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Community Medicine

A Clinical Trial to Evaluate Ready-Made Spectacles in an Eye Camp in India

Dr. Sonalee Mittal*, Dr. Dinesh Mittal

Drishti the Vision Eye Hospital, Vijaynagar, Indore, Madhya Pradesh, India

***Corresponding author:** Dr. Sonalee Mittal
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Abstract **Original Research Article**

The aim of this study was to explore the possibilities of acceptance of a ready-to-dispense spherical equivalent of spherocylindrical correction spectacles. ***Methods:*** Snellen visual acuity with spherical equivalent power of refracted spherocylindrical lenses was prospectively collected from all individuals in an eye camp organized at our Drishti the Vision Eye Hospital Vijaynagar Indore. The satisfaction level was recorded by asking one standard question. The spherical equivalent spectacles were dispensed with a promise for free exchange of spectacles within a month of dispensing. ***Results:*** 329 of 929 patients were refracted and it was found that 120 patients (240 eyes) had refractive error and needed correction. 140 eyes needed spherical correction and 100 eyes had spherocylindrical correction.The average age was 41 (±16; range: 7–84) years. There was no reduction of visual acuity in spherical equivalent of 0.25 and .50 D cylinder (100% satisfaction) and progressive decrease in satisfaction to 43%, 26%, and 19% with spherical equivalent correction of 1.0, 1.5, and 2.0 D cylinder, respectively. No client returned for the free exchange of spectacles. ***Conclusion:*** Dispensing spherical equivalent power up to 1 D cylinder in ready - made spectacles could be considered in resource-poor economic conditions prevailing in an eye camp.
Keywords: refraction, spherical equivalent

INTRODUCTION

The Global Burden of Disease reported that 32.4 million blind people and 191 million visually impaired people lived in the world in 2010[1, 2]. Uncorrected refractive error was the first cause of visually impaired and the second cause of blindness. A pair of spectacles is the most frequent, the simplest, and the cheapest solution. Compliance with wearing spectacles increases when the delivery time is short [3]. Inability to deliver the spectacles in less time and at low cost has been a major challenge. In these situations, dispensing spherical equivalent spectacles is one of the solutions [4-6]. Ready-made spectacles are available for both distance and near use in spherical powers only. We evaluated the possibility of vision correction and the rate of acceptance of spherical equivalent spectacles over spherocylindrical correction spectacles.

METHODS

The recording of presenting vision (and with spectacles in those who were wearing spectacles) and slit lamp examination were done in all the participants. Refraction was done using a streak retinoscope, followed by subjective refraction with trial frame and Snellen chart placed at 6-M distance. After arriving at the best-corrected spherocylindrical power, the vision technician recorded the best spectacle-corrected visual acuity with the spherocylindrical power and spherical equivalent power in the trial frame. The spherical equivalent power of a spherocylindrical power was arrived at by adding half of cylindrical power to full spherical power (this addition was 0 when cylindrical correction was 0.25 D and it was 0.5 when the cylindrical correction was 0.75 D). The participant was not informed of the type of correction, "spherocylindrical correction," or "spherical equivalent correction," in the trial frame. Each participant was asked one standard question: "Are you happy with this glass?" with the spherocylindrical and spherical equivalent correction separately. The participant's response was noted as "comfortable" or "not comfortable" with spherical equivalent correction. All patients were explained the need for constant wear, and the some of the common side effects such as eyestrain and headache were discussed. Irrespective of spherocylindrical or spherical equivalent correction, all patients were assured of a free exchange should they experience any discomfort within the 1st month of spectacle wear. This was offered to all patients (both spherocylindrical and spherical equivalent) to remove any bias. In this study, an auto refractometer was used in addition to refraction using a streak retinoscope.

RESULTS

929 patients attended the eye camp. This included 329 patients that needed refraction. The mean age of the patients who received refraction was 41(±16; range: 7–84) years and included 140 females (43%). 240 eyes had refractive error and needed correction. Spherical correction was needed in 140 eyes (58.4%), and the remaining 100 eyes (41.6%) required spherocylindrical correction. There was no reduction of visual acuity in spherical equivalent of 0.25 and .50 D cylinder (100% satisfaction) and progressive decrease in satisfaction to 43%, 26%, and 19% with spherical equivalent correction of 1.0, 1.5, and 2.0 D cylinder, respectively. Over 43% of eligible patients finally accepted the spherical equivalent spectacles.

No client returned for exchange of spectacles. The median time for dispensing the spectacles was 6 days.

DISCUSSION

Two kinds of spectacle lenses are available for dispensing: the stock lenses and custom-made lenses. Stock lens includes single vision lenses in the range of +9.00–−9.00 DSph and up to −3.00 Dcyl; the Kryptok bifocal lenses have a distance from 0 to +3 DSph and near addition up to +3 DSph. Spectacles with >3.00 Dcyl in single vision and any amount of cylindrical power for distance in bifocals are always custom-made. Stock lenses are always in spherical power where half of the cylindrical correction, if any, is added to the spherical power to create spherical equivalent lens.

Stock lenses cost less than custom made lenses and hence used in an eye camp. More over a pair of custom-made spectacles takes a much longer time to be delivered usually 5–7 days; it depends on a variety of factors that include the type of lens, the time for surfacing required power lens, edging, and fitting to the selected frame. In comparison, a pair of stored stock lenses provides us with the opportunity to dispense the spectacles right at the time of examination.

Some of the earlier studies done in India and other countries have shown good acceptance of ready-made spectacles. Our study showed that over 43% of eligible patients finally accepted the spherical equivalent spectacles.

CONCLUSION

Considering that the compliance with spectacle use improves significantly when it is dispensing immediately [3], that there is good compliance to wearing ready-made lenses in resource-poor locations [7] especially in an eye camp study. Dispensing SE ready-to-wear spectacles to the willing patients with <1 Dcyl is both scientific and cost-effective.

Conflicts of interest

There are no conflicts of interest.

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