The Research of Medical Science Review
ISSN: 3007-1208 & 3007-1216 Volume 4, Issue 2, 2026

COMPLIANCE OF SPECTACLES IN SCHOOL CHILDREN WITH REFRACTIVE ERRORS

Jannat Masood[*1], Saadia Chaman Altaf[2], Usman Ahmed[3], Nimra[4]

[*1]*University of Chester, United Kingdom*
[2]*Health Services Academy, Islamabad, Government of Pakistan*
[3]*Allama Iqbal Open University, Islamabad, Pakistan*
[4]*School Of Health Sciences, University of East Anglia, Norwich, United Kingdom*

[*1]jannatmasood009@gmail.com, [2]sadiachaman68@gmail.com, [3]usmanahmed017@hotmail.com, [4]nimrazamin@gmail.com

[*1]ORCID: https://orcid.org/0009-0006-3795-2373, [2]ORCID: https://orcid.org/0009-0000-6333-6175, [3]ORCID: https://orcid.org/0009-0003-6929-4799, [4]ORCID: https://orcid.org/0009-0002-5809-6191

DOI: https://doi.org/10.5281/zenodo.18594923

Keywords

Article History
Received: 11 December 2025
Accepted: 26 January 2026
Published: 10 February 2026

Copyright@Author
Corresponding Author: *
Jannat Masood

Abstract

Purpose:
Assessment of Compliance of Spectacles in School Children with Refractive Error and reason of Non-Compliance.

Introduction:
The condition known as refractive error occurs when the eyes are unable to focus parallel light on the retina.Spectacles is a visual aid that consists of lenses and frames with sides extending towards the ear. Spectacles are used to correct refractive errors, enhance visual performance, and enable participation in daily activities. The childs who use to wear spectacles are prevented from amblyopia and all other visual disorders (1).
Refractive errors were shown to be the leading cause of visual impairment among school children as reported in numerous studies. However, a lot of young children with such diseases don't show any symptoms. Visual screening is helpful in identifying asymptomatic visual problems, but wearing spectacles is not always adhered to for a variety of reasons, including forgetting to wear them, being self-conscious about how they look, or not believing that they are necessary (2).

Methodology:
It was a cohort mixed study. Data was collected from HDF Schools in Mardan duration. A properly design Performa was used for data collection. Data was collected from students of HDF Schools in Mardan.

Results:
The study examined 2309 students in two phases, started in February and continued in September 2023. The first phase found that 252 students had refractive errors, and 74 were provided with spectacles free of charge. The second phase involved interviews with students to check compliance and non-compliance of spectacles. The study found that compliance with spectacles was 58.1%, and non-compliance was 49.9%. The frequency of spectacles wear varied among age

groups, with 11-13 years old children having the highest frequency. The study also found that 93.0% of subjects were satisfied with their spectacles, while 7.0% were not satisfied. Non-compliance of spectacles was mainly due to broken, uncomfortable, lost, or parents' restrictions. The most common reasons for non-compliance were headaches, diplopia, and eye strain.

Conclusion:

Compliance was highest among 11-13 years old children (47.3%) and females (93.2%). Higher compliance rate observed in students from classes 4-6 (58.1%). The wearing spectacles frequency was 43 which was 58.1% and those who were not wearing spectacles their frequency was 31 which was 41.9%. The majority 93.0% expressed satisfaction with their spectacles, while 7.0% were dissatisfied. The study highlighted common complaints associated with non-compliance, including headaches (38.7%), diplopia (3.2%), and eye strain (16.1%).

INTRODUCTION

The condition known as refractive error occurs when the eyes are unable to focus parallel light on the retina.Spectacles is a visual aid that consists of lenses and frames with sides extending towards the ear. Spectacles are used to correct refractive errors, enhance visual performance, and enable participation in daily activities. The childs who use to wear spectacles are prevented from amblyopia and all other visual disorders (1).

Refractive errors were shown to be the leading cause of visual impairment among school children as reported in numerous studies. However, a lot of young children with such diseases don't show any symptoms. Visual screening is helpful in identifying asymptomatic visual problems, but wearing spectacles is not always adhered to for a variety of reasons, including forgetting to wear them, being self-conscious about how they look, or not believing that they are necessary (2).

Due to the high prevalence of myopia, hypermetropia, and astigmatism, children are one of the main age groups that need to have their refractive errors checked. The ultimate molding of a person's personality and potentiality rests with his nature, surroundings and quality of eye sight. Children's physical, intellectual, and behavioral development develops during their school years. Childhood vision problems have a negative effect on development and maturity as well as school performance. Furthermore, because they adapt in different ways to having poor vision, the majority of schoolchildren are unaware that they have an ocular disability. In order to make up for their poor vision, they either hold their books close to their eyes or sit closer to the blackboard.They may squeez their eyes. Their performance may also be affected if they avoid doing any tasks that require visual concentration (3).

A clear vision is a necessary precondition for learning and academic achievement. Uncorrected vision difficulties in children have been repeatedly linked to a variety of developmental and scholastic problems, including poorer reading comprehension, behavioral concerns, and even lower reading scores. This emphasizes how important spectacles are in the educational setting.

One of the most important parts of children eye care is wearing glasses as prescribed. Corrective eyewear is often necessary for youngsters to address vision issues such astigmatism, hyperopia, and myopia, or nearsightedness and farsightedness. But it can be difficult to make sure kids wear their glasses as directed for a variety of reasons, such as comfort, style, and peer pressure (4).

