

Pattern of care and maintenance of eye wear among regular spectacle users

Padma B. Prabhu^{1,*}, Sreeshma S.², Fathima Husna³, Raju KV⁴

¹Associate Professor, Dept. of Ophthalmology, ^{2,3}Intern B.Sc. Optometry, ⁴Professor & HOD, Dept. of Ophthalmology, Govt. Medical College, Kozhikode, Kerala

***Corresponding Author**

E-mail: padmapraveen@gmail.com

Abstract

Background: Spectacles is the first choice for optical correction worldwide. The novice wearer is concerned about the comfort and cosmetic appearance rather than the quality of vision. Care of the spectacle, lens and frames, is mandatory to extend the life of one's eye wear.

Aims and Objectives: To assess the attitude and practices of constant and regular spectacle users regarding the care of their eye wear.

Design: Cross sectional study based on questionnaire survey.

Material and Methods: The cases were selected by convenient sampling. The questionnaire covered demographic characteristics, general knowledge, care and maintenance as well as review schedule.

Results: The study included 50 cases. 60% of the participants were aware about the power of their glasses. 52% were informed regarding the care and maintenance of spectacles by the respective opticians. 88% responded that they checked the power of glasses at regular intervals. There was no specific cleaning modality of preference in 68% cases. The case was used for storage of eyewear (when the glasses were not in use) by 32% participants. 70% approached an optician for adjustment of glasses when misaligned. Awareness about care and maintenance strategies was poor. Recipients of proper instruction (by the optician), subjects with low level of literacy, those with profession not requiring constant near work and bifocal wearers had better awareness.

Conclusion: The majority of spectacle users had poor knowledge on the care and related aspects of eye wear.

Keywords: Bifocals, Eye wear, Maintenance, Optician, Reading glasses, Spectacles, Spectacle power

| Access this article online | |
|---|--|
| Quick Response Code: | Website: www.innovativepublication.com |
|  | DOI: 10.5958/2395-1451.2016.00004.4 |

Introduction

Globally, refractive errors are a major cause of visual impairment. In spite of increasing popularity of contact lens and refractive surgeries, spectacles continue to be the most preferred low cost method of visual rehabilitation. Spectacles help not only in the correction of refractive errors, but also are used as eye protection, for cosmetic purpose and as part of the fashion wear. For such varied uses, maintenance of spectacles and adequate care are essential. Reasonable care of eye wear extends the life of the spectacles and ensures good quality vision. Unfortunately, many of the wearers are not aware of these precautions.

This study was undertaken to assess the attitude and practices of spectacle users among subjects attending the Ophtho-mo-logy Out-Patient Department of a tertiary care unit in northern Kerala, regarding the care of their eye wear. An attempt was made to

correlate the effect of age, gender, educational status and the living style with this awareness. Further the study also intended to analyze the knowledge regarding maintenance, wearing patterns and adjustments on damage of lenses and frames.

Materials and Methods

A questionnaire based descriptive cross-sectional study was adopted for this investigation. The study group included subjects attending Ophthalmology OPD of our institute for eye care. Subjects with an educational background of higher secondary level and below, history of constant use of glasses (at least 8 hours/day) for more than one year, with or without history of spectacle change, lens, frame or both were selected. Those with ocular diseases, ametropes not fully corrected with glasses, young adults less than twenty years and children were excluded. The sample size satisfied the minimum required for statistical analysis (50) based on the formula $4pq/d^2$, where $p=66\%$ (spectacle coverage rate - A Fotouhi et al [1]), $q = 100-p$ and $d = 20\%$ of p (95% confidence interval). The study period was six months (Jan – July 2015).

The study was briefly explained to the subjects who met the criteria for the study. Those who agreed to participate were requested to provide consent on a consent form. There was no additional financial burden or incentive for the patient to participate in the study.

A two- page questionnaire was administered to the study participants. The questionnaire included queries pertaining to spectacle use, knowledge of eye wear and care of spectacles. The responses were solicited on the duration of spectacle usage, the frequency of change of eye wear, the reasons for such changes, knowledge about the power of the glass and the instructions from optician regarding cleaning, care and follow-up schedule of spectacle wear.

