

KNOWLEDGE OF SPECTACLE CARE AND VISION HEALTH AMONG THE STUDENTS OF ABBOTTABAD INTERNATIONAL MEDICAL COLLEGE KPK

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DOI: <https://doi.org/10.5281/zenodo.17667401>

Keywords

Spectacle, Visual acuity, Eye Health

Article History

Received: 15 September 2025

Accepted: 21 October 2025

Published: 04 November 2025

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Abstract

Visual ability can negatively affect quality of life, productivity, education, and social interaction. Spectacles are among the most cost-effective and widely used interventions for correcting refractive errors, including myopia, hyperopia, astigmatism, and presbyopia, which are leading causes of visual impairment worldwide. However, the benefits of spectacles are not limited to accessibility; they also depend on users' knowledge of correct handling, maintenance, and awareness of eye health practices.

Purpose: To assess the knowledge and practices of the students about glasses care and vision health. This study seeks to identify gaps in awareness and highlight areas where health education programs can improve eye care practices.

Methodology: It was cross sectional and quantitative study. Data were collected by standard format directly from the students' age group 17 to 30 years from Abbottabad international medical college in Abbottabad. Data analyzed by using SPSS.

Results: The study involving 100 participants revealed high awareness regarding eye health and preventive practices, with 95% acknowledging the importance of routine eye checkups and over 90% recognizing key causes of visual problems such as refractive errors, diabetes, and screen exposure. However, practical adherence was low only 19% cleaned glasses regularly and 4% followed the 20-20-20 rule indicating a strong knowledge base but weak behavioral implementation.

Conclusion: It is concluded from this study that although participants demonstrated excellent awareness of eye care, their preventive behaviors remain inconsistent. Educational interventions promoting regular practice of eye protection habits are essential to bridge this knowledge-practice gap.

INTRODUCTION

According to WHO (2019) Vision is central to human development, as 80% learning and

perception depend on sight. Any reduction in visual ability can negatively affect quality of life,

productivity, education, and social interaction. Spectacles are among the most cost-effective and widely used interventions for correcting refractive errors, including myopia, hyperopia, astigmatism, and presbyopia, which are leading causes of visual impairment worldwide.¹ However, the benefits of spectacles are not limited to accessibility; they also depend on users' knowledge of correct handling, maintenance, and awareness of eye health practices.² Globally, an estimated 2.2 billion people live with vision impairment, WHO (2021) and nearly half of these cases are either preventable or remain untreated.³ Despite the widespread use of spectacles, many individuals demonstrate poor compliance with recommended practices. Common mistakes include cleaning lenses with clothing, avoiding protective cases, neglecting UV protection, or delaying routine checkups. These behaviors can reduce the effectiveness of spectacles and contribute to preventable eye strain and discomfort.⁴ Eye health is closely linked with general health and well-being. Regular eye examinations allow early detection and treatment of conditions such as glaucoma, diabetic retinopathy, and cataract.⁵ Although spectacles are widely prescribed and used, knowledge about their care and overall vision health remains inadequate. Improper handling of glasses (e.g., cleaning lenses with clothing, exposure to hot water, not using protective cases) reduces their lifespan and effectiveness. Similarly, low awareness about vision health (e.g., importance of regular eye exams, the role of UV protection, recognizing symptoms like blurred vision or squint) delays preventive and corrective actions. This knowledge gap may contribute to higher rates of visual impairment, even when low-cost interventions are available. Raising awareness about spectacle care and eye health is especially critical in developing countries, where access to professional eye care may be limited. Health education programs can empower individuals to recognize early symptoms of eye problems, adopt preventive practices, and seek appropriate medical care.⁷

MATERIALS & METHODS

This study employed a descriptive, cross-sectional design using a quantitative approach to assess knowledge and practices related to spectacle care and vision health among students. The research was conducted at Abbottabad international medical college (AIMC), Khyber Pakhtunkhwa, over a two-month period from September to October 2025. A purposive sampling technique was used to recruit a total of 100 participants who met the inclusion criteria, which required students to be between 17 and 30 years of age and currently using spectacles. Individuals with diagnosed ocular pathologies or those unable to complete the questionnaire were excluded. Data were collected through a self-administered questionnaire designed to capture demographic characteristics, knowledge of eye health, and behavioral practices regarding spectacle care. Prior to data collection, ethical approval was obtained from the institutional review committee of AIMC, and written informed consent was secured from all participants. Collected data were entered and analyzed using SPSS version 22, where descriptive statistics were applied to summarize participant demographics and key study variables.

LITERATURE REVIEW

A cross-sectional study of 228 participants analyzed demographic data, duration of glasses use, and responses to a structured questionnaire on KAP related to refractive errors and spectacles. Among participants, 53.1% were female, and 45.2% were aged 8–13 years. Glasses use for 1–3 years was reported by 46.1%. Most participants (91.2%) recognized the adverse effects of screen time on vision, and 83.3% valued regular eye check-ups. However, misconceptions existed, such as refractive errors being preventable by diet (43.0%). The overall knowledge was poor. Positive attitudes toward glasses were reported by 64.5%, although 81.6% sought alternatives. More than half (56.1%) rejected the notion that glasses cause bullying, and 51.8% disagreed that glasses negatively impact appearance. Adequate practices were observed in 52.6%, with 75.4% regularly visiting ophthalmologists and 81.6% recognizing

the stabilizing effect of glasses on vision. However, 74.1% purchased glasses without a prescription. Knowledge positively correlated with attitudes ($r = 0.179$, $p = 0.007$) and practices ($r = 0.215$, $p = 0.001$). Participants using glasses for ≥ 3 years had significantly more positive attitudes (63.9%, $p = 0.023$) and adequate practices (77.0%, $p < 0.001$).¹⁵

Population survey of secondary school year 3 students in Nairobi County. Students were selected using multistage random sampling. Sampled students were enrolled after obtaining informed consent. Participating students completed a self-administered semi structured questionnaire to obtain basic demographic data and determine their KAP towards refractive error. A total of 11 out of 80 eligible schools were selected and 1390 students enrolled into the study. The mean age of the students was 17 years, and 54% were males. Only 539 (39%) of the 1390 students had ever had an eye-checkup. Overall, 418 (30.1%) of the students did not know whether they had normal vision or not, and 316 (22.7%) did not know where to seek eye-health services. The students believed, as reported by 526 (37.8%) students, that the most common reason for poor vision was inadequate nutrition. Spectacles were identified as the commonest method of correcting poor vision by 851 (61.2%) students. Of 427 (30.7%) students who had been advised to wear spectacles during previous

screenings, only 148 (10.5%) of them admitted to using spectacles. The commonest reasons for students failing to wear spectacles to correct poor vision were; fear of being teased and cost as reported by 529 (38.1%) and 488 (35.1%) students respectively. Generally, students had a positive attitude towards spectacles but the myths that spectacles can damage your eyes, lead to dependence, or worsen eyesight were still prevalent.¹⁶

