

## REFRACTIVE ERRORS IN MAIDUGURI

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## INTRODUCTION

Refractive errors are a known cause of visual impairment and blindness worldwide<sup>1</sup>. Out of 611 conditions (infectious, dystrophic, metabolic, perceptual, etc) that have a negative effect (harmful, unpleasant, and/or interfering with a normal life), "refractive eye disorders" rank number 7, with an overall prevalence of 44.1%<sup>2</sup>. Refractive errors constitute significant proportion of blindness and visual impairment through out the world<sup>3</sup>. The estimated number of people world wide with refractive errors range from 800 million to 2.3 billion<sup>1</sup>. Although Vision 2020 (the current world health organization global initiative on prevention of blindness) imposes a mandate to correct refractive errors, little infrastructure and few resources and almost non existent data are available to accomplish the task of correcting refractive errors<sup>1</sup>. Fortunately blindness and visual impairment attributable to refractive errors can be successfully corrected with relatively easy procedures and cheap appliances. However accurate data on prevalence and types of refractive errors is mandatory for any location where correction of refractive errors is to be provided. To the best of our knowledge no such data exist in this location.

## METHODOLOGY

All ophthalmic patients coming to the University Of Maiduguri Teaching Hospital are referred to the ophthalmology clinic. In the clinic patients whose visual acuity were less than 6/9 on the snellens test type or illiterate 'E' chart were given the pin hole to retake the visual acuity. All those whose visual acuity improved with the pin-hole test were sent to the optometrist to have their refraction done. A register was kept at the optometrist office where all records on patients refracted were entered. The information recorded includes age, sex, diagnosis and the refractive errors for right and left eyes in diopters. Myopia was defined as -0.50 diopters or more, and hypermetropia was defined as +0.50 diopters or more in each principal meridian while astigmatism was defined as at least a 0.50 difference between the two principal meridians. The records entered for the period January, 2006 to December, 2006 were then analyzed.

## ABSTRACT

**Objective:** To determine the prevalence and types of refractive errors in University of Maiduguri Teaching Hospital, Northeastern Nigeria.

**Design:** A retrospective study of patients with refractive errors seen at the eye clinic, University of Maiduguri Teaching Hospital from January, 2006 to December, 2006.

**Results:** A total of 388 patients had a non cycloplegic refraction. There were 186 males and 202 females (MF: 1:1.1). The most frequent age group was 31-40 years constituting 27.8% while age groups 21-30 and 41-50 constituted 21.1% and 20.15% respectively. Myopia was seen in 82(21.1%), Hypermetropia 18(4.7%) while astigmatism and presbyopia were seen in 89 (22.9%) and 199 (51.3%), respectively.

**Conclusion:** The prevalence and types of refractive errors seen in Maiduguri are similar to those seen in the other parts of the country.

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**Keyword:** Refractive errors, Maiduguri, Nigeria.

## RESULTS

There were a total of 1222 patients seen at the Eye Clinic, University Of Maiduguri Teaching Hospital, between January, and December, 2006. Of these, 388 (31.8%) patients had refractive errors. There were 186 males and 202 females (MF: 1:1.1). The age groups 0-10 years constituted 5.2% of the patients while there were only 6 (1.5%) above the age of 70 years. The most frequent age group was 31-40 with 108 (27.8%) patients. Table 1 shows the age distribution of the patients. Presbyopia was seen in 199(51.3%) patients. Of the 199 presbyopic seen, 101(50.8%) had plano addition while, 98 (49.2%) had power addition. Myopia, hypermetropia and astigmatism were seen in 21.1%, 4.7% and 22.9%, respectively. Among the 82 myopes seen 70(85.4%) had (-0.25 to -3.00 DS) myopia while high (>-5.00DS) myopia was observed in 4(4.9%). Table 2 shows distribution of refractive errors among 388 patients.

**Table 1.** Age distribution of 388 refractive error patients

Age in years	Number of patients (%)
0-10	20(5%)
11-20	34(8%)
21-30	82(21%)
31-40	108(28%)
41-50	78(20%)
51-60	46(12%)
61-70	14(4%)
> 70	6(2%)
<b>Total</b>	<b>388(100%)</b>

**Table 2.** Distribution of refractive errors in 388 patients

Type of refractive errors	Number of patients (%)
Myopia	82(21%)
Hypermetropia	18(5%)
Astigmatism	89(23%)
Presbyopia	199(51%)
<b>Total</b>	<b>388(100%)</b>

## DISCUSSION

Refractive errors constitute significant number of blindness and visual impairment through out the world. The prevalence of refractive errors in the literature is conflicting, mainly regarding myopia and hypermetropia. Tebepa<sup>2</sup> reported 26% prevalence of refractive errors in Port Harcourt an oil producing rural community, where most of patients were presbyopic. Ayed *et al*, in a study on the epidemiologic study of refractive errors in school children in socioeconomically deprived regions in Tunisia found 57.2% prevalence of refractive errors<sup>3</sup>, While Chuka-Okosa reported 1.97% prevalence of

refractive errors among students of post primary institution in a rural community in south-eastern Nigeria<sup>4</sup>. In this study refractive errors were seen in 388(31.8%) of the patients. These widely differing reports on prevalence of refractive errors may be due to difference in sample size and the nature of the population studied.

The prevalence of myopia is about 20% in the United States, but varies with age, sex, race, ethnicity, occupation, environment, and other factors in various sampled populations.<sup>5,6</sup> In Sumatra, Indonesia Saw *et-al*<sup>7</sup> reported 26.1% prevalence of myopia while Raju *et-al*<sup>8</sup> in India reported 26.99%. Adegbehingbe *et-al*<sup>9</sup> reported myopia as the commonest spherical error constituting 22.7% of their series in a study on the pattern of refractive errors at Obafemi Awolowo University Teaching Hospital, Ile-Ife, Nigeria. In this study myopia was seen in 21.1% of the patients with refractive error. This corresponds very well with most studies in other parts of the world. In the average ophthalmic practice, myopes represent an even larger proportion of patients because

of their lifelong dependence on visual aids.

Hypermetropia is considered to be the most common refractive error and in fact constitutes one of the stages in normal development. Faderin<sup>10</sup> reported hypermetropia constituting 52.2% of refractive errors in primary school children in Nigeria while Montes-Mico<sup>11</sup> reported 35.6% prevalence of hypermetropia in Spain. In this study hypermetropia was seen in 4.5% of the refractive error patients. This relatively low percentage of hypermetropia may be due the nature of our patients. More than 80% of the patients were adults.

In a survey of the prevalence of refractive errors among children in lower primary school in Kampala district, Kawuma<sup>12</sup> reported astigmatism as the commonest single refractive error accounting for 52% of all errors of refraction while Adegbehingbe<sup>9</sup> reported 52.8 in Ile-Ife, Nigeria. Our finding of 22.9% is in agreement with studies from Indonesia<sup>7</sup> and Tunisia<sup>3</sup>. Presbyopia accounted for 51.3% of patients with refractive errors. This is not surprising since most of our patients were within the presbyopic age.

In conclusion the prevalence and types of refractive errors seen in Maiduguri are similar to those seen in other parts of the country.

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