametropia by type and severity among private and public secondary school students in Calabar Municipality.

severity	Myopia	Hyperopia	Astigmatism	Total (%)
Mild	91	45	47	183 (41.3)
Moderate	54	52	44	150 (33.9)
Severe	35	40	35	110 (24.8)
Total	180	137	126	443
%	41.0	31.0	28.0	100

## DISCUSSION

A total of 443 students underwent further examination out of 938 referred. From the data obtained and analyzed the prevalence of visual defects amongst students in public and private secondary schools in Calabar Municipality, Cross River State of Nigeria were myopia 41%, hyperopia 31% and astigmatism 28%. It was discovered that socio-economic background of parents do influence the prevalence of myopia, hyperopia and astigmatism among secondary school student in Calabar Municipality. Furthermore, it was observed that students from high socio-economic background suffer more of the ametropia than their counterpart from low socioeconomic background.

Kent et al (2009) measuring 1082 unselected samples of secondary school students from 11 to 16 years old found the same as ours. It was discovered that female students suffer from ametropia than their male counterparts. Since female students reach puberty earlier than boys, it would be seen reasonable that they tend to have more ametropia especially myopia than male students. This agrees with similar findings by Joe (2008). Again, it was found out that socio-economic background and students age influences the prevalence of hyperopia, myopia and astigmatism. From the data collated it was discovered that students between the ages of 10 to 13 years suffer more ametropia than their counterparts from 14 years and above. This agrees with

similar findings of Wasa et al (2011), Leo et al (2010). The findings in this study suggested that there were more students with ametropia (myopia, hyperopia and astigmatism) among the private secondary school students than their counterparts in public secondary school. Prevalence of ametropia has been linked to social class such as degree of urbanization and level of economic development of place of residence. This collaborated with the finding of David (2012). A possible explanation is that students of higher socio-economic background tend to grow taller and heavier.

Furthermore, it was observed that students from private secondary schools who belong to higher socio-economic background suffer more ametropia than the counterparts from public secondary schools. These may be attributed to the fact that students from high socio-economic background have access to good medical facilities and early diagnosis as their parents take them for routine medical check and treatment. David (2012).

Students of the university family have more prevalence of ametropia than among the students of agricultural families and the two groups were not identical socio-economically. This corresponds with Samuel (2011) who compared refraction of secondary school student six areas and found a higher prevalence of ametropia among university students families than that found in their relatives.

Benard (2011) who surveyed ametropia in severed secondary school students and found sufficient

difference to indicate an association with socio-economic background. The cultural and environmental difference associated with the prevalence of ametropia could be due to the simple fact that students of better economic status are more likely to be referred for more attention. In England, economic and nutritional factors were of influence on ametropia Theo (2011).

It was also found out that students with high socio-economic background patronize orthodox medication while their counterpart from low socio-economic background depend on traditional medicine Nelly (2005). This agrees with rivers conceptual model which says that the highly educated and enlightened citizens are inclined to, and are dependent on the services of orthodox medicine as a form of therapeutic measures for the treatment of their sickness and diseases.

## CONCLUSION

Having reviewed the finding of this study, the researchers have made these major conclusion; that the prevalence of visual defects amongst students in public and private secondary schools in Calabar Municipality, Cross River State of Nigeria shows myopia 41%, hyperopia 31% and astigmatism 28%.

Secondary, students from private secondary schools suffer more of ametropia than their counterparts from public schools. Also students from high socio-economic background were more affected in termed of ametropia, than their counterpart from low socioeconomic background.

The cultural and environmental differences associated with the prevalence of ametropia could be due to the simple fact that children of better socio-economic status would be more likely to be referred for attention.

In conclusion, no generally effective method at halting ametropia progression has been proved to exist although number of ways seem to apply to different conditions. Often myopia can be predicted for a child even though he does not yet have it at the time he enters school. Correction of the visual loss has been shown to have no effect on myopia progression

## RECOMMENDATION

- a) The individual can restricts his/her visual environment and thereby decrease environmental demand.
- b) Visual performance level can be increased by proper optometric services.

It is the first group which offers the greater challenge to the profession. They are the failures the retarded readers, the visually inefficient and the behavior problem student.

Visual health education should reach parents and teachers especially with information on the eye health, prevalent and common visual defects among secondary school students. It should be of interest to obtain regular professional attention for students with visual defects whenever the parents/teachers notice any abnormality in the school children's eyes. Other factors that will aid to avoid visual defects like myopia, hyperopia and astigmatism include.

- 1) Avoidance of improper lighting condition and reading small points.
- 2) Maintenance of the general health and vitality.
- 3) Regulation of appropriate posture when reading
- 4) Limitation of the time spent doing close work.

Obviously this study is not exhaustive at finding the socioeconomic background and prevalence of visual defects amongst students in public and private secondary schools in Calabar Municipality, Cross River State, Nigeria due to limited time available for this study. Parents and teachers are advised to report to an eye doctor (Optometrist or ophthalmologist) whenever any abnormality is discovered in a students eye especially if the student is not seeing what is written on the white board or if the student finds it difficult to read at near distance for a long time. Parents and teachers should arrange for periodic visual screening on the secondary school students to identify any of them with visual defect so that appropriate attention can be taken.

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