Cross sectional survey medical students from six Baghdad medical colleges with total sample size of 350 were included. Students who had undergone refractive surgeries and fifth- and sixth-year medical students were also excluded. Level of knowledge was categorized as $< 50\%$ (0-5) poor knowledge, 50-70% (6-8) moderate knowledge and $> 70\%$ (9-12) good knowledge. Among the students with refractive errors, 82% had knowledge about their refractive error. Forty percent had myopia, 12% had astigmatism, 15% had myopia and astigmatism, 10% had hyperopia, and 5% had hyperopia and astigmatism. Among them 57.8% were not willing to undergo refractive surgery due to fear of complications. Forty eight percent had poor knowledge, 43.1% had moderate and only 8.26% had a good knowledge of refractive surgeries. The majority preferred eyeglasses (82.6%) followed by both eyeglasses and contacts lenses.¹⁸

RESULTS

GENDER

Table 1.1 show the total sample size of both female and male.

Gender	Frequency	Percentage%
Male	42	42.0
Female	58	58.0
Total	100	100.0

Table 1.1

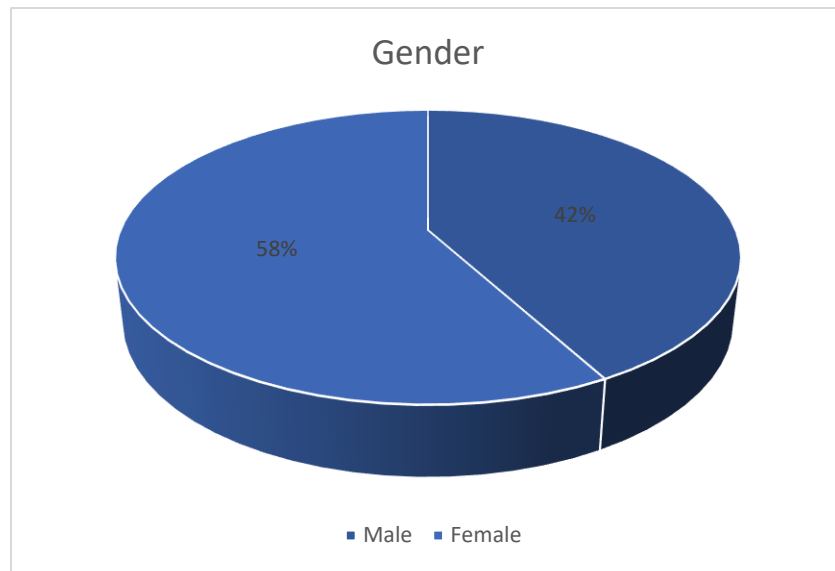


Figure 2.1

AGE

Table 1.2 show the frequency and percentage of age.

Age	Frequency	Percentage%
17-22 years	38	38.0
23-30 years	62	62.0
Total	100	100.0

Table 1.2

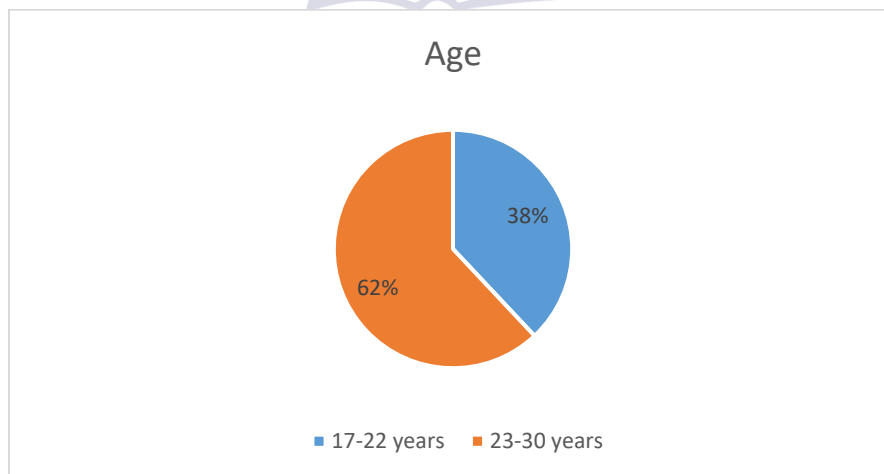


Figure 2.2

CURRENTLY USE GLASSES

Table 1.3 show the frequency and percentage of currently use glasses.

Currently Use Glasses	Frequency	Percentage%
Yes	90	90.0
No	10	10.0

Total	100	100.0
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Table 1.3

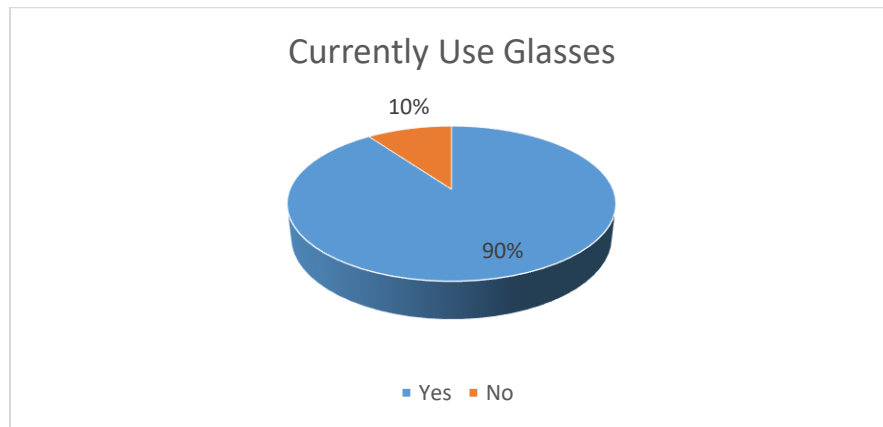


Figure 2.3

EYE EXAMINATIO IN PAST 12 MONTHS

Table 1.4 show the frequency and percentage of eye examination in past 12 months.