Children in every environment are affected by uncorrected refractive errors, which are the primary cause of visual impairment in children. With glasses, most refractive errors can be corrected. Children must wear their glasses consistently in order to experience the benefits, which include improved academic performance (5).

Screening refers to a quick process that aims to distinguish between people who are at a high risk of future problems and those who may be exhibiting symptoms of minor issues that could get worse over time. After identification, the identified students receive services meant to prevent or lessen the issues at present. Screening in schools can be used to find a wide range of potential issues, such as issues with academic performance, disabilities, or health issues (6).

Children should be screened for refractive errors at the community level and included in school health programs. Education and awareness campaigns should also be launched to guarantee that the corrections are implemented and that all cultural barriers to compliance are removed (7). Data is gathered during the screening process to determine whether further, in-depth assessment or intervention is required. It is implied in screening that the student's struggles might go unnoticed (8).

Figure 1.1
Happy kids with glasses, seeing better smilimg brighter

Figure 1.2
Importances of spectacles frame size according to face

Figure 1.3
Diagrammatic presentation of spectacles

The HDF organization, with which our team collaborates, is In 1997, a group of visionary Pakistani Americans gave Pakistan a gift on the occasion of its 50th anniversary of independence: THE HUMAN DEVELOPMENT FOUNDATION. Their goal is to support a nonpartisan movement for constructive social change and neighborhood empowerment (9).
Mardan is city in the Khyber Pakhtunkhwa province of Pakistan. HDF Schools in Mardan are part of the Human Development Foundation (HDF), a non-profit organization working to provide quality education to underprivileged children. These schools aim to empower students by offering a well-rounded education, including academic subjects and extracurricular activities. HDF Schools in Mardan strive to create a brighter future for the children.

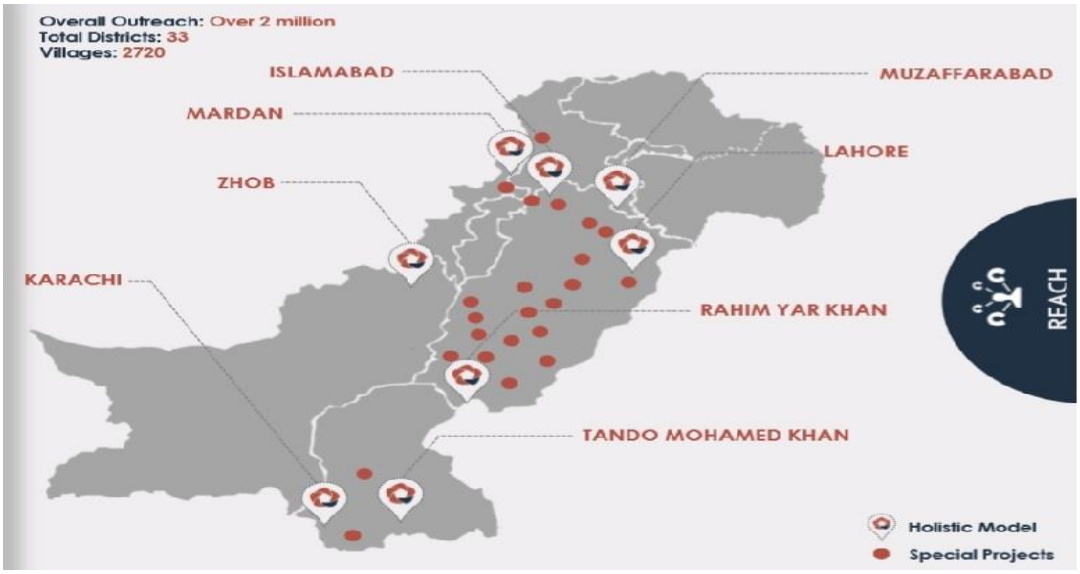

Figure 1.4

OPERATIONAL DEFINITIONS

1.1: Spectacles

A pair of lenses for correcting faulty vision, in a frame that rests on the bridge of the nose and hooks behind the ears called spectacles (10).

1.2: Compliance

Compliance refers to which a patient correctly follows medical advice, treatment plan or medication recommended by healthcare professionals (11).

1.3: Non-compliance

Non-compliance refers to a patient who does not take medication or failed to follow the prescribed course treatment. A non-compliant individual is one who exhibits non-compliance (12).

1.4: Myopia

Nearsighteness , or myopia, as it is medically termed, is a vision condition in which people can see close objects clearly, but objects farther away apear blurred (13).

1.5: Hypermetropia

Farsightedness is a condition of the eye in which light is focused behind rather than on the retina with accommodation at rest. It is also referred to as long-sightedness, hypermetropia, or hyperopia (14).

1.6: Astigmatism

A type of refractive error brought on by rotational asymmetry in the refractive power of the eye is astigmatism. This causes vision to become distorted or blurry from any distance (15).

METHODOLOGY

3.1: Type of Research:
The study was Mixed study design (Quantitative and Quantitative Research)

3.2: Study Design:
The study design was Cohort study design

3.4: Study Location:
The study location was HDF Schools Mardan

3.4: Study Population:
The study population were HDF Schools

3.5: Sampling Technique:
Sampling technique was Purposive sampling

3.6: Sample Size:
100 students with glasses who were provided in phase 1 section

3.7: Study Duration:
The study duration was 6 months

3.8: Inclusion Criteria:
All students who were provided with glasses by HDF

3.9: Exclusion Criteria:
Those students who were not provided glasses

3.10: Data Collection Tools:
Self-design Performa

3.11: Data Analysis:
SPSS version 22

3.12: Ethical committee:
Ethical consideration and permission from ethical committee of PIRS and HDF

Data Collection Instruments

A self-design questionnaire is a tool that we used in research where individuals were provided with a set of questions to answer. These questions covered a wide range of topics such as opinions, behaviors or experiences.

