

# PRESBYOPIA AMONG PUBLIC SENIOR HIGH SCHOOL TEACHERS IN THE KUMASI METROPOLIS

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## SUMMARY

**Background:** Presbyopia if uncorrected causes inability to see and do near work. It is unavoidable as one ages. High school teachers whose work depends much on near work need proper and adequate correction of their presbyopia to increase effectiveness and efficiency.

**Objectives:** The aim was to determine the uptake of correction and prescription for presbyopia of presbyopic teachers of public Senior High School (S.H.S.). **Design:** Descriptive cross-sectional study.

**Methods:** The study was conducted in 12 public S.H.S. in the Kumasi, with a total sample size of 298. Questionnaire was administered to teachers. Their visual acuity, refraction and ophthalmoscopy were done.

**Results:** The prevalence of presbyopia among the teachers was 68.1%. Out of the number examined 197(66.1%) were males and 10(33.9%) were females. Amongst the presbyopes 60 did not have presbyopic correction, representing 29.6% of the presbyopes. A total of 52 presbyopic teachers required an add of +2.00DS and this was the highest diopter of correction needed (25.6%). Among those with presbyopic correction 55.5% of them use single vision type of correction while the remaining 44.5% use bifocals. Out of the 48% presbyopic teachers who have had their presbyopia corrected before, 6% were not wearing their correction.

**Conclusion:** The study has demonstrated a relatively higher prevalence of uncorrected presbyopia amongst teachers in public Senior High Schools in the Kumasi Metropolis of 29.6%. Among those with correction 6 % were not using their correction. Proper and adequate correction is needed by presbyopic teachers through screening to ensure their maximum performance.

**Keywords:** Presbyopia, teachers, lens correction, prescription, senior high school.

## INTRODUCTION

Presbyopia is an age-related loss of accommodation that results in an inability to focus at near distances.<sup>1,2</sup> It is the most common physiological change occurring in the adult eye and is thought to cause universal near vision impairment with advancing age.<sup>3,4</sup>

It is generally first reported clinically between 40 and 45 years of age, with its peak onset between ages 42 and 44 years, and generally occurs in females earlier before 40 years.<sup>5</sup> It progresses gradually over a number of years. From approximately age 52 years on, the prevalence of presbyopia is considered to be essentially 100%; however, its prevalence across all ages in the population is 31%.<sup>6</sup>

The main symptoms include vision at the customary near-working distance being blurred or can be sustained only with excessive effort and some eye discomfort and also reading material must be held farther away to be seen more clearly.<sup>6</sup> Presbyopia cannot be cured, but individuals can compensate for it by wearing reading (single-vision), bifocal, or progressive eyeglasses. A convex lens is used to make up for the lost automatic focusing power of the eye.<sup>7</sup>

Presbyopia is not simply an inconvenience; it has significant effects on quality of life, particularly in the lives of teachers, whose work depends mostly on reading and writing. In Ghana where most of the marking of examination scripts and evaluation of students work in class are done manually, a teacher might not perform efficiently if he/she is unable to read and mark correctly. So corrective spectacle for presbyopia are necessary.

But the type of correction used depends much on the individual's preference and normally the environment in which he finds himself. Teachers who do a lot of close work may consider single-vision reading glasses. Others who work between far and near distance intermittently or have distant vision problems may consider multifocals (bifocal or progressive).

Though the choice of corrective lens depends on the client, a wrong choice can affect his comfort and sometimes ocular health (in relation to contact lens), and this can lead to the client not putting on his correction although he might have had the right power of correction.

Full correction is needed by teachers for maximum performance. Yet there is no data in Kumasi to indicate if they are getting their right correction. Results of the study will help inform policy makers give maximum help on teachers' correction. The aim was to determine the uptake of correction and prescription for presbyopia of presbyopic teachers of public Senior High School (S.H.S.).

The specific objectives included determining the number of presbyopic teachers (both corrected and uncorrected), the type of presbyopic prescription used and the number of presbyopic teachers with corrected presbyopia who are not wearing their prescription.

## METHODS

### *Sampling Technique*

All public Senior High Schools in the Kumasi Metropolis were listed as eligible for the study. The teachers were divided into clusters according to their school. Teachers were randomly selected from each cluster using simple random technique.

A sample size of 338 was calculated and 298 teachers were screened, giving us a respondent rate of 88.2%. Materials employed in the collection of the data included Snellen distance and near acuity charts, trial case and accessories, trial frame and a Heine ophthalmoscope.

### *Data Collection*

Visual acuity was tested separately for distant and near vision using Snellen charts. Teachers with visual acuity (VA) less than 6/9 were refracted for both distance and near with the help of a trial frame, a trial case and some of its accessories.

Teachers with VA of 6/9 or better were subjected to near refraction. Myopes with a visual acuity of 6/12 or worse were also made to wear their correction before taking the near visual acuity test. For the purpose of this study people who could not read N6 and emmetropes who are 40 years and above were considered as presbyopes.

A questionnaire was also used to determine personal information such as name, age, sex and the type of correction used to correct their near vision, whether

their presbyopia has been corrected before and how often they wear their correction.