Eye Examine in Past 12 Months	Frequency	Percentage%
Yes	86	86.0
No	14	14.0
Total	100	100.0

Table 1.4

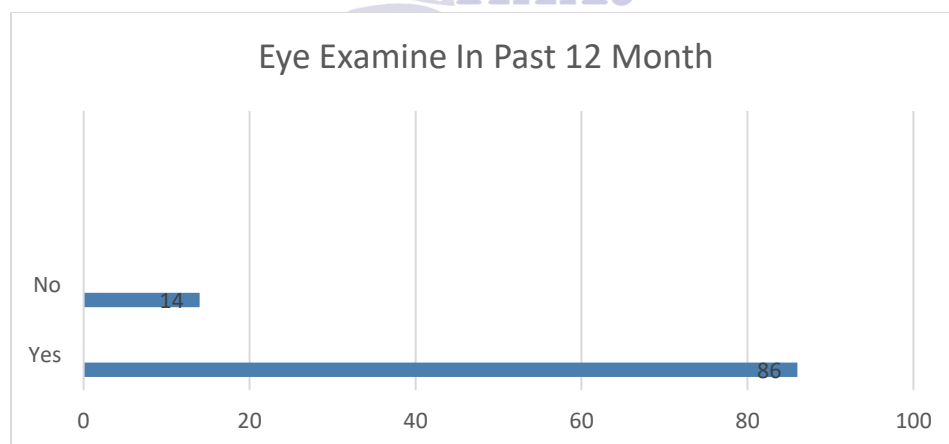


Figure 2.4

ADULT ROUTINE EYE CHECKUP ATLEAST ONCE EVERY YEAR

Table 1.5 show the frequency and percentage of adult routine eye checkup at least once every year.

Adult Routine Eye Checkup At Least Once Every Year	Frequency	Percentage%
True	95	95.0
False	2	2.0

Do Not Know	3	3.0
Total	100	100.0

Table 1.5

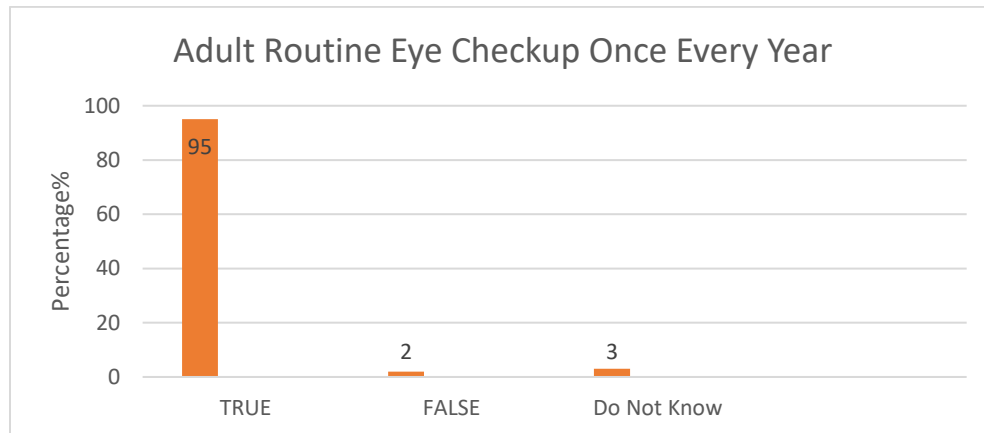


Figure 2.5

BLUR DISTANCE VISION IS COMMON SIGN OF REFRACTIVE ERROR

Table 1.6 show the frequency and percentage of blur distance vision is common sign of refractive error.

Blur Distance Vision is Common Sign of Refractive Error	Frequency	Percentage%
True	93	93.0
False	4	4.0
Don't Know	3	3.0
Total	100	100.0

Table 1.6

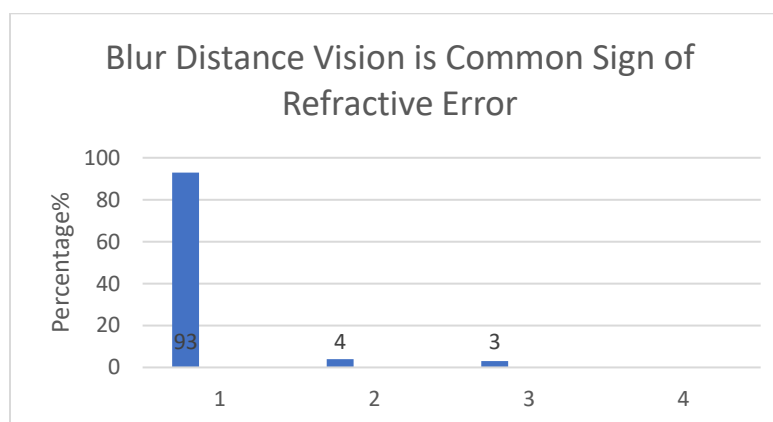


FIGURE 2.6

DIABETES CAN AFFECT EYESIGHT EVEN WHEN VISION SEEMS NORMAL

Table 1.7 show the frequency and percentage of diabetes can affect eyesight even when vision seems normal.

Diabetes Can Affect Eyesight Even When Vision Seems Normal	Frequency	Percentage%
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True	91	91.0
False	1	1.0
Don't Know	8	8.0
Total	100	100.0

Table 1.7

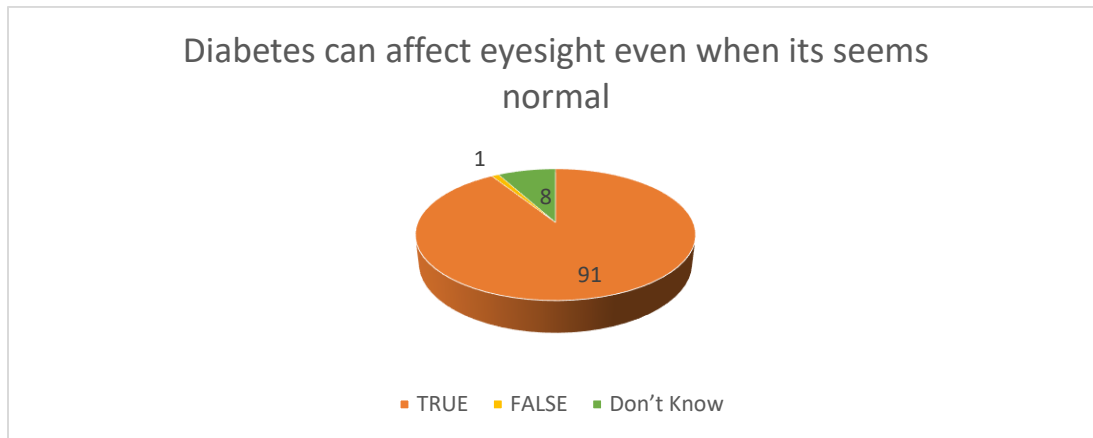


Figure 2.7

PROLONGED SCREEN USE CAN CAUSE EYE STRAIN AND DRYNESS

Table 1.8 show the frequency and percentage of prolonged screen use can cause eye strain and dryness.

