

# Barriers to uptake of presbyopic correction among primary and secondary teachers in public schools in b/k-dere communities in rivers state, Nigeria

## Abstract

**Background:** Presbyopia is an age-related loss of accommodation that results in an inability to focus at near distances and is a problem associated with aging. Since teachers do a lot of near work and most fell within the age bracket for presbyopia, this study aims to determine the barriers of uptake of presbyopic correction among teachers in some rural schools in Rivers State.

**Methodology:** This is descriptive cross-sectional study where teachers were randomly selected from cluster of primary and secondary schools according to size using simple random technique. Visual acuity (VA) was tested with Snellen's chart. Where the visual acuity was 6/9 or less, a pinhole was presented and the test repeated. Teachers with distance visual acuity (VA)  $\leq 6/9$  and near vision N8 or worse were refracted using Keeler streak retinoscope (keeler professional) and trial lenses. This was followed by eye examination and questionnaire administration. For the purposes of this study, teachers who are 34 years or older, who were emmetropic and had near visions less than N6 were considered presbyopic. Data was analyzed using the IBM Statistical software package, Epi-Info ver. 6.04d. A p-value of  $\leq 0.05$  was considered statistically significant.

**Result:** The prevalence of presbyopia among the teachers was 66.0%. Among the presbyopes, 36.4% (N=24) did not have any presbyopic correction. Of these 24 subjects, 11 (45.8%) were not aware they needed eyeglasses (lack of felt need), 6 (25.0%) felt presbyopic correction would weaken their eyes, one respondent (4.2%) said the eyeglasses were heavy, and the remaining 25.0% (n=6) did not want to wear eyeglasses.

**Conclusion:** Findings from this study show that the main barriers to uptake of presbyopic correction are things that can be easily handled by ophthalmic health education since most are due to ignorance.

**Keywords:** presbyopic correction, school teachers, barriers to uptake

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## Introduction

Presbyopia which is defined as age-related loss of accommodation is the most common physiologic ocular change after the age of forty and causes universal near visual impairment with increasing age.<sup>1</sup> The clinical consequence of presbyopia is that without optical correction, the amplitude of accommodation is insufficient to meet the near vision demands of the patient. Treatment of presbyopia can be optical or surgical. Optical treatment involves the prescription of appropriate convex glasses for near work. Spectacles offer a safe, effective, and economic option for the correction of presbyopia. Presbyopic spectacles may be unifocal, bifocal or varifocal.

There are however barriers to accessing presbyopic corrections. For instance only 6% of participants with presbyopia in a study in Tanzania had corrective spectacles.<sup>2</sup> In that study, men were more likely to be able to afford spectacles, whereas a higher proportion of women needed to rely on another person to help them afford spectacles. The majority of participants did not know where to get spectacles and this percentage was higher in women. Among those who knew where to go (both men and women), a third could not

afford the means to travel to a location where spectacles could be obtained and these were mainly women.

In Timor-Leste, among those who were presbyopic, 31% of men and 21% of women had spectacle correction.<sup>3</sup> About 25% of men compared to 15% of women were willing to pay US \$3 for spectacles (age-adjusted prevalence).<sup>3</sup> Holden et al<sup>4</sup> in their study estimated that 517 million people out of 1.04 billion presbyopes (49.7%) were without correction or had inadequate correction. The value may be lower in teachers because they are educated and are expected to have been more receptive to uptake of presbyopic correction. The 49.7% in Holden study was estimated and therefore cannot be said to represent the actual population.

In a study in Kumasi, Ghana, it was reported that +2.00DS was the most common correction required by presbyopic teachers. This could be as a result of increasing difficulty in performing near work from this stage (+2.00DS to +2.50DS) without correction. A total of 55.5% preferred single vision prescription to bifocals.<sup>5</sup> In that study, even though 48% of the teachers had been given presbyopic corrections, about 6% were not wearing them. Similarly, a survey of refractive

error and presbyopia in adults aged 40 years and older in Timor-Leste found that 4.0% were non-compliant and not wearing their correction.<sup>6</sup> In that study the factors responsible for non-compliance were perceived inability to afford spectacles (16.1%), poor cosmesis (41.1%) and embarrassment (37.5%), with neither being gender-based. Unwillingness to wear spectacles was associated with illiteracy, but not with gender or rural living.<sup>7</sup> A survey of ocular morbidity in rural Uganda also reported uncorrected presbyopia as accounting for 48% of cases of visual impairment.<sup>6</sup>

