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ORIGINAL ARTICLE

Assessment of Compliance and Barriers to Spectacles Use in Prescribed Patients

HIRA ALI[1], MOHAMMAD PARVEZ[2], MUHAMMAD AYUB KHAN[3], MUHAMMAD IRFAN[4], AIMAL KHAN[5], MOHAMMAD AFZAL KHAN[6]

[1]*Optometrist, Department of Ophthalmology, Mardan Medical Complex, Mardan, Pakistan*
[2]*Assistant Professor, Department of Ophthalmology, Muhammad College of Medicine Peshawar, KPK, Pakistan*
[3]*Assistant Professor, Department of Ophthalmology, Gomal Medical College, Dera Ismail Khan, Pakistan*
[4]*Senior Registrar, Department of Ophthalmology, HBS Medical & Dental College, Islamabad, Pakistan*
[5]*Assistant Professor, Department of Opthalmology, Helpers Eye Hospital / Bolan Medical College, Quetta, Pakistan*
[6]*Associate Professor, Department of Opthalmology, Bolan Medical College / Helpers Eye Hospital, Quetta, Pakistan*
Correspondence to: Muhammad Ayub Khan, Email: drayub2310@gmail.com

ABSTRACT

Background: One cause of preventable visual impairment in the world is the uncorrected refractive error. Even though the simplicity and low costs of spectacles offer a low-cost issue, adherence to the use of spectacles is still not optimal because of many social, economic, and behavioral considerations.

Objective: To determine adherence and the obstacles to the use of spectacles among the patients who were prescribed with spectacles in a tertiary care hospital in Quetta, Pakistan.

Methods: The proposed study is a cross-sectional descriptive study conducted at Helpers Eye Hospital, Quetta, between April 2022 and April 2023. Non-probability consecutive sampling was used to enroll 200 patients of 6 years and older that had received spectacles at least three months before the study. A structured questionnaire was used to measure frequency of spectacle use and perceived barriers and this was used to collect the data. The compliance was divided into regular use, occasional use and non-use. The SPSS version 26 was used to analyze data. They were tested using chi-square test, and a $p \leq 0.05$ was taken to be statistically significant.

Results: The average age of the respondents was 18.66 years with 56.0 percent being males and 44.0 percent being females. One hundred and eighty four (118) patients (59.0) reported regular use of the spectacle and 82 (41.0) were non-compliant. Cosmetic concerns (26.8%), discomfort or headache (22.0%), social stigma (18.3%), and forgetfulness (15.9%), have been most frequently reported. The compliance was found to be closely related to age ($p = 0.021$), time since prescription ($p = 0.009$), and perceived visual benefit ($p = 0.001$), but not gender.

Conclusion: There is a significant percentage of non-adherence to regular spectacle use in the group of prescribed patients because of barriers that can be changed. Individualized counseling, better patient education, and community education are necessary to increase compliance and preventable visual impairment.

Keywords: Spectacle compliance; Refractive error; Visual impairment; Barriers; Patient adherence; Pakistan.

INTRODUCTION

One of the most common causes of preventable visual impairments in the world is uncorrected refractive error, which impacts considerably on the educational achievement, work efficiency and general livelihood. Spectacles are cheap, easy, and readily accessible type of intervention in correction of refractive failure, but at the same time, many groups are not optimum in adhering to the use of spectacles. Although it is prescribed adequately, a significant percentage of patients, especially children and adolescents, fail to wear their spectacles on a regular basis, which restricts the desired visual and functional gains[1].

There are several factors which are interdependent on compliance with spectacle wear such as socioeconomic status, cultural perception, availability of optical services, and patient education. Research has indicated that the misunderstandings about the necessity of spectacles, fear of progressive vision worsening, and social stigma can demoralize frequent practice, particularly with children of school age and young adults[2,3]. Financial constraints and poor knowledge about the need to wear a spectacle regularly compound these barriers in most developing nations.

Multiple studies have shown that non-compliance rate could be between 30 and 60 percent among the prescribed individuals with higher levels of non-compliance in pediatric populations[4,5]. Perceptions related to gender, influence of peers and concerns related to cosmetics have been noted to be significant determinants of compliance. Besides this, there are also reports of discomfort owing to badly adjusted frames, poor counseling during the prescription, and follow-ups being considered modifiable elements which influence adherence[6].

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The level of education and parental awareness is also a major factor in spectacle compliance among children. Studies have shown that children whose parents believe that they need the corrective lenses tend to comply with the use of the prescribed lenses[7]. On the other hand, misinformation or negative attitudes of the parental attitudes towards spectacles may be a potent obstacle to compliance. Such results demonstrate the significance of patient and caregiver education as a means of enhancing the adherence levels.

In low- and middle-income nations, like that of Pakistan, the obstacles to the use of the spectacle may go beyond individual perceptions. The scarcity of available and affordable spectacles of good quality and the lack of integration of vision screening programs into primary healthcare systems are some of the reasons why the visual needs are not met[8]. Although spectacles use may reduce with time even in the case when provided by screening programs or tertiary care facilities because of social stigma or reinforcement lapse.

