Knowledge, Attitude, And Practice on Digital Eye Strain Among Senior High School Students at Philippine School Bahrain

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Abstract

In an increasingly digital academic environment, the excessive use of electronic devices has heightened the risk of Digital Eye Strain (DES) among students. This study examines the level of knowledge, attitude, and practices related to DES among Senior High School students at the Philippine School Bahrain. A descriptive quantitative research design was employed, using a structured survey questionnaire adapted from Hung et al. (2023) and administered to selected respondents. The findings revealed that most students showed a good understanding of DES, including its causes, symptoms, and preventive measures, but there remains a gap between their knowledge and actual practices. Although students expressed awareness and concern about maintaining eye health, many continued to engage in prolonged screen time without adopting consistent protective habits such as taking regular breaks or adjusting screen brightness. The study also found that factors such as academic workload, duration of screen exposure, and limited awareness programs contributed to the persistence of DES symptoms. Overall, the results highlight the need to strengthen digital wellness. Promoting proper eye care and responsible device use can help reduce the prevalence of DES and support healthier learning habits among students.

Keywords: Digital Eye Strain (DES); knowledge-attitude-practice (KAP); digital wellness; preventive measures

1. Introduction

1.1 Background and Problem of the Study

Technological advancements lead to the betterment of human life in terms of economics, communication, and information accessibility. Electronic gadgets, especially smartphones, computers, and televisions, become indispensable parts of our lives. With increasing exposure to these gadgets, people become increasingly dependent on electronic screen devices rather than conventional media (Hung et al. 2025).

In recent years, the prevalence of digital devices among students' surges, leading to increased concerns regarding digital eye strain. This condition, which can cause symptoms such as dry eyes, blurred vision, and headaches, becomes a significant health issue, particularly among high school students who spend prolonged hours on screens for educational purposes.

Digital Eye Strain (DES), also known as Computer Vision Syndrome, describes a set of eye and vision problems that originate from the extended use of devices. The levels of discomfort individuals experience rely on the amount of usage on these devices. Individuals are characterized by dry eyes, itchy eyes, red eyes, blurred vision, and headaches.

DES includes a range of symptoms caused by prolonged screen use. Eye burning and itching stem from irritation and dryness. A foreign body sensation feels like something is in the eye, often due to dryness or inflammation. Tearing is the eye's response to dryness, while redness signals irritation. Eye pain can be a dull ache or sharp discomfort. Dryness occurs when tear production is low or blinking is reduced. Heavy eyelids and excessive blinking result from eye fatigue. Blurred and double vision happen when the eyes struggle to

focus. Difficulty focusing is the inability to shift between distances easily. Light sensitivity causes discomfort in bright settings, and some may see colored halos around lights. Worsening sight refers to reduced visual clarity, and headaches often result from prolonged eye strain.

A recent study by Garcia and Lacson (2025) at Philippine School Bahrain explores the factors influencing Grade 10–12 students' choices between eyeglasses and contact lenses. Using a qualitative, phenomenological approach and open-ended surveys, the study finds that most students prefer eyeglasses due to comfort, affordability, and ease of maintenance. Glasses are mainly used for academics and daily tasks, while contact lenses are favored for sports and aesthetics. The findings reveal that a significant number of students already rely on prescription glasses, suggesting potential long-term effects of prolonged screen exposure. With the growing integration of digital tools in education such as online modules, research, and virtual group work, senior high school students are increasingly at risk of digital eye strain, especially those already wearing glasses. This highlights a key gap our study aims to address: the correlation between knowledge, attitude, and practices (KAP) and the severity of digital eye strain among eyeglass users.

Understanding the variables of knowledge, attitude, and practice is essential in addressing the root of the problem and guiding future school policies or awareness campaigns. This study aims to assess the level of knowledge, prevailing attitudes, and common practices of senior high school students who wear prescription glasses at Philippine School Bahrain regarding digital eye strain. By doing so, it hopes to highlight any gaps in awareness and behavior, and underscore the need for informed interventions to protect students' eye health in a digitally-driven learning environment.

1.2 Review of Related Literature

Evaluating the Level of Knowledge on Digital Eye Strain in the Tech Era

Jaryal et al. (2025) conducted a comprehensive study that assessed public awareness, knowledge, and preventive practices regarding Digital Eye Strain (DES). As the use of digital screens becomes increasingly prevalent in education, work, and social life, DES has become a growing public health issue, especially among individuals who spend extended hours on screen-based tasks.

Although the study revealed encouraging awareness in some areas, several key gaps remained. For instance, only 61.8% of respondents recognized the importance of vitamin A in supporting eye health and minimizing eye fatigue, suggesting limited knowledge about nutritional approaches to managing DES. Additionally, just 66% correctly acknowledged that dry air can worsen DES symptoms, indicating a lack of understanding of environmental contributors. Moreover, only 64.5% were aware that prolonged screen time could lead to symptoms such as headaches and discomfort, which shows a broader lack of awareness about the common consequences of digital screen exposure.

Another concerning finding was the limited recognition of DES-related symptoms. While 67% of participants identified eye fatigue as a frequent symptom, many failed to associate DES with other indicators like dry eyes, blurred vision, and neck discomfort. This under-recognition underscores the need for improved education on the full range of DES symptoms to enable early detection and timely intervention.

In summary, while the study by Jaryal et al. (2025) highlights a reasonable level of awareness in certain areas, it also reveals critical deficiencies in the understanding of symptoms, preventive measures, and risk factors.