Prolonged Screen Use Can Cause Eye Strain & Dryness	Frequency	Percentage%
True	97	97.0
False	0	0.0
Don't Know	3	3.0
Total	100	100.0

Table 1.8

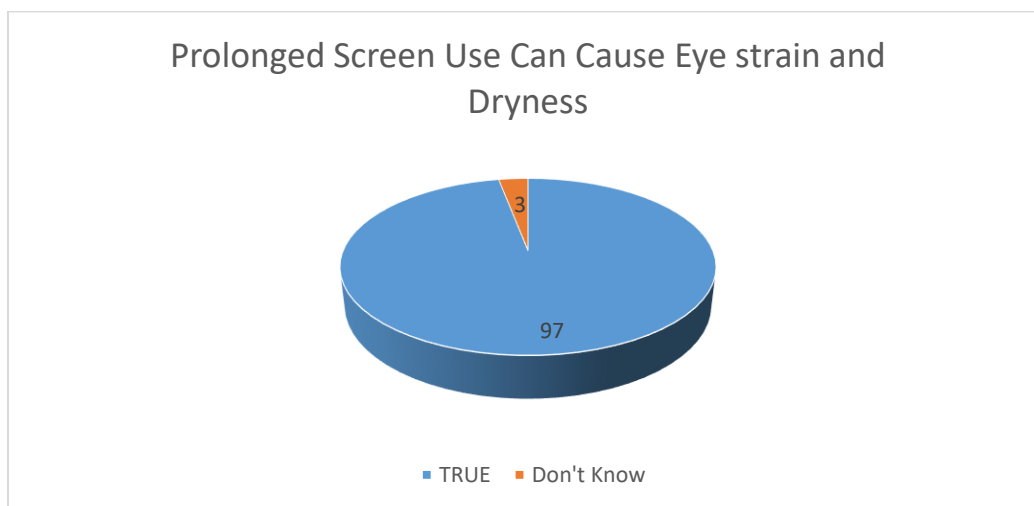


Figure 2.8

CHILD WITH SQUINT ASSESSED EARLY TO PREVENT LAZY EYE

Table 1.9 show the frequency and percentage of child with squint assessed early to prevent lazy eye.

Child With Squint Assessed Early to Prevent Lazy Eye	Frequency	Percentage%
True	92	92.0
False	2	2.0
Don't Know	6	6.0
Total	100	100.0

Table 1.9

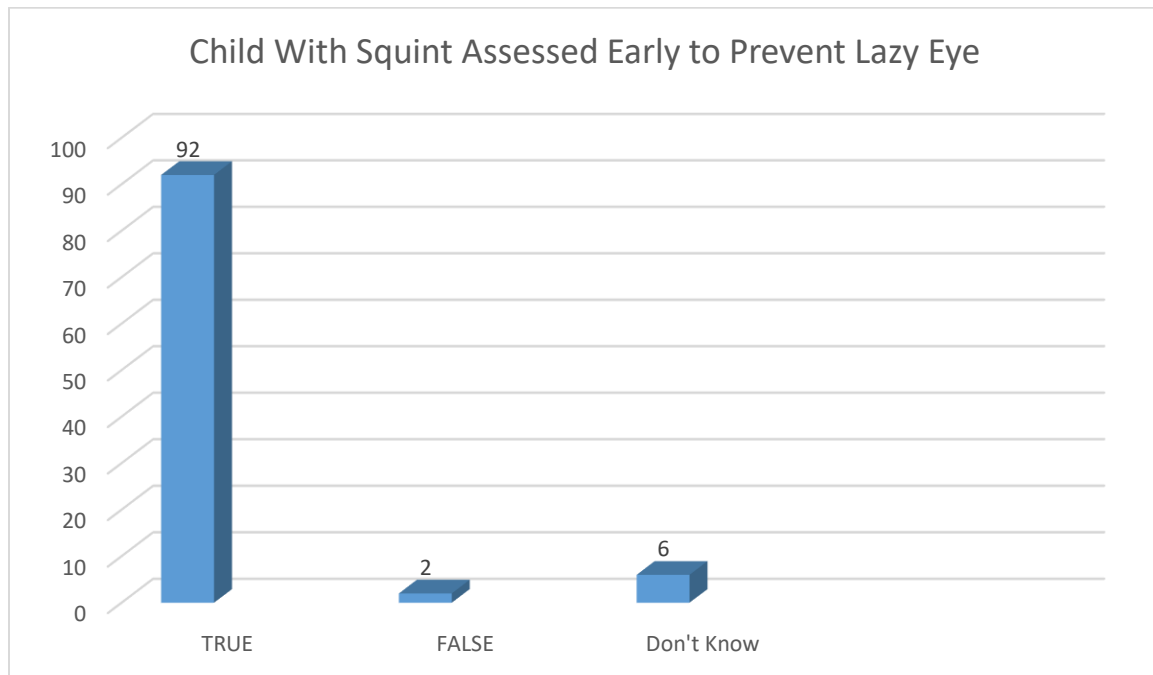


Figure 2.9

UV LIGHT CAN HARM EYE IF IT IS NOT PROTECTED

Table 1.10 show the frequency and percentage of child with squint assessed early to prevent lazy eye.