Data were analyzed using SPSS version 17. The effect of variables (such as age, education, place of residence, gender and type of spectacles) on attitude and practices of the subject was analyzed. The awareness regarding spectacle care, cleaning and maintenance was defined separately. Chi-square test was used for univariate analysis. P value less than 0.05 was considered as statistically significant.

Results

The study group included 50 cases; age ranging from 20 to 80 years (mean age 49.14 SD 15.413). 64% were males. Majority (58%) were having a sedentary office work. 40% were illiterate. 86% belonged to the rural areas. 36 subjects (72%) were using bifocals (Table 1).

Defective vision was the most common complaint for which spectacles were prescribed. Blurring of vision with the existing glasses was the common reason for change of the eye wear (Table 2). The duration of spectacle wear ranged from more than one year to 5 years among 44% (n=22). 12 cases (24%) among them had never changed their glasses; but majority changed their glass within a period of one to three years. This was more appreciable among those with duration of wear of more than 10 years (15/20). The above

observations were statistically significant with $p < 0.001$; but not related to the age, type of glasses, occupation, area of residence or literacy of the subject (Table 3).

60% of the participants were aware about the power of their glasses. 52% were informed regarding the care and maintenance of spectacles by the respective opticians. Majority were complacent to cleaning the glasses at home regularly. But 84% adjusted their glasses themselves. 96% were used to sleeping or reclining with spectacles (Table 4).

Majority (52%) of the participants cleaned their glasses as and when required. The soft cloth provided with the spectacles (selvet) was used for cleaning only by 20% subjects. There was no specific cleaning modality of preference in 68% cases. The storage case was used for storage of eyewear when not in use by 32% participants. 70% approached an optician for adjustment of glasses when misaligned (Table 4).

Those who were educated up to primary level remembered their spectacle prescription ($p < 0.000$) and were regular in the change of glasses ($p < 0.033$). Subjects with clerical job adjusted the frames of spectacles themselves often ($p < 0.029$). Those wearing bifocals regularly checked the power ($p < 0.045$) Table 4, 5.

Participants who were briefed about the care of eyewear at the time of purchase (52%), kept their glasses in the storage case provided with it when not in use ($p < 0.006$) and were prompt in approaching an optician for correction of misalignment without self-adjustment ($p < 0.031$). This promptness was also observed among those who were illiterate ($p < 0.032$) Table 6.

Table 1: Demographic profile of the participants

| Factors | | N | % |
|----------------------|-----------------------|----|------|
| Gender | Male | 32 | 64 |
| | Female | 18 | 36 |
| Socioeconomic status | APL | 25 | 50 |
| | BPL | 25 | 50 |
| Occupation | Nil | 13 | 26 |
| | Manual labour | 8 | 16 |
| | Sedentary office work | 29 | 58 |
| Education | Illiterate | 20 | 40 |
| | Primary | 18 | 36 |
| | Secondary | 12 | 24 |
| Area of residence | Rural | 43 | 86 |
| | Urban | 7 | 14 |
| Type of spectacle | monofocal distance | 8 | 16.0 |
| | bifocal | 36 | 72.0 |
| | reading glass | 6 | 12.0 |

Table 2: Patterns of spectacle use

| | | N | % |
|---|--------------------|----|----|
| Since how long are you using spectacles? | <1 year | 1 | 2 |
| | 2-5 years | 22 | 44 |
| | 6-10years | 7 | 14 |
| | >10years | 20 | 40 |
| When did you last change your glass? | <6 months | 7 | 14 |
| | 6 months-1year | 15 | 30 |
| | >1-3years | 11 | 22 |
| | >3 years | 5 | 10 |
| | never | 12 | 24 |
| What were the causes for such a change? | lens breakage | 15 | 30 |
| | blurring of vision | 31 | 62 |
| | regular interval | 3 | 6 |
| | never changed | 1 | 2 |
| For what purpose glasses were prescribed? | headache | 6 | 12 |
| | defective vision | 43 | 86 |
| | protection | 1 | 2 |
| How frequently do you change your glasses? | <6 months | 1 | 2 |
| | 6-1year | 9 | 18 |
| | >1-3years | 21 | 42 |
| | >3 years | 7 | 14 |
| | never | 12 | 24 |