Effect of an Interactive Digital-Based Educational Intervention on the Severity of Eye Complaints and Knowledge Levels Regarding Digital Eye Strain

Abd El Wahed et al. (2020) emphasized that digital device usage is now essential in daily life, especially in workplaces, schools, and banks. However, extended screen time (3+ hours daily) is linked to health issues such as migraines, Occupational Overuse Syndrome (OOS), psychosocial stress, and Digital Eye Strain

(DES). The American Optometric Association (AOA) defines DES as a set of vision problems caused by prolonged near-vision screen use.

DES is now a widespread issue resulting from improper screen use and can negatively affect quality of life, accuracy, and productivity. Despite its prevalence, many users lack awareness and knowledge of DES and its preventive ergonomic practices.

The study found a significant inverse relationship between eye complaints and knowledge scores. This aligns with findings by Ranasinghe et al. (2016) and Dessie et al. (2018), who both noted that better knowledge of DES and ergonomic habits leads to fewer eye symptoms.

Abd El Wahed et al. (2020) also referenced two supporting studies. Ranasinghe et al. (2016) found a significant link between knowledge of DES and ergonomic practices and the presence of eye-related symptoms in computer users. Similarly, Dessie et al. (2018) reported that individuals with greater awareness of proper computer use experienced fewer symptoms, emphasizing that knowledge plays a crucial role in preventing DES.

The Impact of Digital Practices on Digital Eye Strain in Adolescents

Dere et al. (2020) emphasized that vision problems related to digital screen usage have shifted from being limited to the workplace to becoming a widespread public health concern. The term "Digital Eye Strain (DES)" now encompasses various eye-related symptoms caused by prolonged screen exposure. Common harmful practices include extended periods of screen time, especially on smartphones, which has been associated with a higher incidence of DES symptoms. In particular, studies from South Korea revealed that adolescents using smartphones for more than 2 to 4 hours daily are at greater risk of developing symptoms such as eye strain, blurred vision, and headaches.

Improper posture while using digital devices is another significant factor. A study in India involving 576 adolescents showed a clear link between lying down while using screen-enabled devices and the occurrence of DES symptoms, with 27% reporting discomfort. Likewise, environmental and ergonomic conditions—such as low ambient lighting, small screen and font sizes, and the absence of proper screen height or seating were found to accelerate visual fatigue and strain. These ergonomic deficiencies are more pronounced today due to the shift from desktop to handheld device use, which often lacks proper support for eye-level viewing.

The symptoms of DES eye strain, dry eyes, double vision, and headaches were frequently reported across multiple populations. For example, a survey in Jamaica among 409 medical students showed that 67% experienced eye strain, 26.2% reported dry eyes, 28.9% had double vision, and 51.6% experienced blurred vision. Those who used handheld devices were more likely to report eye burning and moderate to severe visual discomfort. Furthermore, a controlled study where college students played an online game for four continuous hours at night revealed disturbances in eye coordination and blinking, further linking screen exposure practices to ocular strain.

Additionally, children across nine European countries, aged 9–16, reported problems like hurting eyes, eyestrain, and even the need to wear glasses due to long hours of internet use.

These findings across various age groups and regions highlight how prolonged screen time, poor posture, inadequate lighting, and improper ergonomic practices are significant contributors to the development and worsening of Digital Eye Strain.

Digital Eye Strain: Exploring Associated Factors, Practices, and Their Impact on Quality of Life

Abukhlaled et al. (2024) investigated digital eye strain (DES), also known as computer vision syndrome, which refers to a collection of vision-related issues resulting from prolonged exposure to digital screens such as computers, tablets, e-readers, and smartphones. The study found that individuals who wore eyeglasses and used electronic devices for extended periods commonly experienced symptoms like dry eyes, burning

sensations, eye pain, and neck or head stiffness. These symptoms were particularly prevalent among those with refractive errors, the most commonly reported eye condition in the study followed by eye dryness.

A significant portion of participants used digital devices for educational purposes, with 64.1% reporting that they always studied using electronic devices, and many using them for reading (59.8%) and entertainment (54.1%). Daily device usage was high, with most participants using two devices per day and spending 6 to 8 hours daily on screen time. Those who used devices for more than eight hours a day reported more severe symptoms of DES.

Notably, 51.2% of respondents did not practice the 20-20-20 rule, a preventive habit that involves looking away every 20 minutes for 20 seconds at something 20 feet away. Those who failed to follow this rule experienced more severe DES symptoms, indicating its potential value in reducing digital eye strain, especially for individuals with existing eye conditions like refractive errors.

Among participants wearing eyeglasses or with diagnosed eye problems, the severity of symptoms was significantly higher, emphasizing their increased susceptibility to the negative effects of digital screen exposure. These individuals also experienced more difficulty with sleep, productivity, and concentration, with nearly half agreeing that DES impacted their ability to complete tasks and maintain focus.

Although gender, education level, and number of devices used were not significantly associated with DES severity, age and screen time duration were. Specifically, those aged 26–35 and those who studied or worked on screens for longer hours reported more symptoms.

The study also found a connection between pre-existing eye conditions and the impact of DES, highlighting the need for better preventive strategies among screen-dependent individuals, especially those wearing eyeglasses. The researchers recommend exploring protective practices like screen breaks, ergonomic adjustments, and potentially incorporating digital hygiene education in school and workplace settings to mitigate DES risks.

Digital Eye Strain and Its Risk Factors Among a University Student Population in Jordan: A Cross-Sectional Study

Gammoh et al. (2021) conducted a study with 382 university students in Jordan to find out how much they know about Digital Eye Strain (DES) and what they do to prevent it. The study showed that about 69% of the students agreed that spending too much time looking at screens can hurt their eyes and affect their daily lives. This means that most students understand that using digital devices for a long time can cause problems with their eye health.

