

PATTERN OF REFRACTIVE ERRORS AMONG ELDERLY PATIENTS IN A TERTIARY HOSPITAL IN LAGOS, NIGERIA.

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ABSTRACT

AIM: To determine the pattern of refractive errors in elderly patients attending Guinness Eye Centre, Lagos University Teaching Hospital (LUTH): 10 year Review.

METHODS: A descriptive retrospective study, were case records of subjects over 60 years of age who had refraction done over that period were studied. Demographic data: age, gender, presenting visual acuity, intra ocular pressure, objective and subjective refraction were retrieved. Myopia was defined as a Spherical Equivalence (SE) ≥ -0.50 DS. Hyperopia SE of $\geq +0.50$ DS. Astigmatism was analyzed in minus cylinders and defined as cylinder ≥ -0.50 DC. Patients with corneal opacity, advanced pterygium, dense cataract, pseudophakia or aphakia were excluded. Statistical analysis done with Statistical package for the Social Sciences (SPSS) version 19.0 (SPSS Chicago Il). Categorical variables tested with chi square. p value of <0.05 statistically significant.

RESULTS: Three hundred and four eyes of 153 patients (38.25%) met the inclusion criteria. Mean age 66.01 ± 5.09 years (60 – 83 years). Male: Female 1:2.4. A total number of 204 (67.1%) presented with a visual acuity of $>6/18$, 82 (27%) $6/12-6/36$ and 18 (5.9%) had $<6/60$. Hypermetropia was found in 158 (19%), myopia in 15 (5%), and astigmatism 231 (76%) ranging from -1DC to -7DC. Astigmatism was the predominant refractive error while against-the-rule astigmatism was the most prevalent form. All had presbyopia. Refraction improved the proportion of patients with visual acuity $\geq 6/18$ from 67% to 99%.

CONCLUSION: Uncorrected refractive errors is a leading cause of visual impairment in the elderly. Astigmatism has been found to be prevalent. Correcting refractive errors will improve the quality of life in the elderly.

KEY WORDS: Refractive errors, refraction, elderly

INTRODUCTION

The term elderly (also known as ‘old age’ or ‘older people’) describes the last period of time in human life.¹ Whilst the chronological age of 65 years is accepted by most

developed countries as a definition of ‘elderly’^{1,2} the United Nations’ agreed cutoff age for the elderly is 60 years.²

Uncorrected refractive errors is the leading cause of visual impairment and the second leading treatable cause of blindness in Africa.³ In Nigeria, it is the commonest cause of mild and moderate impairment being responsible for visual impairment in 2.46 million Nigerian

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adults above 40 years.⁴ Changes in refractive errors have been reported in the elderly, and are broadly classified into myopia, hyperopia and astigmatism. Refractive errors have been noted to increase with age.^{5,6}

Studies have shown that after 40 years of age, older persons tend to have lower rates of myopia and higher rates of hypermetropia than do younger persons.⁷⁻¹¹ This trend is known as the hyperopic shift ¹². However, after 60 years of age, the hyperopic shift seems less prominent. Some studies like the Barbados eye study¹³ have however shown a reverse trend. Uncorrected refractive error is an important public health issue among the elderly population.^{14,15}

MATERIALS AND METHODS

A Retrospective review of 400 case records of patients ≥60 years of age at the Guinness Eye Centre, Lagos within the 10year period of January 2007 to December 2016. Eyes with corneal opacities, advanced pterygium, dense cataract, pseudophakia and aphakia were excluded. 153 subjects (38.25%) met the inclusion criteria and subsequently their biodata, presenting visual acuity (PrVA), subjective refraction and best corrected visual acuity (BCVA) of the patients were retrieved and analyzed. Visual acuity was categorized based on the 10th revision of the International Classification of Diseases (ICD-10).¹⁶

STUDY DEFINITION

Myopia was defined as ≥-0.50DS

Hyperopia was defined as ≥+0.50DS.

Astigmatism was transposed to the minus cylinders and defined as ≥-0.50DC.

Astigmatism was further categorized into with the rule astigmatism and against the rule astigmatism

RESULTS

Three hundred and four eyes of 153 patients met the inclusion criteria.

The mean age was 66.01 ± 5.09 years (60 – 83 years).

Male: Female 1:2.4.