Table 3: Association of demographic profile and patterns of use with frequency of change of eye wear

| | | Frequency of change of spectacles | | | | | P value |
|-------------------|------------------------|-----------------------------------|----------------|-----------|-----------|-------|---------|
| | | <6 months | 6 months-1year | >1-3years | 3-5 years | never | |
| Duration | 1 year | 0 | 0 | 0 | 0 | 1 | 0.001* |
| | 2-5 years | 1 | 6 | 3 | 1 | 11 | |
| | 6-10years | 0 | 2 | 3 | 2 | 0 | |
| | >10years | 0 | 1 | 15 | 4 | 0 | |
| Type of spectacle | monofocal distance | 0 | 3 | 3 | 0 | 2 | 0.604 |
| | bifocal | 1 | 6 | 16 | 5 | 8 | |
| | reading glass | 0 | 0 | 2 | 2 | 2 | |
| Gender | male | 1 | 6 | 11 | 5 | 9 | 0.624 |
| | female | 0 | 3 | 10 | 2 | 3 | |
| APLBPL | APL | 1 | 3 | 12 | 4 | 5 | 0.574 |
| | BPL | 0 | 6 | 9 | 3 | 7 | |
| Age group years | 21 - 30 | 0 | 2 | 2 | 0 | 3 | 0.472 |
| | 31-40 | 0 | 1 | 1 | 2 | 0 | |
| | 41-50 | 1 | 3 | 3 | 0 | 3 | |
| | 51-60 | 0 | 3 | 10 | 2 | 4 | |
| | 61-70 | 0 | 0 | 4 | 2 | 1 | |
| | 71-80 | 0 | 0 | 1 | 1 | 1 | |
| Occupation | nil | 0 | 3 | 2 | 3 | 5 | 0.130 |
| | manual labour | 1 | 2 | 4 | 0 | 1 | |
| | Clerical/technical job | 0 | 4 | 15 | 4 | 6 | |

| | | | | | | | |
|-------------------|-----------|---|---|----|---|----|-------|
| Education | nil | 0 | 3 | 10 | 4 | 3 | 0.448 |
| | primary | 0 | 3 | 6 | 3 | 6 | |
| | secondary | 1 | 3 | 5 | 0 | 3 | |
| Area of residence | rural | 1 | 8 | 17 | 6 | 11 | 0.911 |
| | urban | 0 | 1 | 4 | 1 | 1 | |

*** - statistically significant with p value < 0.05

Table 4: Distribution of cases based on awareness regarding the make and care of spectacles

| | Yes | | No | | | P value |
|---|-----|----|----|----|---------------------------|----------|
| | N | % | N | % | | |
| Do you know the power of your glass? | 30 | 60 | 20 | 40 | Gender | 0.084 |
| | | | | | Socioeconomic status | 0.193 |
| | | | | | Area of residence | 0.277 |
| | | | | | Duration of use | 0.572 |
| | | | | | Occupation | 0.095 |
| | | | | | Education | 0.000*** |
| | | | | | Type of spectacles | 0.088 |
| Were you informed about the care of your glass? | 26 | 52 | 24 | 48 | Gender | 0.468 |
| | | | | | Socioeconomic status | 0.611 |
| | | | | | Area of residence | 0.453 |
| | | | | | Duration of use | 0.363 |
| | | | | | Occupation | 0.857 |
| | | | | | Education | 0.942 |
| | | | | | Type of spectacles | 0.213 |
| Do you adjust your glasses yourself? | 42 | 84 | 8 | 16 | Gender | 0.609 |
| | | | | | Socioeconomic status | 0.649 |
| | | | | | Area of residence | 0.270 |
| | | | | | Duration of use | 0.516 |
| | | | | | Occupation | 0.029*** |
| | | | | | Education | 0.531 |
| | | | | | Type of spectacles | 0.441 |
| Do you clean your glasses regularly? | 1 | 2 | 49 | 98 | Gender | 0.640 |
| | | | | | Socioeconomic status | 0.500 |
| | | | | | Area of residence | 0.860 |
| | | | | | Duration of use | 0.729 |
| | | | | | Occupation | 0.234 |
| | | | | | Education | 0.199 |
| | | | | | Type of spectacles | 0.820 |
| Do you check the power regularly? | 44 | 88 | 6 | 12 | Gender | 0.369 |
| | | | | | Socioeconomic status | 0.095 |
| | | | | | Area of residence | 0.192 |
| | | | | | Duration of use | 0.594 |
| | | | | | Occupation | 0.328 |
| | | | | | Education | 0.033*** |
| | | | | | Type of spectacles | 0.045*** |
| Do you sleep wearing your spectacles? | 48 | 96 | 2 | 4 | Gender | 0.737 |
| | | | | | Socioeconomic status | 0.755 |
| | | | | | Area of residence | 0.644 |
| | | | | | Duration of use | 0.499 |
| | | | | | Occupation | 0.372 |
| | | | | | Education | 0.735 |
| | | | | | Type of spectacles | 0.388 |