However, when asked if they were willing to reduce the time they spend on screens to avoid these problems, only about 59% said yes. This shows that even though many students are aware of the risks, not all of them are ready to change their habits. Many students may find it hard to limit their screen time because they need their devices for school, socializing, and entertainment.

This difference between knowing and doing is important, especially for students like us who use screens a lot every day. For senior high school students at Philippine School Bahrain, where digital learning is part of everyday life, it is important to look not only at how much students know about digital eye strain but also how they feel about it and what they actually do to protect their eyes. Understanding this can help schools and teachers create better programs that encourage students to take care of their eye health. Taking care of our eyes will help us stay healthy and do better in school, especially since screens are a big part of our learning now.

Knowledge, Attitude, and Practice on Digital Eye Strain Among Healthcare Students at a Private University in Northern Peninsular Malaysia

A study by Hung et al. (2025) stated that in today's digital age, the academic demands placed on students often require prolonged use of digital devices, increasing their risk of developing Digital Eye Strain (DES). In the original study, DES was found to be highly prevalent, with 69.4% of respondents affected, most of whom reported moderate symptoms. Commonly experienced symptoms included eye dryness (89.1%), headaches (88.6%), and eye itching (77.4%), while double vision emerged as the most severe.

In terms of knowledge, most respondents had a moderate understanding of DES, with many acknowledging that improper use of digital devices can lead to negative effects. However, despite this awareness, the majority showed only a neutral attitude, and their preventive practices were limited or inconsistent.

Key practices reported included using digital devices for 7–12 hours daily (42.6%), taking breaks every hour (49.4%), and viewing screens at a distance of 50 cm or less (81.1%). While many used blue light filters (83.1%) or corrective lenses (66.3%), fewer paid attention to optimal lighting conditions or consistent ergonomic posture.

Notably, four protective practices were found to significantly reduce DES risk: limiting device use to 1–6 hours daily, taking breaks every 30 minutes, keeping the screen at eye level, and using blue light filters.

Despite having moderate knowledge, the study found an inverse correlation between knowledge and practice, suggesting that students who knew more about DES didn't always apply healthier screen habits possibly due to overconfidence, lack of resources, or poor motivation.

The study highlights the need for targeted interventions to raise awareness and improve daily screen-use habits among students.

Digital Eye Strain: Knowledge, Attitude and Practice Among University Students

Alshammari et al. (2023) conducted a study that investigated the knowledge, attitudes, and practices (KAP) regarding Digital Eye Strain (DES) among university students, highlighting several points that are also relevant in the context of senior high school students. Their findings showed that 60.6% of respondents had heard about DES, and 66.4% were aware that extended screen exposure can negatively affect the eyes. Although only 31.2% knew the term "digital eye strain," many students still understood the harmful effects of prolonged screen use.

In terms of attitudes, 69.6% of participants acknowledged that using electronic devices for a long time could result in visual problems. A large majority (87.6%) expressed that students should be educated about DES, while 78.2% agreed that health professionals should offer guidance on the issue. This reveals a positive attitude among students toward taking preventive action against DES.

When it came to actual practices, 63.2% of respondents adjusted screen brightness, 55.4% positioned their devices at eye level, and 51.9% maintained a safe distance from their screens. However, only 14.5% used antiglare screens, and just 16.6% adjusted screen color temperatures, indicating that while students were generally aware of DES, many were not consistently applying preventive measures.

The study also found that knowledge, attitudes, and practices were significantly associated with variables such as year level, sex, and course of study, suggesting that certain academic backgrounds may contribute to a better understanding of DES. These findings point to the importance of raising awareness and improving practical habits related to screen use something that can also be explored in the senior high school setting, where students are heavily reliant on digital devices for learning and communication.

Digital Eye Strain and Its Correlation with Practices Among University Students in Jordan

Gammoh (2021) highlighted how the increasing use of digital devices such as smartphones, tablets, and laptops has contributed to the growing prevalence of Digital Eye Strain (DES) among university students. The shift toward digital learning has led to extended screen exposure, with 55.5% of students using digital devices

for more than six hours daily. Additionally, 63.5% reported using these devices for over four years, indicating prolonged and habitual exposure.

Common usage habits included night-time use, which was reported by 53.7% of students, and continuous device usage without breaks, practiced by 36.1% of participants. Although some followed the 20-20-20 rule recommended to reduce eye strain, many still experienced symptoms such as tearing, headaches, and sensitivity to light. The majority of students in the study (94.5%) were found to suffer from computer vision syndrome, based on a validated questionnaire (CVS-Q). A significant association was observed between longer screen time and increased severity of symptoms, particularly among those using digital devices for more than six hours.

Students also reported physical complaints linked to poor posture and repetitive use of handheld devices. These included joint pain in fingers and wrists, neck and shoulder pain, and in some cases, difficulty writing or holding objects. While 69.2% acknowledged that digital device use negatively affects eye health and lifestyle, only 59.2% expressed willingness to reduce screen time. Female students were more likely than males to consider adjusting their device usage habits.

The findings emphasize that prolonged screen exposure, continuous use without breaks, poor posture, and night-time usage are key behavioral factors that contribute to DES among students.

1.3 Research Gap

A study by Garcia and Lacson (2025) at Philippine School Bahrain examined the choices students make between eyeglasses and contact lenses, highlighting that a greater number of students preferred to rely on eyeglasses as their primary vision aid compared to contact lenses. While it showed that many students already rely on prescription glasses, it did not look into how these students experience Digital Eye Strain (DES) or how their knowledge, attitude, and habits affect its severity. Most DES studies only describe symptoms or how common it is, without measuring the link between awareness, habits, and symptom severity. Eyeglass users are of particular importance, as they may be more vulnerable to experiencing DES. With technology use becoming a daily part of schoolwork, this gap needs to be addressed. This study will fill it by gathering quantitative data from senior high students with prescription glasses at Philippine School Bahrain to see how what they know, feel, and do about DES impacts their symptoms.