UV Light Can Harm Eye if it is Not Protected	Frequency	Percentage%
True	95	95.0
False	2	2.0
Don't Know	3	3.0
Total	100	100.0

Table 1.10

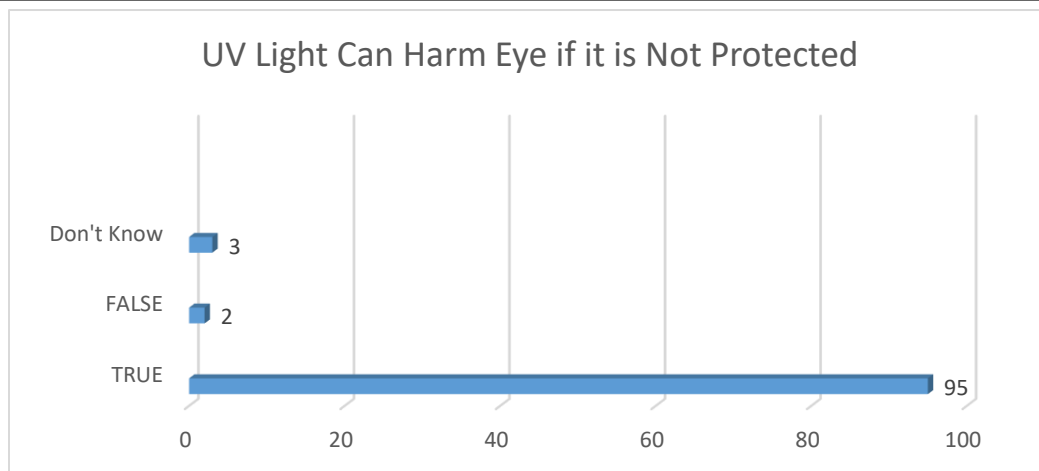


Figure 2.10

HEADCAHE CAN RELATED TO INCORRECT GLASSES POWER

Table 1.11 show the frequency and percentage of headache can related to incorrect glasses power.

Headache Can Related to Incorrect Glasses Power	Frequency	Percentage%
True	99	99.0
False	1	1.0
Total	100	100.0

Table 1.11

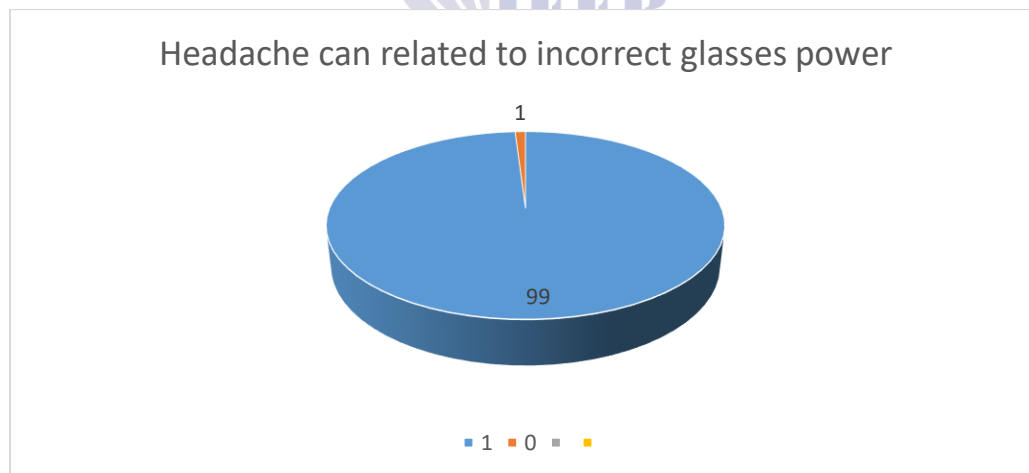


Figure 2.11

SELF-MEDICATION WITH STERIODS EYE DROPS CAN BE DANGEROUS

Table 1.12 show the frequency and percentage of self-medication with steroids eye drop can be dangerous.

Self-Medication with Steroids Eye Drops Can be Dangerous	Frequency	Percentage%
True	87	87.0
False	3	3.0

Don't Know	10	10.0
Total	100	100.0

Table 1.12

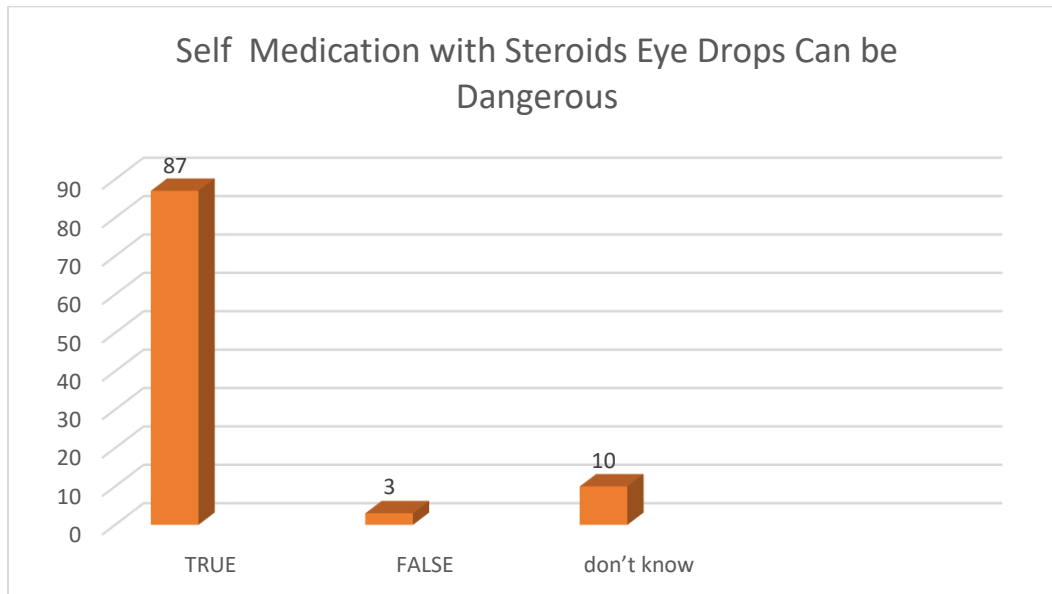


Figure 2.12

CLEANING LENSES WITH SOFT MICROFIBER CLOTH IS RECOMMENDED

Table 1.13 show the frequency and percentage of cleaning lenses with soft microfiber cloth is recommended.

Cleaning Lenses with Soft Microfiber Cloth is Recommended	Frequency	Percentage%
True	97	97.0
False	1	1.0
Don't Know	2	2.0
Total	100	100.0

Table 1.13

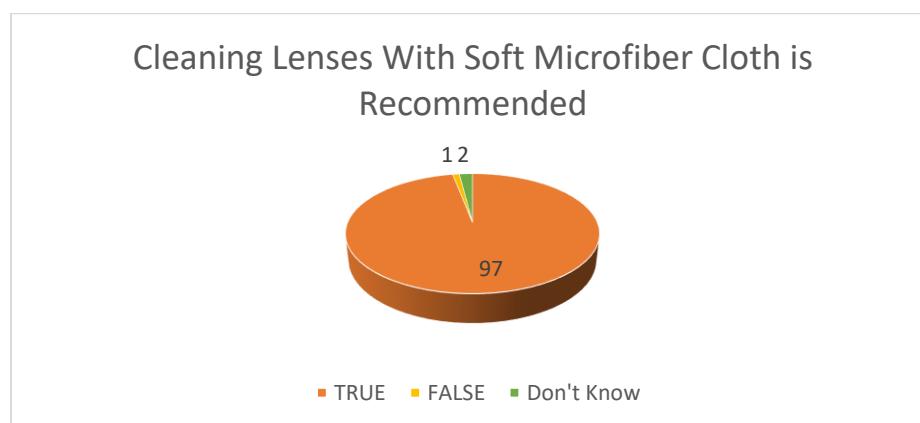


Figure 2.13

USING SHIRT AND TISSUE SCRATCH LENSES OVER TIME

Table 1.14 show the frequency and percentage of using shirt and tissue scratch lenses over time.