For data collection, we used self-designed questionnaires. In self-designed questionnaires, there were two components.

In first component, we did student interviews regarding spectacles compliance. Like spectacle wear, hours of using glasses, satisfied and positive changes in vision with use of glasses.

In second component we asked questions like reasons behind not using spectacles, managed vision without glasses, complains while using spectacles, comments on your glasses.

IEER
Institute for Excellence in Education & Research

RESULTS

Table 4.1: Distribution of Age

Age	Frequency	Percentage%
5-7yrs	4	5.4
8-10yrs	18	24.3
11-13yrs	35	47.3
14-16yrs	17	23.0
Total	74	100

The table shows the frequency and percentage of age

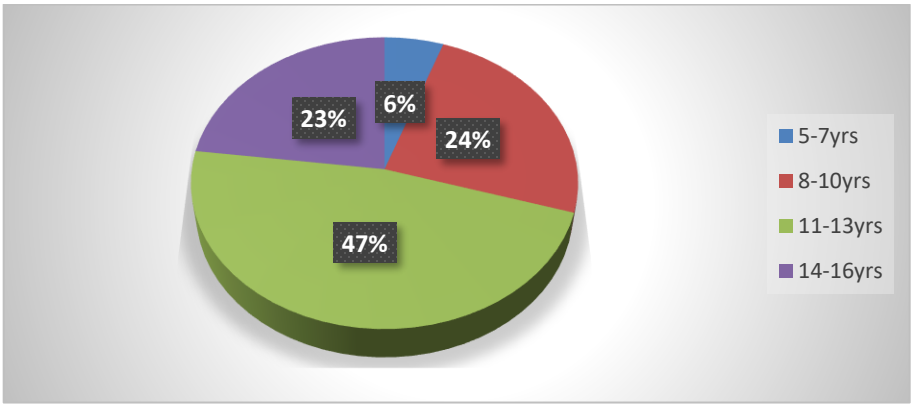

Figure 4.1: The figure shows the percentage of age

Table 4.2: Distribution of Gender

Gender	Frequency	Percentage%
Male	5	6.8
Female	69	93.2
Total	74	100.0

The table shows the frequency and percentage of gender

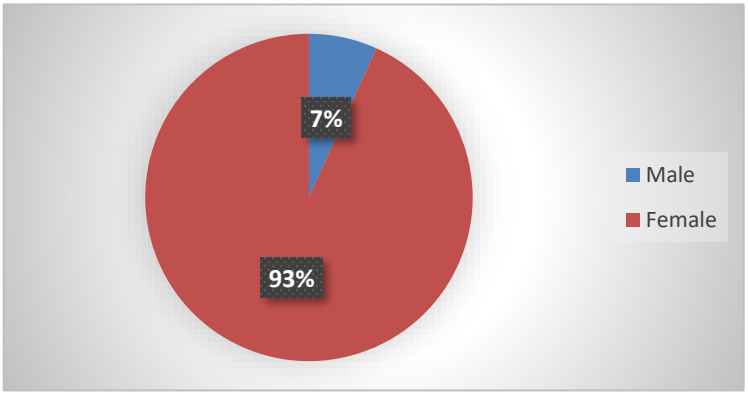

Figure 4.2: The figure shows the percentage of gender

Table 4.3: Distribution of Class

Class	Frequency	Percentage%
1-3	5	6.8
4-6	43	58.1
7-10	26	35.1
Total	74	100.0

IEER
Institute for Excellence in Education & Research

The table shows the frequency and percentage of class

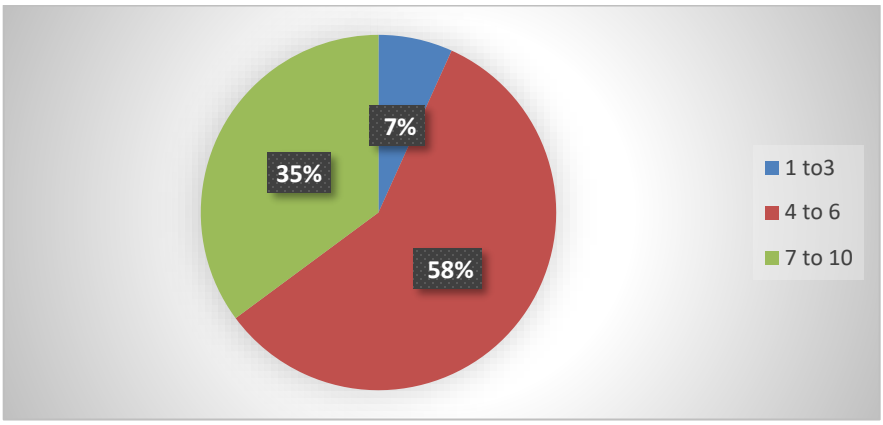

Figure 4.3: The figure shows the percentage of class

Table 4.4: The table shows the frequency and percentage of do you wear your spectacles as provided by eye care professionals?