1.4 Scope and Delimitation

This study aims to bridge the gap in knowledge regarding the rising problem of Digital Eye Strain (DES) amid the prevalence of digital learning by exploring the experiences of Senior High School students at the Philippine School Bahrain during the academic year 2025–2026. It seeks to identify the connection between DES and the students' study habits, as well as its severity within the academic setting. The goal is not only to provide a deeper understanding of the root causes of the problem but also to influence communities, shape policies, and encourage the adoption of preventive behaviors. Ultimately, the study highlights any gaps in awareness and behavior, emphasizing the necessity for evidence-based interventions to safeguard students' ocular health in an increasingly digitalized learning environment.

This study is delimited and narrowed to specific Senior High School students of the Philippine School Bahrain, which may affect the generalizability of the findings. In addition, it exclusively focuses on students who wear prescription glasses and does not include the experiences of those who do not wear prescription glasses or contact lenses.

1.5. Conceptual Framework

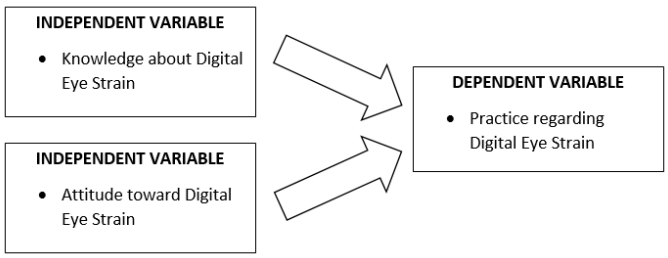

Figure 1: Conceptual Framework: Independent Variable and Dependent Variable

This study focuses on examining the knowledge, attitude, and practice of senior high school students at Philippine School Bahrain regarding Digital Eye Strain. The main independent variables are knowledge and attitude, which are expected to influence the dependent variable, practice. Specifically, the study aims to determine how students' understanding (knowledge) and feelings (attitude) towards Digital Eye Strain affect their actual behaviours or practices in managing or preventing this condition. The conceptual framework illustrates these relationships, showing that knowledge and attitude are key factors that potentially shape students' practice related to Digital Eye Strain.

1.6. Statement of the Problem

This study seeks to determine the knowledge, attitude, and practice regarding digital eye strain among Senior High School students at Philippine School Bahrain.

Specifically, it seeks to answer the following questions:

1. What are the knowledge scores of senior high school students on Digital Eye Strain?
2. What are the attitude scores of senior high school students on Digital Eye Strain?
3. What are the practice scores of senior high school students in the associated factors of Digital Eye Strain?
4. Is there any significant relationship between knowledge and practice regarding Digital Eye Strain?
5. Is there any significant relationship between attitude and practice regarding Digital Eye Strain?

1.7. Hypothesis

1.a. Null Hypothesis. There is no significant relationship between knowledge about DES and practice regarding DES among senior high school students with prescription glasses at Philippine School Bahrain.

1.b. Alternative Hypothesis. There is a significant direct relationship between knowledge about DES and practice regarding DES among senior high school students with prescription glasses at Philippine School Bahrain.

2.a. Null Hypothesis. There is no significant relationship between attitude toward DES and practice regarding DES among senior high school students with prescription glasses at Philippine School Bahrain.

2.b. Alternative Hypothesis. There is a significant direct relationship between attitude toward DES and practice regarding DES among senior high school students with prescription glasses at Philippine School Bahrain.

2. Methodology

2.1 Research Design

This study employed a quantitative research design, specifically the descriptive–correlational approach, to examine the knowledge, attitudes, and practices of Senior High School students at Philippine School Bahrain regarding DES. A descriptive–correlational design is utilized to describe the current state of the variables and to determine the degree of association between them without manipulating any conditions (Creswell, 2012). This design is appropriate as the study sought to assess the participants' awareness of DES, the factors influencing its severity, and the possible relationships among these factors.

The descriptive aspect of the design involved the systematic collection and presentation of data on the participants' knowledge, attitudes, and practices concerning DES, providing an accurate portrayal of the phenomenon within the school setting. Meanwhile, the correlational aspect focused on identifying the statistical relationships between variables, such as the association between knowledge and practice, and determining whether there are significant differences in the susceptibility to, and severity of, DES symptoms between students who wear prescription glasses.

According to Creswell (2012), correlational research enables researchers to examine patterns of relationships between two or more variables, which aligns with the present study's goal of establishing whether a relationship exists between awareness, practices, and the severity of DES. By adopting this approach, the study generated empirical data that will contribute to a deeper understanding of DES among Senior High School students.

2.2. Data Collection Instrument and Procedures

To gather relevant data on the knowledge, attitudes, and practices (KAP) related to DES, the researchers utilized a structured questionnaire as the primary data collection instrument. This questionnaire will be adapted from the study of Hung et al. (2025) entitled "Knowledge, Attitude, and Practice on Digital Eye Strain Among Healthcare Students at a Private University in Northern Peninsular Malaysia". This study used a cross-sectional, observational, online questionnaire-based research survey analysis was conducted among healthcare students. The participants' recruitment was conducted using convenience and a purposive sampling technique. For data analysis, various statistical tests encompassing the Chi-square test, multivariate logistic regression test, and Spearman's correlation coefficient test were carried out.

