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Refractive errors in presbyopic patients in Kano, Nigeria

Abdu Lawan, Eme Okpo[1], Ebisike Philips[1]

Departments of Ophthalmology,Bayero University Kano,Bayero University, [1]Aminu Kano Teaching Hospital, Kano, Nigeria

Correspondence to: Dr. Abdu Lawan, Department of Ophthalmology, Bayero University Kano, Nigeria.
E-mail: lawal1966@yahoo.com

Abstract

Background: The study is a retrospective review of the pattern of refractive errors in presbyopic patients seen in the eye clinic from January to December, 2009.
Patients and Methods: The clinic refraction register was used to retrieve the case folders of all patients refracted during the review period. Information extracted includes patient's age, sex, and types of refractive error. Unaided and pin hole visual acuity was done with Snellen's or "E" Charts and near vision with Jaeger's chart in English or Hausa. All patients had basic eye examination and streak retinoscopy at two third meter working distance. The final subjective refractive correction given to the patients was used to categorize the type of refractive error.
Results: There were 5893 patients, 1584 had refractive error and 644 were presbyopic. There were 289 males and 355 females (M:F= 1:1.2). Presbyopia accounted for 10.9% of clinic attendance and 40% of patients with refractive error. Presbyopia was seen in 17%, the remaining 83% required distance correction; astigmatism was seen in 41%, hypermetropia 29%, myopia 9% and aphakia 4%. Refractive error was commoner in females than males and the relationship was statistically significant (*P*-value = 0.017; $P < 0.05$ considered significant).
Conclusion: Presbyopia is common and most of the patients had other refractive errors. Full refraction is advised for all patients.

Keywords: Presbyopia, pattern, correction

Résumé

Contexte : L'étude est une étude rétrospective du patron de la réfraction oculaire chez les patients presbytes, vus à la clinique ophtalmologique de janvier à décembre 2009.
Patients et méthodes : Le registre de réfraction clinique était utilisé pour récupérer les dossiers de cas de tous les patients réfractées au cours de la période d'examen. Informations extraites incluent patient âge, sexe et types d'erreur de réfraction. Acuité visuelle spontanée et broche trou a été faite avec de Snellen ou des graphiques de « E » et à proximité de vision avec graphique de Jaeger en anglais ou en haoussa. Tous les patients avaient des examen de la vue de base et la rétinoscopie strie à deux tiers mètres de distance de travail. La correction de réfraction subjective finale donnée aux patients a été utilisée pour classer le type d'erreur réfractive.
Résultats : 5893 Patients, 1584 eu erreur réfractive et 644 sont presbytes. Il y a 289 mâles et 355 femelles (m:f = 1:1.2). La presbytie représente 10,9 % de la fréquentation de la clinique et 40 % des patients atteints de réfraction. La presbytie chez 17 %, la correction de la distance de 83 pour cent restants ; astigmatisme chez 41 %, 29 % de hypermétropie, myopie 9 % et aphakie 4 %. Erreur de réfraction est plus fréquente chez les femmes que les hommes et la relation n'était statistiquement significative ($P = 0,017$; $P < 0,05$ considérés comme significatifs).
Conclusion : La presbytie est fréquente et la plupart des patients avaient autres erreurs de réfraction. Réfraction complet est conseillée pour tous les patients

Mots-clés : Correction de la presbytie, Pattern

Introduction

Presbyopia is the gradual loss of accommodative response resulting from loss of elasticity of the lens capsule and lens substance. The amplitude of accommodation decreases with age and symptoms may manifest around the age of 40 years. However, symptoms may start earlier or later than this age depending on the refractive state of the patients' eyes, their visual needs, and depth of focus among other variables.[1] There is recession of the proximal point of clear vision in presbyopia, and this blurs near vision.[2] Refractive errors are a major issue among the elderly and prevalence varies with age.[3] In a study of self-reported visual impairment in the elderly in Ibadan, 18.4% patients had near vision impairment and 15.2% had both distant and near visual impairment. Impairment of near vision had a significant impact on all domains of quality of life.[4] A population-based survey conducted in a district of Kano state showed that 2.05% of those examined had impaired vision, and refractive error was the cause in 5%.[5] Uncorrected refractive error is the major and most easily avoidable cause of impaired vision.[6] An earlier study showed that 40% of patients in our hospital with refractive errors had presbyopia.[7] The aim of the study is to retrospectively determine the prevalence of presbyopia and the pattern of refractive errors in presbyopic patients seen in Aminu Kano Teaching Hospital Kano, Nigeria, from January to December 2009.

Patients and Methods

For this retrospective study, approval was obtained from the Ethical Committee of Aminu Kano Teaching Hospital. The clinic register was used to determine the total outpatient attendance, the number of patients who had refractive error, and the number of patients who presented with presbyopia, and from these determine the prevalence of presbyopia during the period reviewed. The patient's case folders were retrieved and the following information was obtained: Age, sex, and type of refractive errors. Patients whose record was incomplete and the relevant information was unavailable were excluded. Visual acuity was measured unaided and then with the pinhole method using Snellen's or "E" charts. Near vision was tested with Jaeger's chart in English or Hausa at one-third meter working distance in good illumination. All patients studied had basic eye examination including intra ocular pressure measurements and fundoscopy to rule out other causes of subnormal vision. Streak retinoscopy was performed at one-third meter working distance. The final subjective correction provided was used to define the type of refractive error. Data was collected and analyzed. *X*-squared test was used to compare presbyopia in males and females.