	Frequency	Percentage%
Yes	43	58.1
No	31	41.9
Total	74	100.0

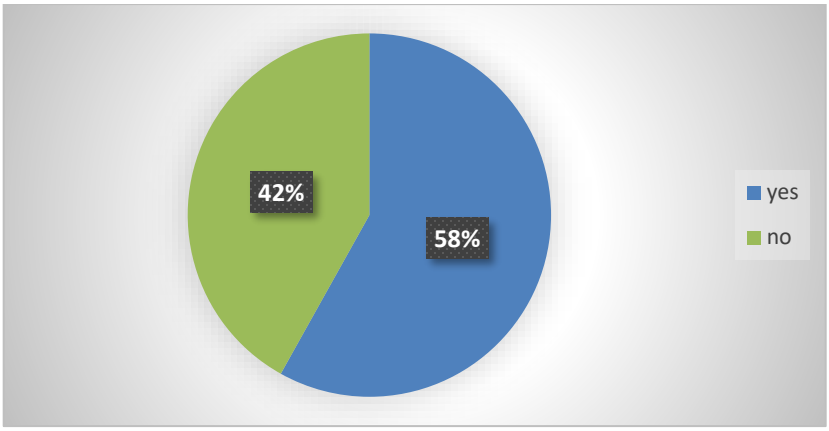

Figure 4.4: The figure shows the percentage of do you wear your spectacles as provided by eye care professionals?

COMPLIANCE OF SPECTACLES

Table 4.5: The table shows the frequency and percentage of how many hours do you use glasses?

	Frequency	Percentage%
<2 hours	3	7.0
>2 to 4 hours	9	20.9
>4 to 6 hours	11	25.6
>6 hours	20	46.5
Total	43	100.0

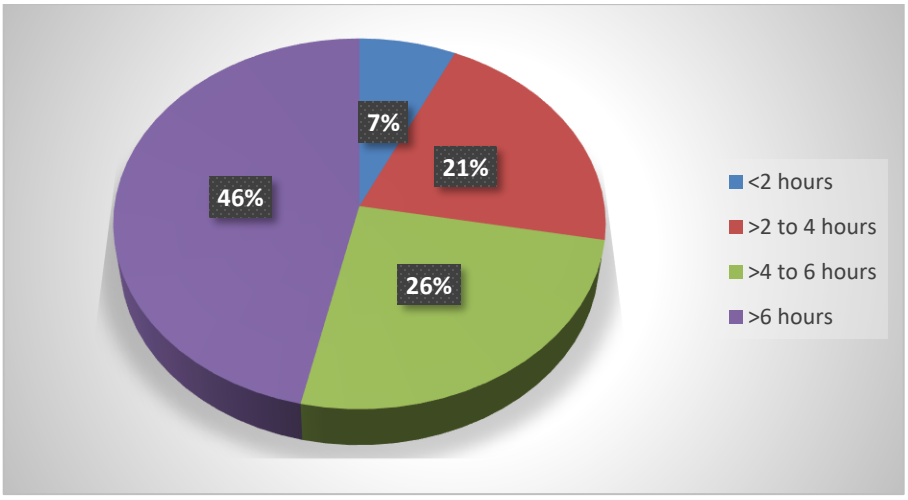

Figure 4.5: The figure shows the percentage of how many hours do you use glasses?

Table 4.6: The table shows the frequency and percentage of are you satisfied with your spectacles?

	Frequency	Percentage%
Yes	40	93.0
No	3	7.0
Total	43	100.0

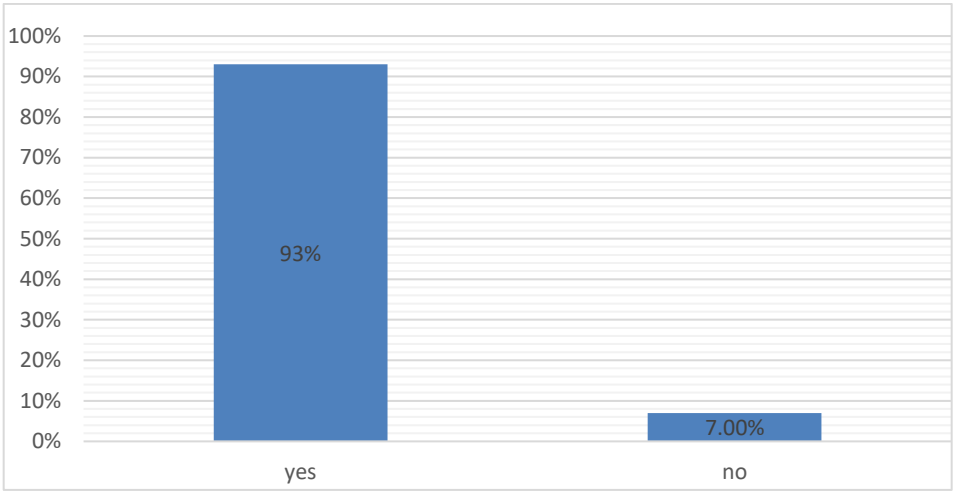

Figure 4.6: The figure shows the percentage of are you satisfied with your spectacles?

Table 4.7: The table shows the frequency and percentage of what activities do you primary use your spectacles for?