The instrument was modified to suit the educational level and context of high school students in Philippine School Bahrain. It consists of five sections: (1) demographic profile, (2) the Computer Vision Syndrome Questionnaire (CVS-Q) assessing 16 DES symptoms, (3) eight true-or-false questions measuring knowledge about DES, (4) seven Likert-scale items evaluating attitudes, and (5) nine items assessing students' practices regarding DES. The knowledge section was measured through true-or-false questions, the attitude section was classified using a four-point Likert scale consisting of strongly agree, agree, disagree, and strongly disagree, while the practice section was evaluated using frequency and mode.

Table 1. Likert Scale Interpretation for DES Symptoms

Symptoms of DES	Verbal Interpretation
3	Often or always
2	Occasionally
1	Never

Table 2. True-or-False Questions Measuring Knowledge on DES

Statements	True or False	
	True	False
Statement 1		

Table 3. 4-point Likert Scale Measuring Attitudes toward DES

Response	Interpretation
4	Strongly Agree
3	Agree
2	Disagree
1	Strongly Disagree

Table 4. Frequency of Options of Practices Related to DES

	Frequency of Options		
Practice	Option 1	Option 2	Option 3
P1			

2.3. Research Locale and Participants

The study was conducted at Philippine School Bahrain, a PAASCU-accredited educational institution in Bahrain that follows the K-12 curriculum prescribed by the Department of Education (DepEd) and offers a senior high school program. The research participants were the senior high school students who wear prescription glasses, as they will be the primary focus of the study. The school setting will be ideal for this research, and its location will be convenient for the researchers, as they will also be enrolled in this institution.

The study utilized purposive sampling. Purposive sampling is a non-probability sampling technique, also known as judgmental, selective, or subjective sampling. It relies on the researcher's judgment in selecting units (people, organizations, events, data) to be studied (Rai & Thapa, 2015).

Table 5. Inclusion and Exclusion of Participants

Inclusion	Exclusion
Age Range: 15-19 years old Educational Level: Grade 11 and Grade 12 students at Philippine School Bahrain. Specific Experience: Wears prescription glasses. Availability for Data Collection: Willing and able to complete the survey.	Does not wear prescription glasses.

Participants selected for this study must be within the age range of 15 to 19 years old to ensure the target demographic of senior high school students is accurately represented. Only students currently enrolled in Grade 11 or Grade 12 at Philippine School Bahrain are included to maintain a consistent educational background relevant to the study context. Additionally, participants are required to wear prescription glasses, as this specific experience is pertinent to the research focus. Lastly, participants must be willing and able to complete the survey to guarantee reliable and valid data collection.

2.4. Treatment of Data

Statistical tools were utilized to evaluate and interpret the data obtained from the survey. Before analysis, all responses will be organized and checked for completeness and validity to ensure accuracy and reliability. Data analysis was then conducted using JASP (Jeffreys' Amazing Statistical Program) to compute frequencies, percentages, and the Binomial Test for each variable.

The knowledge scores of senior high school students on Digital Eye Strain (DES) was analyzed using frequency and the Binomial Test in JASP. Since the data was collected through true-or-false questions, these analyses will identify the distribution of correct and incorrect responses and determine the respondents' overall level of knowledge, categorized as Poor, Moderate, or Good.

Table 6. Interpretation of Scores Distribution of Knowledge

Item No.	Item	Options	Score
K1	Digital eye strain is attributed to the inappropriate and excessive use of electronic gadgets.	TRUE	1
		FALSE	0
K2	Digital eye strain involves the feeling of discomfort in both ocular and extraocular part of body structure.	TRUE	1
		FALSE	0
K3	Symptoms of digital eye strain last for short term only.	TRUE	1
		FALSE	0
K4	Refractive errors of vision add to the risk of developing digital eye strain.	TRUE	1
		FALSE	0
K5	If left untreated, digital eye strain might cause exacerbation of dry eye syndrome and damage to cornea.	TRUE	1
		FALSE	0
K6	People wearing eyeglasses or contact lenses do not have the risk of getting DES at all.	TRUE	0
		FALSE	1
K7	20-20-20 rule (for every 20 min of screen-viewing, look at the object 20 feet away for 20 s) is the way to alleviate DES.	TRUE	1
		FALSE	0
K8	Lubricating eye drops cannot improve the symptoms of digital eye strain.	TRUE	0
		FALSE	1

The attitude scores of the respondents were also analysed using frequency and the Binomial Test in JASP based on favourable and unfavourable responses. These measures will assess the participants' perspectives and outlook regarding Digital Eye Strain, classified as Negative, Neutral, or Positive.

Table 7. Interpretation of Scores Distribution of Attitude

Item No.	Item	Options	Score
A1	Online learning is one of the contributing factors to DES.	Strongly Disagree	1
		Disagree	2
		Neutral	3
		Agree	4
		Strongly Agree	5
A2	DES can be treated and prevented by reducing screen time.	Strongly Disagree	1
		Disagree	2
		Neutral	3
		Agree	4
		Strongly Agree	5
A3	There is no need to consult doctor if you have been diagnosed with DES.	Strongly Disagree	5
		Disagree	4
		Neutral	3
		Agree	2
		Strongly Agree	1
A4	Every individual has the responsibility to take care of own eyes while using digital devices.	Strongly Disagree	1
		Disagree	2
		Neutral	3
		Agree	4
		Strongly Agree	5
A5	Children are more vulnerable to DES if compared to adults.	Strongly Disagree	5
		Disagree	4
		Neutral	3
		Agree	2
		Strongly Agree	1
A6	Do you agree to switch from the use of digital device to hardcopy material for learning purpose?	Strongly Disagree	1
		Disagree	2
		Neutral	3
		Agree	4
		Strongly Agree	5
A7	Eye care can be maintained by consuming eye supplements.	Strongly Disagree	1
		Disagree	2

Neutral	3
Agree	4
Strongly Agree	5

The practice scores of the respondents were examined using frequency and the Binomial Test in JASP based on favourable and unfavourable responses. These tools will reveal the most common practices among the respondents and determine whether the distribution of responses significantly differs from expected values, providing a clearer view of their behaviours related to Digital Eye Strain.