Using shirt and tissue scratch lenses over time	Frequency	Percentage%
True	92	92.0
False	3	3.0
Don't Know	5	5.0
Total	100	100.0

Table 1.14

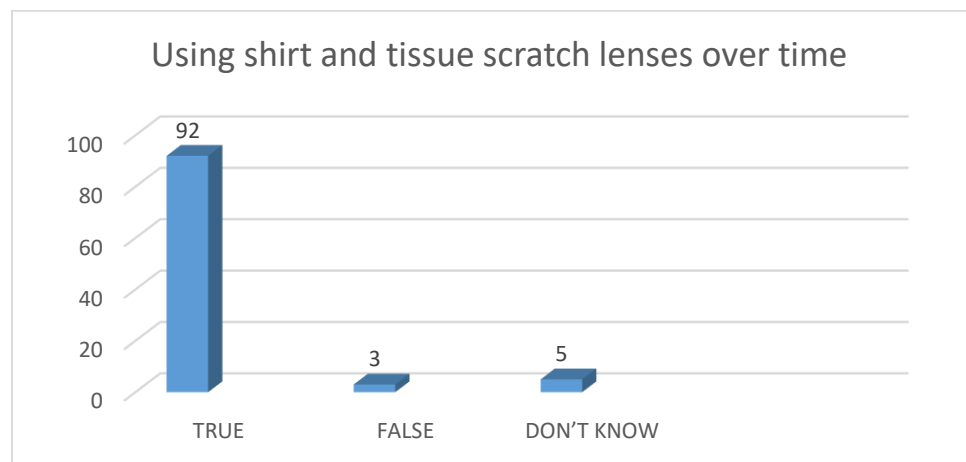


Figure 2.14

HOT WATER SHOULD BE AVOIDED WHEN CLEANING COATED LENSES

Table 1.15 show the frequency and percentage of Hot water should be avoided when cleaning coated lenses.

Hot Water Should Be Avoided When Cleaning Coated Lenses	Frequency	Percentage%
True	72	72.0
False	2	2.0
Don't Know	26	26.0
Total	100	100.0

Table 1.15

Hot Water Should Be Avoided When Cleaning Coated Lenses

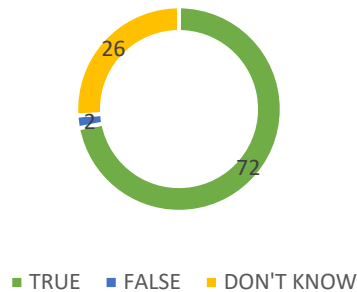


Figure 2.15

GLASSES SHOULD BE PUT IN PROTECTIVE CASE WHEN NOT IN USE

Table 1.16 show the frequency and percentage of glasses should be put in protective case when not in use.

Glasses Should be Put in Protective Case When Not in Use	Frequency	Percentage%
True	96	96.0
False	2	2.0
Don't Know	2	2.0
Total	100	100.0

Table 1.16

Glasses Should be Put in Protective Case When Not in Use

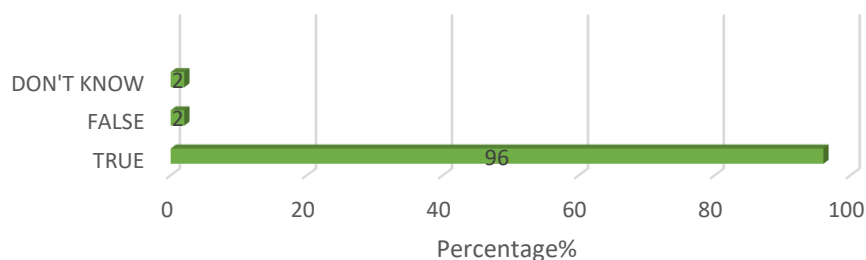


Figure 2.16

HOW OFTEN DO YOU CLEAN YOUR GLASSES PROPERLY?

Table 1.17 show the frequency and percentage of how often you clean your glasses properly

How often you clean your glasses properly?	Frequency	Percentage%
Never	22	22.0
Rarely	59	59.0
Always	19	19.0

Total	100	100.0
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Table 1.17

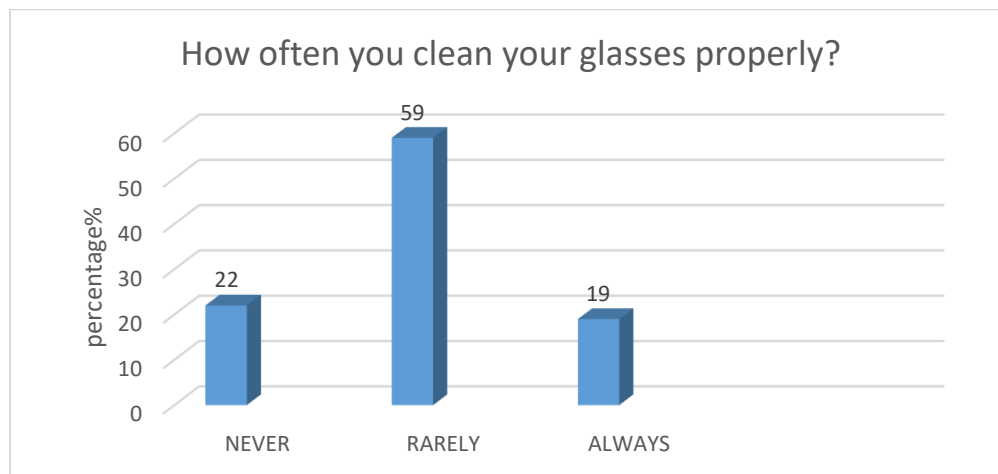


Figure 2.17

DO YOU FOLLOW 20-20-20 RULE?