### Methodology

This is descriptive cross-sectional study where teachers were divided into clusters according to their schools. Teachers were then randomly selected from each cluster according to size using simple random technique. Examinations were done outside the classrooms, along the corridors within the school premises, as there was better illumination outside. Visual acuity was tested separately for distance and near vision using Snellen and near charts. Distance Visual acuity was determined separately for each eye at 6 metres using the Snellen’s chart. Where the visual acuity was 6/9 or less, a pinhole was presented and the test repeated. Teachers with distance visual acuity (VA) ≤6/9 and near vision N8 or worse were refracted using Keeler streak retinoscope (keeler professional) and trial lenses. Their eyes were examined and questionnaires administered. For the purposes of this study, teachers who were 34 years and older, emmetropic and had near vision less than N6, were considered presbyopic. Data was analyzed

using the IBM Statistical software package, Epi-Info ver. 6.04d. A p-value of ≤0.05 was taken as statistically significant.

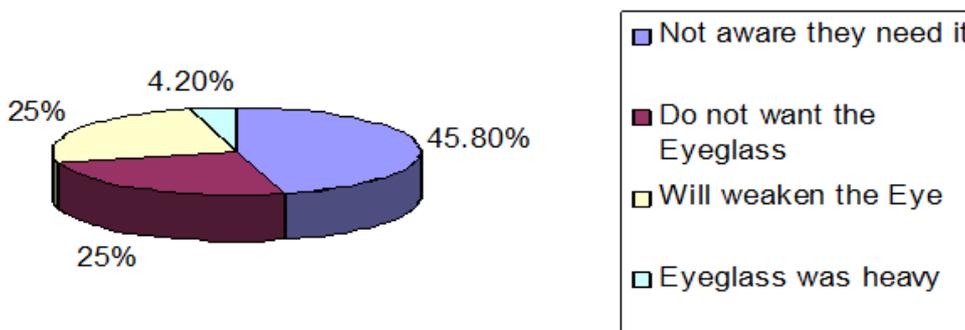
### Results

A total of 100 teachers were recruited for the study and all were studied giving coverage of 100%. Out of these, 47(47%) teachers were from secondary schools and 53(53%) were from primary. There were 50 males and 50 female teachers giving a male to female ratio of 1:1. The mean age of the study population was 47.45±7.91 with a range of 24-64 years. Of the 100 teachers examined, 66.0% were presbyopic while 34.0% were not presbyopic. This difference was statistically significant ( $\chi^2=6.27$ ;  $p=0.01$ ). Among the presbyopes, 63.6% (n=42) were corrected but 24(36.4%) did not have any corrections.

This difference was however not statistically significant ( $\chi^2=2.77$ ;  $p=0.09$ ). Table 1 shows that when checked by sex, there was still no statistically significant difference between males and females with respect to being or not being corrected ( $\chi^2=0.01$ ,  $p=0.92$ ;  $\chi^2=0.28$ ,  $p=0.60$ ). Among those with presbyopic correction, 25(59.5%) used single vision while the remaining 17(40.5%) used bifocals. The barriers to uptake of presbyopic correction are as shown in Figure 1. Of the 24 subjects not corrected for presbyopia, 11(45.8%) were not aware they needed eyeglasses (lack of felt need), 6(25.0%) felt presbyopic correction will weaken their eyes, and the remaining 25.0% (n=6) did not want any eyeglasses. Only 1 respondent (4.2%) said the eyeglasses were heavy. \*Not significant

**Table 1** Distribution of corrected and non-corrected presbyopes by sex

Presbyopes	Sex		Total	Chi-Square	P-value
	Male	Female			
Corrected	22(33.3)	20(30.3)	42(63.6)	0.01	0.927*
Non Corrected	14(21.2)	10(15.2)	24(36.4)	0.28	0.60*
Total	36(54.5)	30(45.5)	66(100.0)		



**Figure 1** Barriers among non-corrected.

### Discussion

Over 36% of the presbyopes in this study did not have any form of correction. This is more than the 29.6% recorded in the Kumasi study<sup>5</sup> but less than that in Rural Uganda where patients with uncorrected presbyopia constituted 48% of cases of visual impairment.<sup>6</sup> The variation could be due to lack of felt need in the rural Ugandan populace compared to teachers. The teachers in the Kumasi study were High school teachers with more academic demand compared to

those in our study which also included primary school teachers and this may have contributed to the lower percentage recorded.