Table 8. Interpretation of Scores Distribution of Practice

Item No.	Item	Options	Score
P1	Most commonly used digital device	Smartphone	–
		Laptop	–
		Desktop	–
		Tablet/iPad	–
P2	Total hours of digital device use per day	1-6 h	1
		7-12 h	0
		13-18 h	0
		19-24 h	0
P3	Screen viewing distance while using digital device	50 cm or below	0
		Above 50 cm	1
P4	Seating position while using digital device	Face at level of screen	1
		Face not at level of screen	0
P5	How often do you take a break while using digital device?	Every 30 min	1
		Every 1 h	0
		Every 2 h	0
		More than 2 h	0
P6	How often do you use lubricant eye drops while using digital device?	Never	0
		Rarely	0
		Sometimes	0
		Often	0
		Always	1
P7	Do you use blue light filter on your digital device?	Yes	1
		No	0
P8	Do you use eyeglasses or contact lenses?	Yes	1
		No	0
P9	Usually, what is the lighting condition while you are using digital device?	Very Dark	0
		Dark	0
		Dull	0
		Bright	1
		Very Bright	0

Finally, Spearman's rho correlation in JASP was employed to determine the significant relationships between the variables—specifically, between knowledge and practice scores, as well as between attitude and practice scores. This analysis was established whether the respondents' knowledge and attitudes toward Digital Eye Strain are significantly associated with their actual practices.

Table 9. Knowledge score grading as per Bloom Scoring System

Interval Scale	Verbal Interpretation
0–4.79	Poor
4.80–6.39	Moderate
6.40–8.00	Good

Table 10. Attitude score grading

Interval Scale	Verbal Interpretation
7.00–20.99	Negative
21.00–27.99	Neutral
28.00–35.00	Positive

Table 11. Practice score grading (level of variables) as per Practice Scoring Scale

Interval Scale	Verbal Interpretation
0–2.71	Poor
2.72–5.43	Moderate
5.44–8.00	Good

Table 12. Spearman-Rho Correlation p-value Interpretation

Interval Scale	Verbal Interpretation
0	No Correlation
$0 < p \leq 0.19$	Very Weak
$0.20 < p \leq 0.39$	Weak
$0.40 \leq p \leq 0.59$	Moderate
$0.60 \leq p \leq 0.79$	Strong
$0.80 \leq p \leq 1.00$	Very Strong
1.00	Monotonic Correlation

2.5. Ethical Considerations

This study strictly adhered to ethical considerations to ensure the safety, security, and privacy of participants, as well as the protection of their rights. Prior to data collection, all participants are fully informed about the nature and purpose of the study, and their voluntary participation is requested. Only those who provide informed consent proceed to complete the questionnaire. Participants are assured that their responses are kept confidential and that their identities remain anonymous. It is also emphasized that participation is entirely voluntary, with the option to withdraw from the study at any time without any form of coercion or penalty. To maintain anonymity, participants are assigned identification codes such as "Participant 1," "Participant 2," and so forth. The data collected is exclusively accessible to the research advisers and panellists, with stringent measures implemented to uphold confidentiality throughout the study.

3. Result and Discussion

3.1 Profile of Respondents

Table 13 shows the frequency and percentage distribution of the respondents' demographic profile and their experiences with eye-related symptoms of Digital Eye Strain (DES). The data were analyzed using JASP through frequency and the Binomial Test to see how often each response appeared based on age, grade level, section, and different eye conditions. This part of the study aims to describe the background of the respondents and identify the common eye problems they experience. The results help show how students' personal characteristics are connected to the symptoms of Digital Eye Strain.

Gammoh (2021) reported that both age and duration of device use significantly affected the prevalence of Digital Eye Strain (DES) among students. In line with the current study, younger participants who spent more time on screens experienced higher levels of eye discomfort and fatigue, suggesting that personal demographic factors play a key role in the experience of DES symptoms.

Table 13. Demographic Profile of Respondents

Variable	Level	Counts	Proportion	p
Age (in years)	15	5	7%	< .0001
	16	27	39%	0.0722
	17	30	43%	0.282
	18	8	11%	< .0001
Grade Level	11	33	47%	0.7202
	12	37	53%	0.7202
Section	Mapaghinuha	10	14%	< .0001
	Mapagnilay	12	17%	< .0001
	Mapagpalaya	10	14%	< .0001
	Mapagsiyasat	9	13%	< .0001
	Mapanaliksik	14	20%	< .0001
	Mapitagan	15	21%	< .0001

3.2 Discussion

Level of Knowledge of Senior High School Students on Digital Eye Strain

Table 14 presents the frequency and percentage distribution of the respondents' knowledge scores on Digital Eye Strain (DES). The data were analyzed using JASP through frequency and the Binomial Test to determine the proportion of correct and incorrect responses. This analysis aims to assess the respondents'

understanding of the causes, symptoms, and preventive measures of Digital Eye Strain. The results reflect the overall level of knowledge among senior high school students, categorized as Poor, Moderate, or Good based on the Bloom's Scoring System.