	Frequency	Percentage%
Reading & Writing	33	76.7
Watching TV	1	2.3
Outdoor activities	1	2.3
Using smart phone	1	2.3
All of these	7	16.3
Total	43	100.0

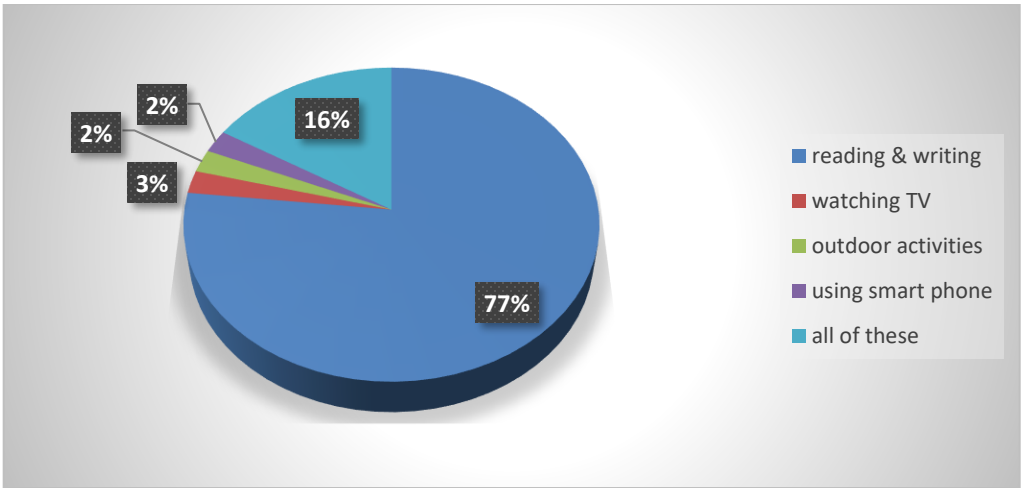

Figure 4.7: The figure shows the percentage of what activities do you primary use your spectacles for?

NON-COMPLIANCE OF SPECTACLES

Table 4.8: The table shows the frequency and percentage of why you are not using spectacles?

	Frequency	Percentage%
Broken	19	61.3
Uncomfortable	4	12.9
Lost	4	12.9
Parents not allow to use	4	12.9
Total	31	100.0

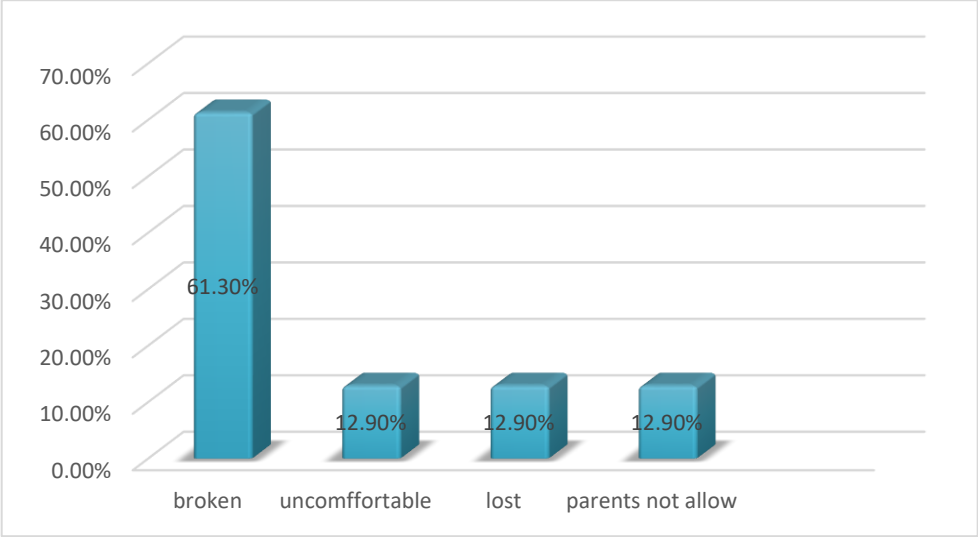

Figure 4.8: The figure shows the percentage of why you are not using spectacles?

Table 4.9: The table shows the frequency and percentage of if your spectacles provided by HDF are broken\Lost\Uncomfortable then you tried to make another pair of spectacles?

	Frequency	Percentage%
No	31	100.0
Total	31	100.0

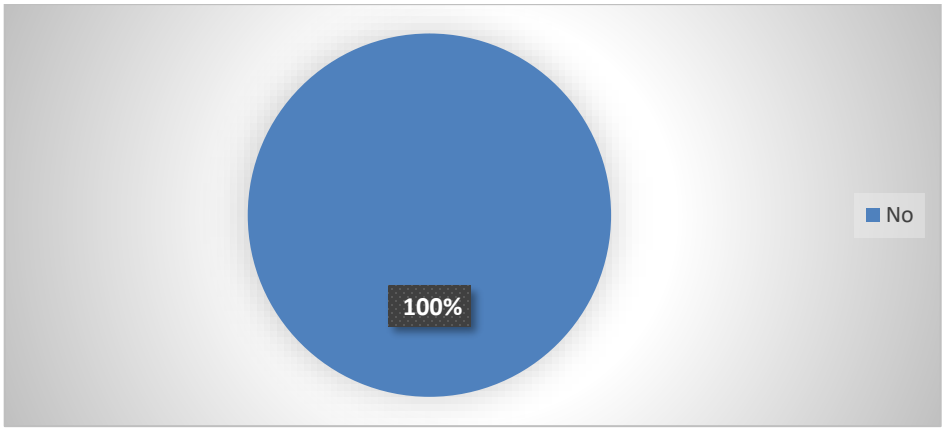

Figure 4.9: The figure shows the percentage of if your spectacles provided by HDF are broken\Lost\Uncomfortable then you tried to make another pair of spectacles?