Table 1.18 show the frequency and percentage of do you follow 20-20-20 rule?

Do You Follow 20-20-20 Rule?	Frequency	Percentage%
Never	53	53.0
Rarely	43	43.0
Always	4	4.0
Total	100	100.0

Table 1.18

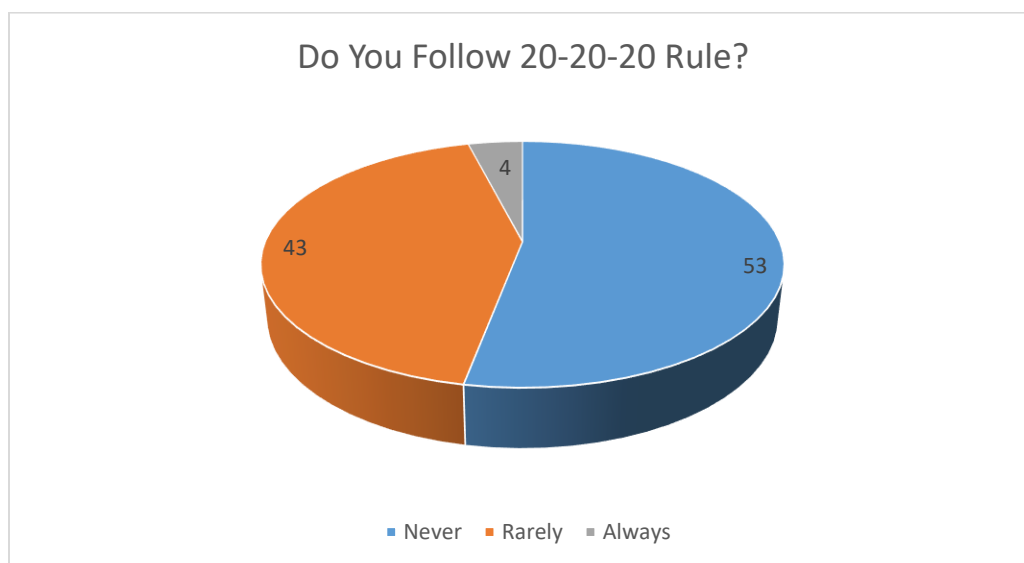


Figure 2.18

DO YOU USE SUNGLASSES?

Table 1.19 show the frequency and percentage of do you use sunglasses?

Do You Use Sunglasses?	Frequency	Percentage%
Never	46	46.0
Rarely	49	49.0
Always	5	5.0
Total	100	100.0

Table 1.19

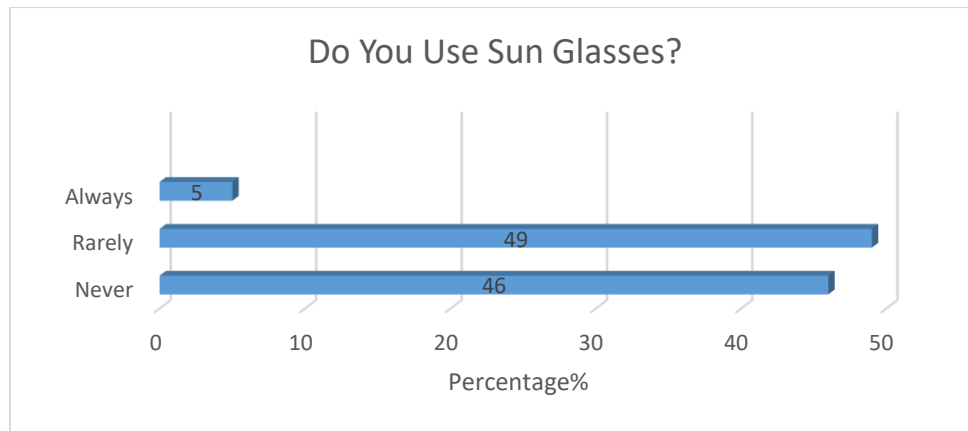


Figure 2.19

IF YOU NOTICE VISION CHANGE HOW SOON DO YOU SEEK AN EYE CHECKUP?

Table 1.20 show the frequency and percentage of If you notice vision change how soon do you seek an eye checkup?

If you notice vision change how soon do you seek an eye checkup?	Frequency	Percentage%
Don't Seek	23	23.0
Within Week	47	47.0
After Months	30	30.0
Total	100	100.0

Table 1.20

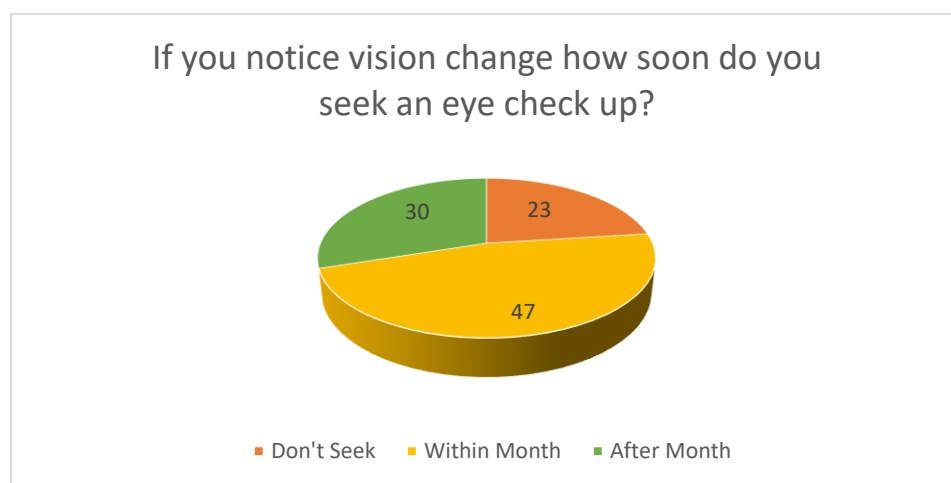


Figure 1.20

The study included 100 participants, of whom 42% were male and 58% female. Most respondents 62% belonged to the age group of 23–30 years, while 38% were between 17–22 years. A significant proportion 90% reported currently using glasses, and 86% had undergone an eye examination within the past 12 months. Moreover, 95% of adults acknowledged the importance of routine annual eye checkups.

Awareness regarding common eye health issues was high among participants. Approximately 93% recognized blurred distance vision as a sign of refractive error, and 91% were aware that diabetes can affect eyesight even when vision appears normal. Similarly, 97% understood that prolonged screen use leads to eye strain and dryness, and 92% agreed that early assessment of squint in children helps prevent lazy eye. Awareness of UV light hazards to eyes was also strong (95%), and almost all respondents (99%) knew that incorrect spectacle power could lead to headaches.