Table 14. Knowledge Level of Senior High School Students on Digital Eye Strain

Item	Options	Level	Counts	Proportion	p
Digital eye strain is attributed to the inappropriate and excessive use of electronic gadgets.	FALSE	0	3	4%	< .0001
	TRUE	1	67	96%	< .0001
Digital eye strain involves the feeling of discomfort in both ocular and extraocular part of body structure.	FALSE	0	6	9%	< .0001
	TRUE	1	64	91%	< .0001
Symptoms of digital eye strain last for short term only.	FALSE	0	53	76%	< .0001
	TRUE	1	17	24%	< .0001
Refractive errors of vision add to the risk of developing digital eye strain.	FALSE	0	9	13%	< .0001
	TRUE	1	61	87%	< .0001
If left untreated, digital eye strain might cause exacerbation of dry eye syndrome and damage to cornea.	FALSE	0	4	6%	< .0001
	TRUE	1	66	94%	< .0001
People wearing eyeglasses or contact lenses do not have the risk of getting DES at all.	TRUE	0	3	4%	< .0001
	FALSE	1	67	96%	< .0001
20-20-20 rule (for every 20 min of screen-viewing, look at the object 20 feet away for 20 s) is the way to alleviate DES.	FALSE	0	11	16%	< .0001
	TRUE	1	59	84%	< .0001
Lubricating eye drops cannot improve the symptoms of digital eye strain.	TRUE	0	11	16%	< .0001
	FALSE	1	59	84%	< .0001
Overall Knowledge Score on DES	7			Good	

Interval Scale: 0 – 4.79: Poor; 4.8 – 6.39: Moderate; 6.4 – 8: Good

Table 14 presents the knowledge level of senior high school students on Digital Eye Strain (DES). The overall mean score of 7, interpreted as good, indicates that students generally possess sufficient knowledge about the causes, symptoms, and preventive measures related to DES.

For Item 1, a vast majority (96%) correctly recognized that inappropriate and excessive use of electronic gadgets contributes to the development of digital eye strain. This suggests that students are aware of the link between prolonged screen exposure and visual discomfort. Similarly, Item 2 shows that 91% understood that DES involves discomfort not only in the eyes but also in surrounding muscles, reflecting awareness of both ocular and extraocular symptoms.

Conversely, Item 3 had the lowest correct response rate, with only 24% of students correctly identifying that DES symptoms are temporary and not long-term. This indicates that many respondents overestimated the persistence of DES, possibly confusing it with more serious or chronic eye conditions. Such misconception suggests a gap in understanding the temporary and reversible nature of DES, which typically subsides with adequate rest, reduced screen time, or proper eye care practices.

For Item 4, 87% correctly identified that refractive errors contribute to DES, showing understanding of its physiological risk factors. Item 5 also yielded a high accuracy rate (94%), revealing that most students recognize the potential for complications such as dry eye syndrome or corneal damage.

Item 6 shows that 96% of students correctly disagreed with the misconception that wearing eyeglasses or contact lenses completely eliminates the risk of DES, indicating proper understanding of its

multifactorial nature. Meanwhile, Items 7 and 8, both with 84% correct responses, demonstrate that a majority are familiar with effective management practices, including the 20-20-20 rule and the use of lubricating eye drops.

These findings are consistent with the study of Jaryal et al. (2025), who found that while individuals generally possess awareness of DES, significant knowledge gaps remain regarding its symptoms and preventive measures. Similar to the current results, their study revealed that many respondents understood the basic causes of DES but lacked full awareness of environmental and nutritional factors, such as the role of vitamin A and dry air in worsening symptoms. This supports the present findings where students demonstrated good foundational knowledge but showed misconceptions about the duration of symptoms.

Overall, the results indicate that the students exhibit a good level of knowledge about DES, particularly in its causes and preventive strategies. However, misconceptions regarding the duration and persistence of symptoms suggest a need for further education or awareness campaigns to emphasize long-term eye care habits, especially in academic environments that rely heavily on digital technology.

Level of Attitude of Senior High School Students on Digital Eye Strain

Table 15 presents the frequency and percentage distribution of the respondents' attitude scores on Digital Eye Strain (DES). The data were analyzed using JASP through frequency and the Binomial Test to determine the proportion of positive and negative responses. This analysis aims to assess the respondents' attitude toward the seriousness of DES, their willingness to take preventive actions, and their overall awareness of proper eye care practices. The results reflect the general attitude of senior high school students, categorized as Positive, Neutral, or Negative based on the computed attitude scores.

Table 15. Attitude Level of Senior High School Students on Digital Eye Strain

Items	Options	Level	Counts	Proportion	p
Online learning is one of the contributing factors to DES.	Disagree	2	13	19%	< .0001
	Neutral	3	39	56%	0.403
	Agree	4	18	26%	< .0001
DES can be treated and prevented by reducing screen time.	Disagree	2	6	9%	< .0001
	Neutral	3	27	39%	0.0722
	Agree	4	37	53%	0.7202
There is no need to consult doctor if you have been diagnosed with DES.	Strongly disagree	5	48	69%	0.0025
	Disagree	4	17	24%	< .0001
	Neutral	3	4	6%	< .0001
	Agree	2	1	1%	< .0001
Every individual has the responsibility to take care of own eyes while using digital devices.	Disagree	2	1	1%	< .0001
	Neutral	3	18	26%	< .0001
	Agree	4	51	73%	0.0002
Children are more vulnerable to DES if compared to adults	Agree	2	8	11%	< .0001
	Neutral	3	28	40%	0.1196
	Disagree	4	34	49%	0.905
Do you agree to switch from the use of digital device to hardcopy material for learning purpose?	Strongly disagree	1	6	9%	< .0001
	Disagree	2	23	33%	0.0056

	Neutral	3	25	36%	0.0225
	Agree	4	16	23%	< .0001
Eye care can be maintained by consuming eye supplements	Strongly disagree	1	4	6%	< .0001
	Disagree	2	16	23%	< .0001
	Neutral	3	31	44%	0.403
	Agree	4	19	27%	0.0002
Overall Attitude Score on DES	20.66			Negative	

Interval Scale: 7 – 20.99: Negative; 21 – 27.99: Neutral; 28 – 35: Positive

Table 15 presents the attitude level of senior high school students toward Digital Eye Strain (DES). The overall mean score of 20.66, interpreted as Negative, indicates that most students hold unfavorable or indifferent attitudes toward DES management and prevention. This suggests that while they may be aware of its causes, they do not fully practice or value proper preventive measures in their daily routines.

