

Comparison of Comfort level in Normal Presbyopic Population using Bifocals and Progressive Glasses

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ABSTRACT

PURPOSE: To make a comparison of the comfort level among normal presbyopic population using bifocals and Progressive Addition Lenses (PALs).

MATERIALS AND METHODS: A comparative cross-sectional study was conducted on 93 presbyopic patients using bifocal glasses and progressive addition glasses and visiting Mayo Hospital, Lahore. Kruskal-wallis test was applied to check the significance of glass types among outcome variables. The subjects, consisting of both males and females of different age groups, were asked to fill a proforma to assess their subjective level of comfort with their respective type of presbyopic glasses.

RESULTS: Among the 93 respondents, 50.5% used bifocal glasses and 49.5% used Progressive addition glasses. The overall results depict that Progressive addition glasses are a better choice for presbyopes as compared to bifocal glasses ($p < 0.05$). We concluded that progressive lenses are better than bifocals. Level of comfort was judged by noting the comfort level with different daily routine activities e.g. reading, watching TV, while using a computer, outdoor activities either with Bifocal glasses or PALs.

CONCLUSION: Results concluded that most of the respondents had an excellent level of comfort with PALs and it is a better choice for presbyopes.

KEY WORDS: Presbyopia, Bifocal lenses, Progressive addition lenses, Comfort level.

INTRODUCTION

Presbyopia is a condition associated with aging of the eye that causes progressive worsening of the ability to focus clearly on close objects. It results from the gradual decrease in accommodation expected with age and can have multiple effects in quality of vision.¹

The hallmarks of presbyopia are characterized by the dimness of vision and the failure to see minor details at the habitual near working distance. Its other associations may be a delay in focus at near distance, ocular discomfort, asthenopia, fatigue from near work and diplopia.²

In the developed world, most of the present population spends roughly half their lives as presbyopic people.³ Word "prevalence" of presbyopia usually means the estimated population of people who are managing presbyopia at any given condition (i.e. people with presbyopia). The prevalence of presbyopia in Pakistan is 143,327 out of 159,196,336 which is a warning for us.⁴

Although it is difficult to estimate the incidence of a chronic condition such as presbyopia due to its slow and different times of onset in different individuals, it appears that the highest incidence of presbyopia (i.e. first reported effects) is in persons of ages 42-44. Presbyopia is arbitrarily described as the visual condition of everyone who is above

the 40 years of age. U.S Census Bureau figures suggest that in 1995 about 106 million Americans had presbyopia.⁵

Presbyopia may be corrected with different types of corrective lenses including:

- 1) Single-vision lenses
- 2) Multifocal glasses
- 3) Progressive addition lenses (PALs)

Single-vision lenses are used when the patient is practically emmetropic for distance vision and needs only near correction. Multifocal lenses may be used when the patient requires a change in focal length for daily routine activities like driving, cooking, and reading. They fall into two categories which are:

- Bifocal glasses
- Trifocal glasses

Benjamin Franklin, 200 years ago, is generally credited with the invention of bifocals. However, serious historians from time to time produced evidence to suggest that others may have preceded him in the invention.⁶

Bifocal is a type of lens that is used when the patient is essentially ametropic for both distance and near for most refractive errors including astigmatism. The distance and

near portions are incorporated into the single spectacle lens. Bifocal lenses are available in a variety of lens design and size.^{7,8}

The progressive surface of a PAL provides far, intermediate and near vision in a gradual, continuous progression of vertically increasing dioptric power from far to near focus. Or top to bottom of the lens. There are no visible edges between zones of differing dioptric powers as present in bifocals.⁹

Progressive lenses are prescribed according to the demand of near and distance work e.g. a low hyperope who wears spectacles only while reading may prefer a larger near zone and comfortable with it, whereas a low myope who removes the spectacles to read may prefer a larger distance zone where he would be comfortable. People differ in their level of comfort according to their need.¹⁰

The level of comfort is that a person can perform near activities without having a complaint of headache, watering, blurring of near objects, soreness of eyes and eyestrain. In this study comfort level is regarded as the ease with which the presbyopic patients use their prescription either with bifocal glasses or PAL's while performing daily routine activities.