Quetta is a big city in Baluchistan and has a heterogeneous population of different socioeconomic and educational statuses. Spectacles used in refractive correction are commonly prescribed in tertiary care hospitals but the actual adherence to the use of these systems among patients is still unclear. The identification of particular obstacles in this regional context is key to the development of the interventions that could be tailored to improve adherence and preventable visual impairment.

Assessment of compliance trends and perceived obstacles to the use of spectacles in prescribed patients may offer useful evidence to the clinicians, planners, and policymakers in the field of public health. This evidence can be used in remedial measures such as patient education, community education and school education to enhance long-term spectacle use and visual performance.

Objective: To assess compliance and identify barriers to spectacle use among patients who were prescribed spectacles at a tertiary care hospital in Quetta, Pakistan.

METHODOLOGY

Study Design and Setting: The study is a descriptive cross-sectional study done in the Department of Ophthalmology Gomal Medical College, Dera Ismail Khan and Helpers Eye Hospital, Quetta. It was conducted during one year study period between February 2023 and July 2023. The hospital is a tertiary care referral hospital that serves the urban and peri-urban communities of Quetta and other districts of Baluchistan.

Population and Sampling of the study: The prevalent patients in the study were 6 years and above who had been prescribed the spectacles to correct refractive error at least three months before the time of data collection. Any pediatric and adult patients on the follow-up visits in the outpatient department were eligible. Patients with ocular pathology that would interfere with vision (e.g., cataract, glaucoma, corneal opacity), ocular surgery in the past, or cognitive impairment that would interfere with participation in the interview were eliminated. Non-probability consecutive sampling method was used. All patients who met the eligibility criteria and who appeared during the study period and agreed to take part in the research were enrolled.

Data Collection Procedure: Informed consent (and assent in the case of minors) was obtained, and data were collected with the help of a structured and pre-tested questionnaire. In pediatric respondents, the answer was received on behalf of the parents or the guardians. The following are the demographic variables used in the questionnaire which encompassed age, gender, level of education, occupation, the time period of spectacle prescription, the type of refractive error, and the frequency with which the spectacles were used.

Compliance was broken down into:

• Frequent use- put on during most of the waking hours.
Occasional sight aid- putting on spectacles on rare occasions.
• Non-use - failure to put on the prescribed spectacles.

The barriers to the use of spectacle were measured using the multiple choice and open-ended question such as discomfort, cosmetic concerns, social stigma, forgetfulness, loss/breakage of spectacles, financial factors, no perceived benefit and the misconceptions of being dependent on spectacles.

The visual acuity was determined by applying Snellen chart with and without spectacles so that the usage and correction effectiveness could be objectively checked.

Variables/ Operational Definitions: The main outcome measure was adherence to spectacle usage (regular, occasional, non-use). The independent variables were age, sex, education level, number of months since prescription, refractive error type and perceived barriers to usage. Operational definition Compliance was defined as self reported regular use supported by assessment of visual acuity at the clinic visit.

Data Analysis: The SPSS version 26 was used to enter and analyze data. Quantitative data like the age were provided in terms of mean and standard deviation. The qualitative variables like gender, the category of compliance, and alleged barriers were discussed in terms of frequencies and percentages. The Chi-square test was used to determine the associations between independent variables and compliance. The statistically significant p-value was deemed to be 0.05 and less.

Ethical Considerations: The Institutional Review Board of Hospital, Quetta gave the ethical approval. Informed consent was taken in written form of all adult participants and parents or guardians of minors. Participant information was kept confidential during the study and the research was done keeping to ethical principles as was indicated in the Declaration of Helsinki.

RESULTS

The study involved 200 patients who had been prescribed spectacles at least three months before the study. The average age of the subjects was 18.6 + 9.4 years (minimum and maximum: 6-45 years). Out of them, 112 (56.0%) were male and 88 (44.0%) were female. One hundred and ten (55.0%) pediatric patients (6-15 years) and 90 (45.0%) were above 15 years.

In general, 118 (59.0%) of them indicated to use spectacles regularly, 46 (23.0%) to use these devices occasionally, and 36 (18.0%) were non-users. The absence of compliance (occasional use + non-use) was thus found in 82 (41.0%) patients.

Cosmetic issues (26.8 percent), discomfort or headache (22.0 percent), social stigma or peer teasing (18.3 percent), forgetfulness (15.9 percent), and loss or breakage of spectacles (12.2 percent) were the most frequently reported restrictions to the use of the spectacle. A total of 9.8% had financial constraints. Some patients have reported several barriers.

There was statistically significant relationship between the compliance and age group (p = 0.021) with pediatric patients showing less compliance than adults. Other factors that were not significantly related to compliance included gender (p = 0.284). Regular use of spectacles was also significantly related to the period of use since prescription and perceived visual benefit (p = 0.009 and p = 0.001 respectively).