Results

A total of 5893 outpatients were seen during the study period, of which 1584 had refractive errors. There were 644 patients who presented with presbyopia, with mean age of 43.5 + 3.8 years. There were 289 males and 355 females (M: F=1.0:1.2). The prevalence of presbyopia was 10.9% of clinic attendance and it accounted for 40.7% of patients seen with refractive error. All the patients who presented with presbyopia were in the age group 35 years and above. Around 48% were in the age group of 40-49 years and 69% in 40-59 years. The distribution of the patients by age and sex is shown in Table 1. Presbyopia (alone) was seen in 17% of the patients. The remaining had other refractive errors requiring correction for distance [Table 2]. Squared test showed that presbyopia was more predominant in females than in males and the difference was statistically significant (P value = 0.017; $P < 0.05$ considered significant).

Discussion

Presbyopia is a result of one of the age-related changes in the physiology of accommodation in the human eye.[1] The incremental changes that take place in the lens to render the central region inflexible by middle age leads to presbyopia.[8] Presbyopia is one of the common refractive errors that result in avoidable loss of vision.[9] Presbyopia accounted for 48% of non-vision impairing conditions in a rural adult population of Uganda.[10] Similarly, the Andhra

Table 1: Distribution of refractive errors by age and sex

Age in years	Sex		Total (%)
	Male	Female	
35-39	38	59	97 (15)
40-49	142	167	309 (48)
50-59	57	81	138 (21)
60-69	33	38	71 (11)
70+	19	10	29 (5)
Total	289	355	644 (100)

Table 2: Distribution of types of refractive errors

Type of refractive error	Sex		Total (%)
	Male	Female	
Presbyopia (alone)	58	50	108 (17)
Presbyopia+Myopia	28	31	59 (9)
Presbyopia+Hypermetropia	80	106	186 (29)
Presbyopia+Astigmatism	109	156	265 (41)
Presbyopia+Aphakia	14	12	26 (4)
Total	289	355	644 (100)

Pradesh Eye study reported that 63.7% of those with refractive errors had presbyopia,[11] and 33% had presbyopia in a rural community of Annambra state, Nigeria.[12] A report from Oshogbo showed that 45% of 1824 consecutive patients examined had presbyopia.[13] Uncorrected or poorly corrected presbyopia was associated with reduced workers' productivity among staff of an institution in Lagos.[14] Uncorrected presbyopia cause widespread visual impairment throughout the world.[15] A population-based survey in Tanzania showed that 61.9% of those above the age of 40 years were presbyopic and the peak occurrence was in the 40-50-year age group, which is similar to the rate in our study.[16] In low-income regions of Kenya, uncorrected presbyopia is associated with near-vision functional impairment.[17] Our study showed that more females than males presented with presbyopia. Presbyopia affected females earlier than males.[18] Females have higher prevalence of presbyopia than males in Brazil,[19] and women had 40% higher odds of being presbyopic.[20]This is in agreement with our findings. Predominance of females than males is seen in our study. Female presbyopia occurred at an earlier age in Ghana; however, there was no interdependence of birth on female gender as speculated.[21] There is a small and consistent gender difference in presbyopic corrections that females require and add of a greater magnitude than their age-matched male counterparts.[18]A study in southwestern Nigeria showed that presbyopia accounted for 35.3% of patients with refractive error and one-and-half times commoner in females than in males.[22]Our study showed that most presbyopic patients require correction for distance and hence the need to refract all patients with presbyopia, rather than offer subjective near correction alone. Other studies did not report a similar trend.[3,9,10,12,16,18] Anisometropia tends to increase appreciably with presbyopia.[23]Hypermetropia and low amplitude of accommodation at the age of 20 years might predispose one to early onset of presbyopia.[24] The proportion of myopic patients who presented with presbyopia in our study was low, perhaps due to the higher amplitude of accommodation in myopic patients between the ages of 35 and 44 years compared with emmetropic and hypermetropic patients.[25] Presbyopia is associated with worse vision targeted health-related quality of life compared with young patients with ametropia.[26] Presbyopia has a significant impact on vision-related quality of life in rural African settings, thus strengthening the need for the Vision 2020 refraction agenda to place greater emphasis on presbyopia.[27] The necessity to promptly correct sight loss in the elderly cannot be underestimated as vision loss is associated with depression, social isolation, fall, dependency and error in medication.[28] Spectacle correction either single vision (for near-vision-related work only) or bifocal is the main modality of correcting presbyopia in our environment. In low-income countries like in India, there is a great need for spectacles and it is desirable to develop a system that ensures equitable cross-subsidization of spectacles.[29] The occupation of the patients was not included in the analysis,which could have provided further relevant information on the impact of presbyopia on the quality of life of the individual. Presbyopia is a common cause of presenting to the eye clinic; most of the patients have other refractive errors and require full refraction to ensure that both far- and near-vision errors are corrected.

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