Bifocals and progressive addition glasses are the means for correction of presbyopia in addition to single vision glass. Instead of having just two or three lens powers like bifocals or trifocals, progressive lenses are true «multifocal» lenses that provide a seamless progression of many lens powers for all viewing distances. Trifocals offer correction for three viewing distances but have an unacceptably small intermediate segment, which prevents a full view of the surroundings.¹¹

MATERIALS AND METHODS:

This comparative cross-sectional study was conducted on 93 presbyopic patients visiting Mayo Hospital, Lahore. The study population consisted of both males and females of different age groups and they were asked to fill a self-designed proforma to judge at what level of comfort they are either with bifocal glasses or progressive addition glasses. All data were entered and analyzed using statistical package for social science (SPSS version 20.00). SPSS was used for entry of all types and its evaluation, quantitative variable like age presented in the form of mean \pm SD. Kruskal- wallis test was applied to check the significance of glass types among outcome variables. The qualitative variables like gender are presented as frequency or as a percentage. Pseudophakic, Aphakic, Mentally challenged and people with any other sight threatening ocular disorder were not included in the study.

Among the 93 respondents, 48(51.6%) were male and 45(48.4%) were females. Among them 50.5% used bifocal glasses and 49.5% used Progressive addition glasses. The overall facts and figures depict that Progressive addition glasses are a far better choice for presbyopes as compared to bifocal glasses based on the response of the 93 patients involved in the study. Level of comfort was judged by

noting the different daily routine activities e.g. reading, watching TV, while using a computer, outdoor activities either with Bifocal glasses or PAL's. P-value=0.0015 i.e. <0.05, which is significant. We concluded that progressive lenses are better than bifocals.

Discussion:

Presbyopia is an inevitable condition that was initially corrected by single vision glasses followed by bifocal and progressive addition glasses. Different researches have been done to show that both bifocals and PALs differ in their level of comfort; some presbyopes are more inclined to bifocal glasses rather than PALs as they require clear distance near and intermediate vision at all times. The purpose of this study was to evaluate and compare the comfort level of different aged presbyopes using bifocals and PALs. It is an age-related refractive condition of the eye in which the amplitude of accommodation decreases with age and near vision is affected. If to specify the distance, 25-40cm is stated as the near distance and 6meters for the distance vision.

This comparative study was about to focus on the comfort level of people while adapting to the Progressive Addition Lenses (PAL's) and Bifocals. Patient education is the key factor in the adaption of PAL and Bifocals regarding head movements. The present study aimed to conclude how many among the normal presbyopic population using PAL's and bifocals were comfortable and a comparison between the levels of comfort of both types of lenses. This study sought to compare the effectiveness of using PAL's with Bifocals to estimate the comfort level of patients.

In this study comfort level is regarded as the ease with which the presbyopic patients use their prescription either with bifocal glasses or PAL's while performing daily routine activities. Many studies conducted in the past somehow support this study and some of them contradict in many ways. Adaptations of presbyopic corrections depend on lens design and near add given. So it is concluded that PAL's are more preferred. This study concluded that people who were using blended bifocals were also more satisfied with PAL's; hence progressive addition lenses were more acceptable than bifocals.

CONCLUSION:

The basic purpose of the study was to compare the comfort level among the normal presbyopic population using bifocals and Progressive Addition Lenses (PAL's) and the results concluded that most of the respondents had an excellent level of comfort with PAL's and it is a better choice for presbyopic patients.

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RESULTS:

Table 1: Comparison of comfort level

Glasses Type	Variables	Grading			
		Average	Good	Very Good	Excellent
Progressive	Watch TV	0	6(5.38%)	34(36.56%)	7(7.53%)
	Reading	0	3(3.23%)	20(21.51%)	23(24.73%)
	Driving	0	3(3.23%)	21(22.56%)	21(22.58%)
	Computer Use	0	3(3.23%)	22(23.66%)	20(21.51%)
	Walking Downstairs	0	5(5.38%)	24(25.81%)	17(18.28%)
	Outdoor activities	0	1(1.08%)	22(23.66%)	22(23.66%)
	Bifocals	Watch TV	0	35(37.63%)	12(12.90%)
Reading		8(8.60%)	29(31.18%)	10(10.75%)	0
Driving		15(16.13%)	23(24.73%)	9(9.68%)	0
Computer Use		16(17.20%)	22(23.66%)	9(9.68%)	0
Walking Downstairs		9(9.68%)	33(35.48%)	4(4.63%)	0
Outdoor activities		26(27.96%)	17(18.28%)	4(4.30%)	0

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