TABLE 1: Visual acuity distribution

VA category	Pr VA (%)	BCVA (%)
Category 0	204 (67.1)	301 (99)
Category 1	82 (27)	3 (1)
Category 2	9 (3)	-
Category 3	5 (1.6)	-
Category 4	4 (1.3)	-

FIGURE 1: DISTRIBUTION OF REFRACTIVE ERROR

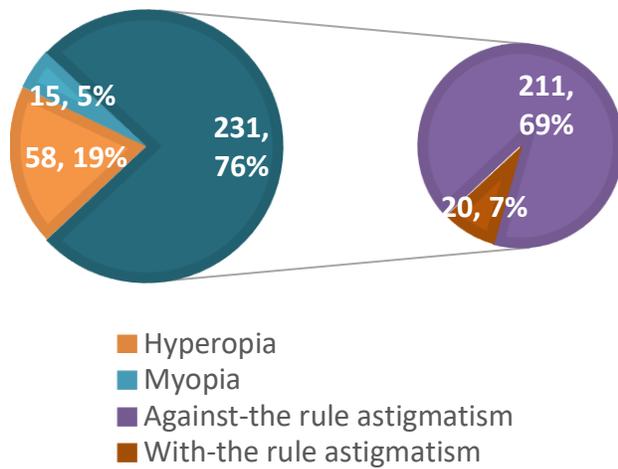


TABLE 3: SEX DISTRIBUTION VS TYPE OF REFRACTIVE ERROR

Type of refractive error	Male (%)	Female (%)
Hyperopia	15 (25.9%)	43 (74.1%)
Myopia	4 (26.7%)	11 (73.3%)
Astigmatism	72 (31.6%)	156 (68.4%)

TABLE 2: AGE VS TYPE OF REFRACTIVE ERROR

Type of refractive error	Mean age
Hyperopia	65.24 ±4.88 yrs
Myopia	66.73 ±5.04 yrs
Astigmatism	65.99 ±5.01 yrs

DISCUSSION

The elderly undergo a variety of health challenges with advancing age. Refractive errors are a ubiquitous aspect of age related metamorphoses. Most studies on the pattern of distribution of refractive errors were conducted in younger populations or have included only a small proportion of the elderly.¹⁴⁻¹⁹ Only 400 cases records of elderly patients were seen within that 10 year period, of which 153 (38.25%) met the inclusion criteria and were enrolled. This may reflect the variety of other eye care practitioners who are often sought out before if at all, seeking appropriate care from Ophthalmologists. On the other hand, it can be attributed to poor health seeking patterns

of these individuals or poor record keeping in the hospitals.

The small numbers recorded could also be due to the criteria for inclusion in this study of refractive errors in the elderly. These multiple pathologies causing VI and blindness often co-exist in the elderly patients, however in this study, subjects with refractive errors and co-existing pathologies are excluded.

Astigmatism was the predominant type of refractive error while against-the-rule astigmatism was the most prevalent form. There are a few studies available on the prevalence of astigmatism in the elderly.^{4,20} Hypermetropia was seen in 58(19 %) and myopia in 15 (5 %). This is lower than reported in similar studies.^{7,21} This may be as a result of the small study group. The highest rate of hypermetropia occurred in the age group 60 to 69 years with a higher rate of hypermetropia found in women, similar to other reports.^{7,11,21} This may be because women have a shorter axial length and more shallow anterior chamber depth than men, hence a higher probability of being hypermetropic. Myopia increased with age in this study though the trend was not significant ($p= 0.17$). 153(100%) of the participants were presbyopic with a mean near vision of N24. Presbyopia is an age-related condition thus the data found in this study is not surprising.

The presenting VA was $\geq 6/18$ in 204 (67.1%) and $<6/18$ in 100 (32.9%) participants. Corrected VA $>6/18$ was found in 301 (99 %) whilst Corrected VA $<6/18$ was found in 3 (1%) elderly patients. This affirms the fact that visual impairment and blindness from refractive errors can be prevented. Elderly

patients should have refraction done and prescribed lens given.

The limitation of a retrospective study of this type is its small/limited sample size. The under-representation of elderly people may result in under estimation of the pattern of refractive errors in them. Also there was a limitation as to details of BIODATA such as socio-economics, educational level and occupational status for associations and analysis. As this records were not well documented.

Uncorrected refractive errors are leading cause of visual impairment in the elderly. Most of the problems could be effectively treated in the primary and secondary eye care levels- including giving prescribed glasses / low vision aids. While it is necessary for all centres to have these facilities, there is also a need to subsidize eye care services for the elderly Nigerians so as to enhance regular eye tests including refraction done yearly. This is so as to ensure that no elderly Nigerian unnecessarily suffers from the burden of visual impairment and blindness caused by uncorrected refractive errors.

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