*** - statistically significant with p value < 0.0

Table 5: Factor analysis contd

| | | Yes | No | |
|--------------------------------------|--------------------|-----|----|-----------|
| Do you check the power regularly? | illiterate | 19 | 1 | 0.033 *** |
| | Primary level | 17 | 1 | |
| | Secondary level | 8 | 4 | |
| Do you check the power regularly? | monofocal distance | 5 | 3 | |
| | bifocal | 33 | 3 | 0.045 *** |
| | reading glass | 6 | 0 | |
| Do you know the power of glasses? | illiterate | 6 | 14 | 0.000 *** |
| | Primary level | 3 | 15 | |
| | Secondary level | 11 | 1 | |
| Do you adjust your glasses yourself? | Occupation -nil | 8 | 5 | 0.029 *** |
| | manual labour | 8 | 0 | |
| | clerk | 26 | 3 | |

*** - statistically significant with p value < 0.05

Table 6: Association of demographic profile with method of care and adjustment of spectacles

| | | N | % | | | | | | |
|--------------------|------------------------------|----|----|---------------------------------|--------------------------------|----|----|-----------------------------|-----------------|
| When do you clean? | before use | 20 | 40 | Gender | 0.640 | | | | |
| | | | | Socioeconomic status | 0.500 | | | | |
| | Both before and after | 4 | 8 | Area of residence | 0.860 | | | | |
| | As and when needed | 26 | 52 | Duration of use | 0.729 | | | | |
| | | | | Occupation | 0.234 | | | | |
| | | | | Education | 0.199 | | | | |
| | | | | Type of spectacles | 0.820 | | | | |
| | | | | Informed or not | 0.755 | | | | |
| | | | | How do you clean? | selvet | 10 | 20 | Gender | 0.263 |
| | | | | | | | | Socioeconomic status | 0.507 |
| Area of residence | 0.700 | | | | | | | | |
| Duration of use | 0.126 | | | | | | | | |
| Occupation | 0.936 | | | | | | | | |
| Education | 0.246 | | | | | | | | |
| Type of spectacles | 0.089 | | | | | | | | |
| | Multiple means | 30 | 50 | Informed or not | 0.755 | | | | |
| | | | | Where do you keep the glasses? | case | 15 | 30 | Gender | 0.108 |
| | | | | | | | | Socioeconomic status | 0.560 |
| | | | | | | | | Area of residence | 0.948 |
| | | | | | | | | Duration of use | 0.088 |
| | | | | | | | | Occupation | 0.686 |
| | | | | | | | | Education | 0.753 |
| Type of spectacles | 0.283 | | | | | | | | |
| | anywhere | 26 | 52 | Informed or not | 0.006*** | | | | |
| | | | | How do you hold the spectacles? | hold with both hands | 44 | 88 | Gender | 0.631 |
| | | | | | | | | Socioeconomic status | 0.011*** |
| | | | | | | | | Area of residence | 0.616 |
| | | | | | | | | Duration of use | 0.479 |
| | | | | | | | | Occupation | 0.897 |
| | | | | | | | | Education | 0.845 |
| Type of spectacles | 0.266 | | | | | | | | |
| | hold with one hand | 6 | 12 | Informed or not | 0.295 | | | | |
| | | | | How do you remove your glasses? | hold at temple with both hands | 31 | 62 | Gender | 0.280 |
| | | | | | | | | Socioeconomic status | 0.381 |
| | | | | | | | | Area of residence | 0.568 |
| | | | | | | | | Duration of use | 0.680 |
| | | | | | | | | Occupation | 0.755 |
| | | | | | | | | Education | 0.295 |
| Type of spectacles | 0.521 | | | | | | | | |
| | hold at temple with one hand | 9 | 18 | | | | | | |
| | | | | hold at bridge with one hand | 4 | 8 | | | |
| | | | | | | | | | |