Table 4.10: The table shows the frequency and percentage of any complain while using spectacles?

	Frequency	Percentage%
Headache	12	38.7
Diplopia	1	3.2
Eye strain	5	16.1
Other	7	22.6
N/A	6	19.4
Total	31	100.0

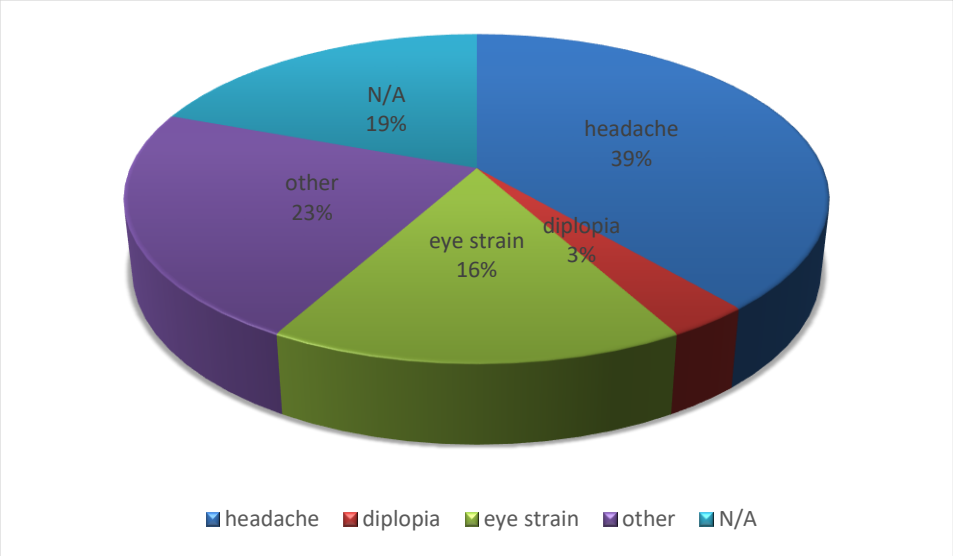

Figure 4.10: The figure shows the percentage of any complain while using spectacles?

2023

RESULTS

In this study total 2309 students were examined in phase I of the research. First phase was started in February 2023. 252 students have refractive error and 74 students were provided with spectacles free of cost by HDF. The second phase of research was started in September 2023. In the second phase of research interviews were conducted from students who were provided with spectacles to check compliance and non-compliance of spectacles. The results of the current study showed that the compliance with spectacles frequency was 43 and which was 58.11% and the non-compliance with spectacles frequency was 31 which was 41.89%. The compliance and non-compliance of different age groups showed that 5-7 years old children frequency was 4 which was 5.4%. 8-10 years old children frequency was 18 which 24.3%. 11-13 years old children frequency was 35 and which was 47.3%. 14-16 years old frequency was 17 which was 23.0%. The compliance and non-compliance of gender showed that male frequency was 5 which was 6.7% and female frequency was 69 which was 93.2%. The compliance and non-compliance of spectacles according to class distribution was for 1-3 class the frequency was 5 and which was 6.8%, for class 4-6 the frequency was 43 which was 58.1%, class 7-10 the frequency was 26 which was 35.1%. Regarding wear of spectacles 58.1% of the subject wear glasses and 42% do not wear glasses as provided by eye care professionals. During the study when it was asked about duration of spectacles wear, children who wear <2 hours frequency was 3 which was 7.0%. >2 to 4 hours frequency was 9 which was 20.9%. >4 to 6 hours frequency was 11 which was 25.6% and > 6 hours frequency was 20 which was 46.5%.

In response to satisfactory level of use of spectacles 93.0% subjects were satisfied with their spectacles which frequency was 40 and 7.0% were not satisfied with their spectacles which frequency was 3. Daily activities which are associated with the use of spectacles had different frequency and percentage for compliance, for reading and writing frequency was 33 which was 76.7%, watching TV frequency was 1 which was 2.3%, for outdoor activities frequency was 1 which was 2.3%, for using smart phones frequency was 1 which was 2.3% and for all of these activities the frequency was 7 which was 16.3%. The common reasons for non-compliance of spectacles were broken or it was uncomfortable, lost, parents not allow to use spectacles. The frequency for broken spectacles was 19 and percentage was 61.3%. For uncomfortable of spectacles the frequency was 4 which was 12.9%. For loss of spectacles the frequency was 4 which 12.9%. For last factor that parents not allow to wear spectacles the frequency was 4 and percentage was 12.9%. When it is asked about if your spectacles provided by HDF are broken, lost, uncomfortable then you tried to make another pair of spectacles the response of all children was NO. The complain regarding non-compliance of spectacles was headache, diplopia, eye strain and the frequency percentage of non-compliance of spectacles was for headache frequency was 12 and 38.7%. For diplopia frequency was 1 and 3.2%. For eye strain its frequency was 5 which was 16.1%. The other associated complain with non-compliance had frequency of 7 which was 23%. Subjects who are not applicable the frequency was 6 and percentage was 19.4%.