In terms of safe eye practices, 87% knew that self-medication with steroid eye drops is dangerous, while 97% correctly identified the use of microfiber cloths as the proper method for cleaning lenses. About 92% were aware that using shirts or tissues can scratch lenses, and 72% understood that hot water should be avoided when cleaning coated lenses. Furthermore, 96% reported that spectacles should be stored in a protective case when not in use.

Despite this high awareness, behavioral practices were less consistent. Only 19% of respondents reported always cleaning their glasses properly, while 59% did so rarely and 22% never. Adherence to the 20-20-20 rule for eye relaxation was also low, with only 4% always following it and 53% never doing so. Similarly, the regular use of sunglasses was limited, with just 5% always using them compared to 46% who never did. When experiencing changes in vision, 47% sought an eye check-up within a week, whereas 30% delayed it for months, and 23% did not seek professional care at all.

Overall, the findings indicate a high level of awareness regarding eye health and protective

practices but reveal a noticeable gap between knowledge and actual preventive behavior.

DISCUSSION

The present study evaluated the level of knowledge and practices regarding spectacle care and vision health among medical students at Abbottabad International Medical College, Khyber Pakhtunkhwa. The findings demonstrated that most participants possessed adequate theoretical awareness about eye health, with 95% recognizing the importance of routine eye examinations and 97% acknowledging the impact of prolonged screen exposure on visual function. However, despite this high awareness, behavioral compliance remained unsatisfactory, as only 19% of respondents cleaned their glasses regularly and merely 4% adhered to the 20-20-20 rule. This discordance between knowledge and practice highlights a substantial gap between cognitive understanding and actual behavioral implementation.

Comparable trends have been reported in several regional and international studies. A cross-sectional study involving 228 participants assessing knowledge, attitude, and practice (KAP) towards refractive errors found that although 91.2% recognized the adverse effects of excessive screen time and 83.3% appreciated the value of regular eye checkups, the overall knowledge was poor and practices were suboptimal.¹¹ Similarly, the present study identified a high level of theoretical understanding but limited practice, reinforcing the global observation that awareness alone does not guarantee compliance with preventive measures.

The findings of the current research are further consistent with a population-based survey conducted among secondary school students in Nairobi County.¹² That study revealed that only 39% of students had undergone any form of eye examination, and a mere 10.5% of those prescribed spectacles wore them regularly. The most frequently cited reasons for poor compliance included fear of social stigma and financial constraints. In contrast, participants in the Abbottabad study, being medical students, had fewer misconceptions and demonstrated

better conceptual understanding of visual health. Nevertheless, the persistence of low practical adherence even among this educated population indicates that factors such as behavioral neglect, habitual tendencies, and lack of motivation play a significant role in influencing preventive eye care behaviors.

An experimental study conducted in rural Northwestern China reported that providing vision health education combined with free eyeglasses significantly improved both knowledge and compliance among children requiring refractive correction.¹³ After the intervention, the rate of correct visual knowledge responses increased from 30.1% to nearly 48%, while eyeglass usage rose from 15% to 43%. These results emphasize the importance of structured, repetitive, and behavior-focused health education interventions in promoting sustained ocular health practices. The present study's findings corroborate this notion, suggesting that mere awareness without practical reinforcement yields limited behavioral impact. Incorporating interactive eye-care training programs within educational institutions may thus enhance compliance among students.

Similar outcomes were observed in a cross-sectional survey among medical students in Baghdad, where 82% exhibited awareness regarding refractive errors, yet 48% had poor knowledge about refractive surgeries and 57.8% expressed reluctance toward surgical correction due to perceived risks.¹⁴ This pattern mirrors the current findings in Abbottabad, where participants displayed commendable knowledge of spectacle care principles but failed to apply them consistently. Both studies underscore the necessity of translating theoretical knowledge into habitual, preventive behaviors through continuous professional education and reinforcement.

In another descriptive study assessing knowledge about the causes of poor vision, 63% of participants attributed vision impairment to excessive digital device usage, while 95% correctly identified spectacles as a corrective method.¹⁵ The findings are comparable to the present study, in which 97% of respondents recognized screen

time as a major risk factor for visual strain. However, consistent spectacle maintenance and preventive practices remained low in both studies, confirming that knowledge does not directly translate into habitual behavioral compliance. The online survey conducted during the COVID-19 pandemic also supports these observations, demonstrating that while 96.6% of participants adhered to hygiene measures such as hand wash before wearing glasses, less than half (44.9%) understood that eyeglasses do not provide complete protection against infection.¹⁶ This selective understanding parallels the current findings, where participants showed strength in conceptual knowledge but weakness in continuous practice adherence.

Collectively, these comparative findings reveal a recurring global pattern: while awareness of refractive errors, eye protection, and spectacle hygiene is generally adequate, behavioral implementation remains insufficient. This phenomenon, often termed the "knowledge-practice gap," highlights the need for behaviorally driven educational interventions that promote consistent eye health habits. In the context of medical students, this gap carries additional significance, as these individuals represent future healthcare providers who will influence community awareness and preventive practices.

CONCLUSION

Most participants demonstrated a high level of awareness regarding common eye health issues such as refractive errors, diabetes-related vision problems, and the effects of prolonged screen use. Preventive knowledge, including proper cleaning of lenses and the importance of UV protection, was strong among respondents. Despite good awareness, there was a clear gap between knowledge and practice, as most participants did not regularly follow eye care routines such as the 20-20-20 rule or proper cleaning habits. A significant number of participants delayed seeking professional eye examinations even after noticing vision changes.

RECOMMENDATIONS

Continuous public awareness campaigns and educational programs should emphasize translating knowledge into daily preventive eye care practices. Routine eye screening programs should be encouraged in workplaces and educational institutions to promote early detection and timely treatment of vision-related issues.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

SOURCE OF FINDING

The authors received no financial support for publication of this article.

ACKNOWLEDGMENT

First and foremost, we are grateful to Almighty Allah for granting me the strength, patience, and determination to complete this research independently. This work is the result of our own effort, dedication, and commitment, without any external supervision, financial assistance, or institutional support. Undertaking this research has been a valuable journey of self-learning, perseverance, and personal growth. We extend our heartfelt thanks to our colleagues and friends for their motivation and assistance, which made this journey more meaningful. We sincerely hope that the findings of this study will contribute in a meaningful way to the existing knowledge in this field.

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