### *Data Analysis*

The SPSS 16 software was employed in entering the data, analyzing them and drawing the tables. Percentages and prevalence were calculated for all the variables

## RESULTS

More males were screened than females (197/298, 66.1%). Of the teachers, 71.1% were between the ages of 36-55 with 46-50 having the highest frequency 60(20.1%). There were 203 teachers with presbyopia and the prevalence of presbyopia was 68.1%. Amongst the presbyopes, 29.6% (60) did not have presbyopic correction.

The most common correction required was +2.00DS representing 25.6% (52) of presbyopic teachers. Also presbyopic teachers requiring this correction (+2.00DS) represented the largest group who have had previous correction before. All the presbyopic teachers who were having an add of +2.50DS had their presbyopia corrected before.

Among those who had presbyopic correction, (55.5%) used single vision type of prescription while the remaining (44.5%) used bifocals. A total of 46% of the teachers who were presbyopic had distant correction. And amongst these (the 46%), 90.5% preferred bifocal to single vision prescription.

Among those who do not wear distant correction, 94.6% preferred to use single vision. Table 1. A total of 143 (48%) of presbyopic teachers have had previous prescriptions for correction. However of the presbyopic teachers who have had previous prescription for correction, 6% were non compliant and not wearing their spectacles.

**Table 1** Types of near presbyopic prescription

Have distant correction	Type of near prescription used		
	Single vision	Bifocal	Total
Yes	6(9.5%)	57(90.5%)	63(100.0%)
No	70(94.6%)	4(5.4%)	74(100.0%)
Total	76(55.5%)	61(44.5%)	137(100.0%)

## DISCUSSION

Prevalence of presbyopia in this study was 68.1%. This seems to be high as compared to the prevalence studies in Brazil, 55%,<sup>8</sup> Southern India, 55%<sup>5</sup> and in Ghanaian women, 65%.<sup>9</sup>

A total of 30% of the presbyopic teachers had no correction. Holden *et al* estimated 517 million people out of 1.04 billion presbyopes (49.7%) to be without correction or having inadequate correction.<sup>10</sup> This is higher than what we found among teachers. This may be because teachers are educated and are expected to have been more receptive to uptake of correction for their error.

The 49.7% in Holden's study was estimated and therefore cannot be said to represent the actual population. They also used the general population whilst we restricted the population to high school teachers. Of these 29.6% had high presbyopia which could affect their performance. Perhaps some teachers may be reluctant to give class exercise and assignment in order to avoid marking.

Amongst presbyopes who have had previous correction +2.00DS was the most common correction required 52(25.6%). And this could be as a result of increasing difficulty in performing near work from this stage (+2.00DS to +2.50DS) without correction. Even though it was expected for presbyopic teachers who required +0.75 to +1.00DS correction to have the lowest presbyopic correction +1.50DS was the lowest prevalence of presbyopic correction.

A survey of ocular morbidity in rural Uganda found patients with uncorrected presbyopia accounting for 48% of those presenting with visual impairment.<sup>11</sup> A total of 55.5% preferred single vision prescription to bifocal, probably to avoid the inconvenience of having to put on their correction most of the time.

Among those who wear distant correction the bifocal was the preferred choice since opting for a single vision correction meant having to change spectacles during teaching. The teacher has to use his/her presbyopic correction to read and his distant correction to look at his/her pupils during teaching. None of them wore progressive lens and this could be that progressive lenses are relatively expensive and unknown to most clients.

Although 48% of the presbyopic teachers have been corrected before 6% were not wearing their prescription. There could be many reasons for that including damaged or lost spectacle and discomfort or poor vision when wearing the spectacles. Further studies will be required to determine the reasons for non-compliance. A survey of refractive error and presbyopia in adults aged 40 years and above in Timor-Leste found 4.0% (56/1414) who were non compliant and not wearing their correction.

In that study the factors responsible for non compliance were: Perceived inability to afford spectacles (16.1%; 9/56), poor cosmetics (41.1%; 23/56) and embarrassment (37.5%; 21/56), with neither being gender biased. Unwillingness to wear spectacles was associated with illiteracy, but not with gender or rural living.<sup>12</sup>

There seems to be hardly any published papers on presbyopia among high school teachers in the African setting and it is difficult to compare our work to others in the region. The limitation of this study was that some of the selected teachers could not participate due to their work schedule. Four principals did not consent to data collection in their school the results cannot be extrapolated for the Ghana.

## CONCLUSION

The study has demonstrated a high prevalence of uncorrected presbyopia amongst teachers in public Senior High Schools in the Kumasi Metropolis of 30%. It has also shown that among those with correction 6% were non compliant and not using their correction. Considering that proper and adequate correction is needed by presbyopic teachers to ensure maximum performance, all S.H.S. teachers 35 years and above should be encouraged to go for presbyopic screening and wear their spectacles. This will help improve performances in the teaching profession. Teachers who have their presbyopia corrected should seek professional advice on the type of prescription suitable for them. Further studies are required to find out why some teachers who have their presbyopia corrected do not put on their prescription and to determine the relationship between correction of presbyopia and performance of S.H.S. teachers and their students.

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