DISCUSSION

This discussion was meant to evaluate the compliance and non-compliance with eyewear rule. The probe is being conducted at the Human Development foundation (HDF) school in Mardan. The present research employed a mixed cohort design. During the present study there were a total of 74 individuals, 43 of were collaborative and 31 were not. The research project will be evaluated utilizing the self-structured questionnaire. The findings of our research fall in previous research which was conducted in 2019 by McCormickI, Morjaria P, Mactaggart I, in Botswana (Southern Africa). About 193/286 (67.5%) of the children for whom compliance statistics were available were female (62.2%) and had a median age of 15 (interquartile range: 12–17 years). Sixty-one percent of the sample wore glasses as required. The probability to be compliant was greater for girls as compared to boys (adjusting odd ratio [AOR] = 2.32, with a 95% of confidence interval [CI] 1.03–5.27). the average age of the study participants is 15, which is comparable age. However there has been an important shift in the sex distribution. 93% of participants in the current survey are female, compared with 62.2% of participants in the previous study. In addition, the present trials 93% compliance rate with regard to wearing glasses significantly greater than 61% compliance observed in the Botswana study. these variations indicate that there could be a cultural and demographic disparities which affect eyeglass compliance significantly (16).

Using a random stratified clustered sampling method between 17 elementary schools, Ilechie AA, Ezinne NE, Mashige KP, et al. performed a study in 2020 in Onitsha, which Anambra State, Nigeria, having a focus on kid's years 5 to 15. Of the 998 children evaluated, 97 (9.7%) had refractive error (RE), or uncorrected visual acuity of 20/40 or worse in both eyes. To find out why prescribed eyewear was not being used, a questionnaire interview was conducted in combination with the Revised Refractive Error Study in Children protocol. Amazingly out of the 97 kids with RE, only 20 (20.6%) wore their glasses during the research period. Of them, 55% were female, 65% were myopic, and 50% were between the ages of 8 and 10. Placing on glasses.Pupils in Onitsha elementary schools have a low percentage of spectacle use, which emphasizes how essential it is to increase public's understanding of the advantages and significance of wearing spectacles. Similarly, children between the ages of 5 and 7 have a compliance rate of 5.4%, children between the ages of 8 and 10 have a higher compliance rate of 24.3%, and children between the ages of 11 and 13 have the highest

compliance rate of 47.3%. The present research examined compliance and non-compliance rates across age groups. the rate of compliance for the 14–16 age group is 23.0%. According to data from 69 students, the frequency of male students using spectacles is 6.7%, While the percentage of female students who use them is significantly higher at 93.2%.It seems that the older age categories—11–13 years old in particular—show a higher compliance with wearing glasses when compared these results to the before research. Furthermore, there is a clear disparity in sex, with a significantly greater percentage of girls complying than boys. According to the latest research, the top two reasons for non-compliance are spectacle breaking and parental disapproval. This result is in line with previous research and emphasizes how significant it is to address issues like parental attitudes and the durability of eyewear in order to increase kids' compliance (17). A second survey carried out in June 2021 in India by Gajiwala, Patel, Sudhan, and associates found that only 29.8% of elementary school students who received free glasses as part of the National Programme for the management of Refractive Error actually wore them within two years. The fact that 35% of students wore glasses with a low prescription (D value < 0.75) and that the frames were fairly relevant was surprising. Interestingly, 25% of kids ended up wearing adult spectacles since they didn't like the ones that were provided to them.According to the results of the previous survey, 43% of students wear glasses with prescriptions between 0.75 and 3.00, according to the present research. For the purpose to boost compliance, the research recommends reassessing the strategy by eschewing pointless prescriptions, providing frame options, and assessing the program's efficacy. Data provided via surveys indicates that people's perceptions of the frames that HDF provides are positive. This is in contrast to earlier research, which suggests that school dress might be promoted more successfully and that frame satisfaction may have raised more (18). Khan Ik performed a second survey in Pakistan in 2023, this time examining at 117 randomly selected schools that received funding from the SSI. Fifteen twenty-five of the twenty-four45 children who were able to take part did so. To make sure that students were properly wearing their spectacles, a survey was utilized. Of the participants, 56.9% or so complied. The significance of gender (p=0.000) suggests that gender was important. There was a small connection between age and the kind of school. The findings of this research demonstrated that 58% of participants followed the rules, and the reasons stated for not wearing glasses include breaking, missing a thing, having problems with money, caring about appearances, and social issues (20).

These findings are in line with a study by Khan Ik in Pakistan. In 2023, Du K, Zhu J, Guan H, et al. conducted a follow-up study in rural China to examine the factors affecting students' compliance with using glasses and the reasons behind non-compliance. The study's foundation was a spectacle treatment experiment that was carried out in 162 rural Chinese classrooms. During the baseline, voucher-based or free glasses were given to students having refractive errors at randomly. A surprise follow-up seven months later evaluated the students' adherence to wearing glasses and inquired as to why those who didn't wear them didn't. At the seven-month follow-up, an amazing 95.9% of the 1904 students who had glasses at baseline were still wearing them. Of them, 41.7% wore spectacles. Interestingly, there was not a significant disparity in the compliance rates between the voucher and unrestricted groups. During the follow-up, several traits were discovered to be extremely significant indicators of using glasses. These included having friends who wore glasses (1.87, 1.32–2.63), being older (Odds ratio = 1.56, 95% CI: 1.12–2.19), having a higher degree of refractive error (3.68, 2.23–6.07), and having worn glasses in the past (3.91, 2.53–6.04). Students were less likely to wear spectacles, however, when they could already see the whiteboard clearly from their positions (0.68, 0.51–0.89). The idea that glasses were unsightly was another contributing factor (0.76, 0.57–1.00). The research discovered that a common belief that wearing glasses could worsen one's vision leads to non-compliance. 32.8% of the students that answered to the survey expressed this

concern. In addition, difficulty was cited by 23.6% of respondents as the primary reason they did not wear them. In this particular research, 41.89% of the participants were non-compliant, whereas 58.11% of them were compliant. On the other hand, 95.9% of students were still continued to wear glasses at the seven-month follow-up, according to the findings of the Du K. et al. (2023) study (21).