Table 1: Demographic Characteristics of Participants (n = 200)

Variable	Frequency (n)	Percentage (%)
Age (Mean ± SD)	18.6 ± 9.4 years	—
Age 6–15 years	110	55.0%
Age >15 years	90	45.0%
Male	112	56.0%
Female	88	44.0%
Duration since prescription ≥6 months	124	62.0%
Duration since prescription <6 months	76	38.0%

Table 2: Compliance with Spectacle Use (n = 200)

Compliance Category	Frequency (n)	Percentage (%)
Regular Use	118	59.0%
Occasional Use	46	23.0%
Non-Use	36	18.0%
Total Non-Compliant	82	41.0%

Table 3: Reported Barriers to Spectacle Use (n = 82 non-compliant patients)

Reported Barrier	Frequency (n)	Percentage (%)
Cosmetic concerns	22	26.8%
Discomfort / headache	18	22.0%
Social stigma / teasing	15	18.3%
Forgetfulness	13	15.9%
Breakage / loss	10	12.2%
Financial constraints	8	9.8%

Table 4: Association Between Selected Variables and Compliance

Variable	Regular Use (n=118)	Non-Compliant (n=82)	p-value
Age 6–15 years	56	54	0.021
Age >15 years	62	28	
Male	70	42	0.284
Female	48	40	
Duration ≥6 months	84	40	0.009
Duration <6 months	34	42	
Perceived Visual Benefit (Yes)	104	36	0.001
Perceived Visual Benefit (No)	14	46	

DISCUSSION

In the current study the compliance and barriers to spectacle use in patients with corrective lenses prescription were evaluated at a tertiary care hospital, Quetta. Our group had a total compliance rate of 59% and 41% were occasional users and non-users. These results suggest that a significant percentage of the patients fail to completely comply with the prescribed use of spectacles, thus restricting the possible visual and functional advantages of refractive correction. The same level of compliance has been observed in other studies done in the past in developed and developing nations[9,10].

A number of non-compliance have been reported among the numerous international populations with a range of 30-60 percent especially among the pediatric population[11,12]. Reduced compliance among children in our study is in line with the preceding studies that indicated that children at age are more susceptible to the influence of peer perception, social stigma, and parent attitude towards the use of spectacles. This highlights the role played by family participation and school-based education on adherence enhancement.

The most common barrier that was reported in our study is cosmetic issues. Similar results are also conveyed in other regional and international-based studies where aesthetic dissatisfaction and fear of appearing bad were also strong deterrents to the use of spectacles on regular basis[13,14]. Such issues are especially acute in adolescence, when a person can be more social-oriented than corrective. Compliance can be enhanced with regards to cosmetic preferences by providing light frame and contemporary design.

A headache and discomfort were also reported as the common barriers. Past studies have indicated that ill-fitting, incorrect prescriptions, or absence of adaptation counselling may be an addition to the discomfort and early dropout of spectacles[15]. To minimize these modifiable causes of non-compliance, proper dispensing, counselling during prescription and early follow-up visits can be helpful.

A significant percentage of the pediatric respondents reported social stigmatization and peer teasing. The South Asian and Middle East populations have also shown similar results with teasing and bullying being of significance as reasons why school children do not use spectacle[16]. The perception that spectacles are a sign of weakness, or poor health, that is part of culture may discourage repeated usage as well. The community-level awareness campaigns can thus be useful in normalizing the use of spectacles.

All the aforementioned factors are barrier reasons, and although the financial limitations are less prevalent in our study, it is still a relevant factor in low- and middle-income environments. Although spectacles may be initially supplied, breakage loss may turn out to be the reason behind the further use[17]. The use of sustainable optical programs and subsidized services can enhance long-term compliance, especially in the families with low income.

The high correlation between perceived visual benefit and compliance in our study is in line with the previous studies that show that a patient who demonstrates a noticeable improvement in his vision will have higher chances of adhering to the use of spectacles[18]. This highlights the issue of patient education about anticipated visual effects and the functional benefits of daily use.

The correlation between longer time since prescription and greater compliance might be due to the fact that there is time adaptation since the patients are used to wearing spectacles. To a large degree, the same has been observed in longitudinal adherence studies[19,20]. Nevertheless, unless reinforced and counselled properly, some people may go against the compliance, which makes their regular follow-up and encouragement tactics.

LIMITATIONS: There are a number of limitations of this study. To start with, the cross-sectional design does not permit the determination of the time relationships or causality between the identified factors and the compliance with the spectacle. Second, compliance and barriers were measured via self-report which can be affected by recall bias or social desirability bias especially in pediatric respondents. Third, the research was done in one tertiary care hospital, which can restrict the extrapolation of the results to the rest of the community or in a primary care environment. Besides, the socioeconomic status was not quantitatively stratified, and this could have allowed more insight into financial barriers. It is suggested to conduct multicenter studies with longitudinal follow-up and objective evaluation of spectacle wear in the future to come up with more comprehensive and generalizable evidence.

CONCLUSION

This paper brings to light the fact that a significant percentage of patients that are prescribed spectacles do not follow the routine use but cosmetic fears, discomfort, social stigma, and perceived no benefit are the most prevalent. The considerable level of compliance was connected with age, time since prescription, and perceived visual improvement. Such results highlight the necessity of patient-specific patient education, dispensing, school and community education as important factors to promote adherence to spectacle use and preventable visual impairment among the local population.

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