In the Kumasi study,<sup>5</sup> 25.6% required +2.0 DS correction which was similar to our study with 27.3% needing +1.75 correction followed by 24.2% with +2.25DS presbyopic correction. Among the 42 corrected subjects, 59.5% used single vision. This is similar to the 55.5% reported in the Kumasi study.<sup>5</sup> This may be because they want to avoid the inconvenience of having to put on their glasses all the

time. Of the 42 corrected presbyopes, fewer females 30.3% accessed their correction compared to males (33.3%) but this difference is however not statistically significant ( $p=0.92$ ). This result may also be influenced by the dynamics in the family, culture and community as gender has been cited as a barrier in general to accessibility of health services.<sup>8,9</sup>

Of the 24 uncorrected presbyopes, the barriers to correction were lack of felt need (48.5%) and fear that eyeglasses would damage their eyes (25.0%). Lack of felt need was one of the barriers noted in similar studies.<sup>10,11</sup> Sherwin et al<sup>10</sup> stated that 25% of presbyopes in a rural Kenyan population did not consider their condition important and another 25% felt it would weaken their eyes. The fear of damage to the eye was also observed among Chinese children and Tanzanian students.<sup>12,13</sup> In our study, about 7% of corrected presbyopes rarely used their correction. This is similar to the 6% reported in the Kumasi study<sup>5</sup> but higher than the 4% obtained in Timor-Leste.<sup>7</sup> Among the presbyopes, the major challenge in obtaining correction is economic reason (39.4%). This has been proven in other study where economic reason is a major barrier. Economic reason may have constituted a higher percentage in our study but since the teachers are salary earners, a good number of them could at least afford reading spectacles. The study by Holden et al<sup>4</sup> involved the general population some of whom may be unemployed.

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## Conflicts of interest

The authors declare that there was no conflict of interest.

## References

1. Weale RA. Epidemiology of refractive errors and presbyopia. *Surv Ophthalmol.* 2003;48(5):515–543.

2. Patel I, West S. Gender difference in presbyopia. *Community Eye Health.* 2009;22(70):27.
3. Ramke J, du Toit R, Palagyi A, et al. Correction of refractive error and presbyopia in Timor–Leste. *Br J Ophthalmol.* 2007;91(7):860–866.
4. Holden BA, Fricke TR, Ho SA, et al. Global vision impairment due to uncorrected presbyopia. *Arch Ophthalmol.* 2008;126(12):1731–1739.
5. Kumah DB, Lartey SY, Amoah–Duah K. Presbyopia among public senior high school teachers in the Kumasi metropolis. *Ghana Med J.* 2011;45(1):27–30.
6. Kamali A, Whitworth JA, Ruberantwari A, et al. Causes and prevalence of non–vision impairing ocular conditions among a rural adult population in SW Uganda. *Ophthalmic Epidemiol.* 1999;6(1):41–48.
7. Ramke J, Toit R, Palagyi A, et al. Correction of refractive error and presbyopia in Timor–Leste. *Br J Ophthalmol.* 2007;91(7):860–866.
8. Courtright P. Gender and blindness: Taking a global and a local perspective. *Oman J Ophthalmol.* 2009;2(2):55–56.
9. Courtright P, Bassett K. Gender and blindness: eye disease and the use of eye care services. *Community Eye Health.* 2003;16(45):11–12.
10. Sherwin JC, Keeffe JE, Kuper H, et al. Functional presbyopia in a rural Kenyan population: the unmet presbyopic need. *Clin Exp Ophthalmol.* 2008;36(3):245–251.
11. Nirmalan PK, Krishnaiah S, Shamanna BR, et al. A population–based assessment of presbyopia in the state of Andhra Pradesh, south India: the Andhra Pradesh Eye Disease Study. *Invest Ophthalmol Vis Sci.* 2006;47(6):2324–2328.
12. Congdon N, Zheng M, Sharma A, et al. Prevalence and determinants of spectacle non wear among rural Chinese secondary schoolchildren: The Xichang Pediatric Refractive Error Study Report 3. *Arch Ophthalmol.* 2008;126(12):1717–1723.
13. Odedra N, Wedner SH, Shigongo ZS, et al. Barriers to spectacle use in Tanzanian secondary school students. *Ophthalmic Epidemiol.* 2008;15(6):410–417.