CONCLUSION

1. Compliance was highest among 11-13 years old children and females.
2. Higher compliance rate observed in students from classes 4-6.
3. The wearing spectacles frequency was 43 and those who were not wearing spectacles their frequency was 31.
4. Mostly children wearing spectacle more than 6 hours a day.
5. The majority expressed satisfaction with their spectacles, while some of the participants were not satisfied.
6. The study also highlighted common complaints associated with non-compliance, including headaches, diplopia and eye strain.

RECOMMENDATIONS

1. Eye screenings for students, especially in the age groups where refractive errors were prevalent and early detection can lead to timely intervention and prevent further complications.
2. Ensure accessibility of spectacles for students with refractive errors.
3. Conduct educational campaigns to enhance awareness among students and their parents about the importance of consistent spectacle wear.

AIMS AND OBJECTIVES

Aim:

- The Aim of compliance of wearing spectacles in school going children is to improve their vision.

Objective:

- To assess the compliance among school children who were provided spectacles free of cost.
- To assess the determinants of spectacles acceptance.
- To assess the reason for non-compliance.

RATIONALE

Wearing glasses is intended to improve learning concentration and provide clear vision. To find the effects of children's spectacle use and how it facilitates their day-to-day activities. This is also a requirement for fulfilling a portion of our Bachelor of Science degree in Vision Sciences.

REFRENCES

Aldebasi YH. A descriptive study on compliance of spectacle-wear in children of primary schools at Qassim Province, Saudi Arabia. International journal of health sciences. 2013 Nov;7(3):291.

Castanon Holguin AM, Congdon N, Patel N, Ratcliffe A, Esteso P, Toledo FS. Factors associated with spectacle-wear compliance in school-aged Mexican children Invest Ophthalmol Vis Sci 2006, 47:925-928.

Murthy GVS, Gupta SK, Bachani D, editors. The Principles and Practices of Community Ophthalmology. New Delhi: Community Ophthalmology Section, RP Centre, AIIMS, 2002.

Bridget M. Barr, et al. (2016), Visual Impairment and Refractive Error in School-Age Children in Gombak District, Malaysia. Journal of Optometry, 9(3), 201-208.

Morjaria P, McCormick I, Gilbert C. Compliance and predictors of spectacle wear in schoolchildren and reasons for non-wear: a review of the literature. Ophthalmic epidemiology. 2019 Nov 2;26(6):367-77.

Hoff, N., Peterson, R. L., Strawhun, J. & Fluke, S. (2015, April). School-wide Behavior Screening, Topic Brief. Lincoln, NE: Student Engagement Project, University of Nebraska-Lincoln and the Nebraska Department of Education.

WHO 100lobal magnitude of visual impairment caused by uncorrected refinsetive errors in 2004.

Salvia. Ysseldyke & Bolt, 2007.

From HDF web.

https://www.google.com/gasearch?q=definition%20of%20spectacles%20&source=sh/x/gs/m2/5.

https://en.wikipedia.org/wiki/Adherence_(medicine).

https://www.rxlist.com/noncompliance/definition.htm

Near-sightedness- Wikipedia 2021.

Far-sightedness-Wikipedia 2021.

Facts About Astigmatism. National Eye Institute. Octuber 2010.Archived from the original on 2 October 2016.Retrived 22 December 2019.

McCormick I, Morjaria P, Mactaggart I, Bunce C, Bascaran C, Jeremiah M, Foster A. Spectacle compliance and its determinants in a school vision screening pilot in Botswana. Ophthalmic epidemiology. 2019 Mar 4;26(2):109-16.

Ilechie AA, Ezinne NE, Mashige KP, Ekemiri KK, Akano OF. Spectacle utilisation rate and reasons for non-compliance with wearing of spectacles amongst primary school children in Onitsha, Anambra state, Nigeria. African Vision and Eye Health. 2020 Jan 1;79(1):1-6.

Gajiwala UR, Patel RU, Sudhan A, Sil A, Jain E, Jhala L, Mahendra M, Bezankiwar V. Compliance of spectacle wear among school children. Indian Journal of Ophthalmology. 2021 Jun;69(6):1376.

Udeh NN, Aghaji AE, Okoye OI, Oguego NC, Okoye O, Maduka-Okafor FC, Ezegwui IR, Ezisi CN, Achigbu EO, Nwobi AE, Onwasigwe NE. Preferred spectacles among nigerian school children: Report from a refractive error in school children (RESC) study. Nigerian Journal of Medicine. 2022 Jul 29;31(3):309-14.

Khan IK. Compliance of Spectacles among Schools Children in Urban Slums of Pakistan. Journal of Clinical and Community Ophthalmology. 2023 Jul 12;1(02):63-9.

Du K, Zhu J, Guan H, Zhang Y, Wang H, Wang D, Shi Y. Factors associated with the spectacle wear compliance among primary school students with refractive error in rural China. Ophthalmic Epidemiology. 2023 Jan 2;30(1):17-26.

IEER
Excellence in Education & Research