| | | | | | |
|--|--|----|----|------------------------|-----------------|
| | hold at rim with one hand | 6 | 12 | Informed or not | 0.262 |
| If there is a misalignment what do you do? | self-adjustment | 10 | 20 | Gender | 0.727 |
| | | | | Socioeconomic status | 0.402 |
| | approach an optician without self-adjustment | 27 | 54 | Area of residence | 0.958 |
| | | | | Duration of use | 0.376 |
| | | | | Occupation | 0.989 |
| | approach an optician after self-adjustment | 8 | 16 | Education | 0.032*** |
| | do not mind | 5 | 10 | Type of spectacles | 0.719 |
| | | | | Informed or not | 0.031*** |

*** - statistically significant with p value < 0.05

Discussion

Spectacles are a pair of lenses held by a frame. They have a major role in enhancing visual acuity. A greasy finger print, smudge, debris, dust or moisture can affect the quality of vision through the spectacles. Similarly, alignment of the frame is also essential to keep the lenses centered in the pupillary area.^[2] The frame gets dirty from sweat and everyday dirt. Dirt can destroy the finish; result in dermatitis or rashes at areas of contact like side of nose, back and top of ears.^[3,4] Hence proper care and maintenance of the spectacles are mandatory to ensure clarity in the visual perception, especially among constant users with long wearing time as in high refractive errors.^[5] Generally, the first time user is careful about handling and usage of the eyewear. It is observed that with prolonged use, the care in handling and usage declines. This study intended to ascertain the attitude towards this aspect among regular users of glasses.

It was observed that majority considered spectacles for correction of defective vision. Blurring of vision followed by breakage of glasses were the chief reasons for spectacle change. A large proportion was content with their existing facility for long years. Though statistically significant this was not related to the age, type of glasses, occupation, literacy of the subject and area of residence.

The performance of any eye wear can be enhanced by proper and regular cleaning of the spectacle lenses and frame.^[6] The ideal method includes spraying with light detergents and air drying. Soft and clean clothes with compact fibres e.g. (selvet) provided with the glasses also aids in removing smudge and fingerprints in case of need. It is preferable to wash in running water at least once in a day before use to enhance the life of frames as well.^[6] The glasses should be gripped firmly at the pieces crossing the bridge of nose while wearing. They should be removed with both hands. These precautions prevents accidental bend of the frame.^[7] They should be placed carefully and stored properly when not in use. This prevents scratching of lenses. Use of hard spectacle pouch or microfiber pouch is advisable. They should not be left bare on dashboards, seats, chairs, sofa or beds.^[8] Though cleaning of the

lens and frame can be done regularly by the wearer using household facilities like detergents and soft clothes, a regular visit to the optometrist for optimal care and alignment of the spectacles is essential.^[9] They have special equipments to clean the lens and frame in a perfect manner. Moreover the alignment of the frame and standardization can also be checked.^[10] The checkup is usually scheduled at regular intervals (every 3-4 months).^[10]

Knowledge regarding power of glass was less among the study group. However majority were regular in checking the power. Knowledge regarding spectacle care was also low among the study group. Majority were reluctant in cleaning the glasses at home regularly and often adjusted their glasses themselves. Improper practices like reclining with spectacles was very common. Those with such practices did not consider their habit as a reason behind frame misalignment.

Despite the importance in selecting an ideal eye wear for use, the subjects seeking new glasses often give priority consideration for cosmetic appeal. The optician has the responsibility to guide the customer towards a proper spectacle, both lens and frame, so as to get the best quality vision and comfort. It is not enough to merely dispense the new pair of refractive correction, but it should be accompanied by instructions regarding the essential care and maintenance of the glasses. We observed that there is a big void in this essential communication. Those who were properly briefed did better in the maintenance of spectacles.

The soft cloth provided with the eyewear was used by only a minority of subjects. The case was used for storage of eyewear when not in use by less than 50% participants. A majority approached an optician for adjustment of glasses when misaligned but not for maintenance. Subjects with clerical job requiring constant and continuous near work were affected by the misalignment, but adjusted their glasses themselves often without opting for professional help. This group should be counseled about the subnormal visual function resulting from the shift of the centration point or optical center from the pupillary area. This can induce aberrations like prismatic aberrations and change in the power, axis or both of the prescription. Hence self-adjustments should be done with caution.

The optician can train this group regarding the correct methods of frame adjustments in case of minor misalignments. Users of bifocals checked the power regularly, probably due to the progression of presbyopic power.

Limited data, translational bias, bias in the understanding of the response by the interviewer and recall bias due to self-reporting are the limitations of this study. Though the sample size is less, this data can be considered as a representative sample of regular spectacle wearers.

The prevalence rates of spectacle users, especially children, are increasing rapidly in rural as well as urban areas. Even though there is an increased upcoming of ophthalmic hospitals and more optical firms, the awareness regarding appraisal of spectacle performance, repair and prudent follow up is generally lacking. Poor understanding about the wearing techniques, need for ensuring good visual functions, careful handling practices and discretion in the maintenance of the eye wear were evident in our study. There is also a huge gap between attitudes, knowledge, and actual practice within the study population. This may reflect the lack of awareness in the general population.

Conclusion

The awareness regarding appraisal of spectacle performance, repair and prudent follow up was generally lacking. Poor understanding about the wearing techniques, need for ensuring good visual functions, careful handling practices and discretion in the maintenance of the eye wear were evident in our study. Those with long wearing time or prolonged years of usage did not possess better understanding about the care, as expected. Poor communication from the side of the optician was evident.

Conflict of Interest: None

Source of Support: Nil

References

1. A Fotouhi, H Hashemi, B Raissi, K Mohammad. Uncorrected refractive errors and spectacle utilization rate in Tehran: the unmet need. *Br J Ophthalmol*. 2006 May;90(5):534-537.
2. Adeoti CO. Beliefs and attitude towards spectacles. *Niger J Clin Pract*. 2009 Dec;12(4):359-61.
3. Situm M, Lugović-Mihić L, Bulat V, Peternel R, Vojniković B, Martinis M, Toth I Dermatological aspects of contact dermatitis from eyeglass frames and optical materials. *Coll Antropol*. 2013 Apr;37 Suppl 1:19-24.
4. Kim IS, Yoo KH, Kim MN, Hong HK, Choi YS, Jo YC, Kim BJ, Lee JS. The fine scratches of the spectacle frames and the allergic contact dermatitis. *Ann Dermatol*. 2013 May;25(2):152-5.
5. Dandona R, Dandona L, Kovai V, Giridhar P, Prasad MN, Srinivas M. Population-based study of spectacles use in southern India. *Indian J Ophthalmol*. 2002 Jun;50(2):145-55.
6. Odedra N, Wedner SH, Shigongo ZS, Nyalali K, Gilbert C. Barriers to spectacle use in Tanzanian secondary school students. *Ophthalmic Epidemiol*. 2008 Nov-Dec;15(6):410-7.
7. Jones-Jordan LA, Chitkara M, Coffey B, Jackson JM, Manny RE, Rah MJ, Walline JJ. A comparison of spectacle and contact lens wearing times in the ACHIEVE study. *Clin Exp Optom*. 2010 May;93(3):157-63.
8. du Toit R, Ramke J, Palagyi A, Brian G. Spectacles in Fiji: need, acquisition, use and willingness to pay. *Clin Exp Optom*. 2008 Nov;91(6):538-44.
9. Ramke J, du Toit R, Palagyi A, Williams C, Brian G. Public sector refraction and spectacle dispensing in low-resource countries of the Western Pacific. *Clin Experiment Ophthalmol*. 2008 May;36(4):339-47.
10. Hrynchak P. Prescribing spectacles: reasons for failure of spectacle lens acceptance. *Ophthalmic Physiol Opt*. 2006 Jan;26(1):111-5.