For Item 1, more than half (56%) are neutral that online learning contributes to the development of DES. This shows that students recognize the connection between prolonged screen exposure and eye strain. However, some still underestimate how much online learning affects eye health. Similarly, Item 2 revealed that 53% of the respondents agreed that DES can be treated or prevented by reducing screen time, showing a fair understanding of prevention. Still, a few respondents disagreed, suggesting that not everyone believes simple lifestyle changes are effective.

In Item 3, the majority (69%) strongly disagreed that there is no need to consult a doctor if diagnosed with DES, while 24% disagreed. This indicates that most students recognize the importance of seeking professional medical advice for eye-related concerns and demonstrate awareness that DES requires proper attention and management.

Meanwhile, Item 4 revealed that 73% of respondents agreed that every individual has the responsibility to take care of their own eyes while using digital devices. This shows that students hold a positive and proactive attitude toward personal eye care, emphasizing self-awareness and preventive habits in reducing DES risks.

For Item 5, 49% disagreed that children are more vulnerable to DES than adults. This indicates that some respondents are not necessarily aware of how younger people are more affected by digital eye strain, though others may not fully understand the age-related risks. In Item 6, 36% are neutral and 23% disagreed to switching from digital devices to hardcopy materials for studying. This suggests that while some students are open to reducing screen time, many still rely heavily on technology for schoolwork.

Lastly, Item 7 showed that 44% of respondents are neutral that consuming eye supplements can help maintain good eye health. This shows that many students believe that taking supplements is one way to care for their eyes.

Ragavan et al. (2022) observed that medical students, despite being aware of DES prevention methods, often held negative attitudes toward applying these strategies. Similarly, Parrey et al. (2023) noted that university students, though knowledgeable about the causes and prevention of DES, frequently exhibited indifference toward adopting preventive measures. These patterns support the current results, which indicate that awareness does not always translate into positive attitudes toward managing DES.

Overall, the results show that students possess varying attitudes toward Digital Eye Strain. While many demonstrate awareness of preventive practices and personal responsibility, the overall negative attitude score suggests that there is still room for improvement in promoting positive behaviors and consistent eye care habits among senior high school students.

Level of Practice of Senior High School Students on Digital Eye Strain

Table 16 presents the frequency and percentage distribution of the respondents' practice scores on Digital Eye Strain (DES). The data were analyzed using JASP through frequency and the Binomial Test to determine the proportion of proper and improper practices among senior high school students. This analysis aims to assess the students' actual habits and behaviors when using digital devices and how these practices relate to the prevention or management of Digital Eye Strain. The results reflect the general level of practice among senior high school students, categorized as Poor, Moderate, or Good based on the computed practice scores.

Table 16. Practice Level of Senior High School Students on Digital Eye Strain

Items	Options	Level	Counts	Proportion	p
Most commonly used digital device	Desktop	–	4	6%	< .0001
	Laptop	–	21	30%	0.0011
	Smartphone	–	42	60%	0.1196
	Tablet/IPad	–	3	4%	< .0001
Total hours of digital device use per day	1–6 h	1	20	71%	0.0004
	7–12 h	0	44	63%	0.0004
	13–18 h	0	5	7%	0.0004
	19–24 h	0	1	1%	0.0004
Screen viewing distance while using digital device	50 cm or below	0	57	81%	< .0001
	Above 50 cm	1	13	19%	< .0001
Seating position while using digital device	Face not at level of screen	0	27	39%	0.0722
	Face at level of screen	1	43	61%	0.0722
How often do you take a break while using digital device?	Every 30 min	1	29	41%	0.1882
	Every 1 h	0	16	23%	0.1882
	Every 2 h	0	9	12%	0.1882
	More than 2 h	0	16	23%	0.1882
How often do you use lubricant eye drops while using digital device?	Never	0	45	64%	< .0001
	Rarely	0	15	21%	< .0001
	Sometimes	0	7	10%	< .0001
	Often	0	3	4%	< .0001
	Always	1	0	0%	< .0001
Do you use blue light filter on your digital device?	No	1	25	36%	0.0225
	Yes	0	45	64%	0.0225
Do you use eyeglasses or contact lenses?	Yes	1	70	100%	< .0001
	No	0	0	0%	< .0001
Usually, what is the lighting condition while you are using digital device?	Very Dark	0	4	6%	0.0414
	Dark	0	9	13%	0.0414

	Dull	0	30	43%	0.0414
	Bright	1	26	37%	0.0414
	Very Bright	0	1	1%	0.0414
Overall Practice Score on DES	3.51			Moderate	

Interval Scale: 0 – 2.71: Poor; 2.72 – 5.43: Moderate; 5.44 – 8: Good

Table 16 presents the level of practice of senior high school students on Digital Eye Strain (DES). The overall mean score of 3.51, interpreted as Moderate, indicates that most students demonstrate an average level of practice in managing and preventing DES. This suggests that while they perform some proper eye care habits, these are not consistently applied or fully integrated into their daily digital routines.

For Item 1, the results show that smartphones (60%) are the most commonly used digital devices among students. This reveals the heavy reliance on mobile technology for both academic and personal use, which increases their exposure to screens and potential risk for DES. Item 2 indicates that 71% of the respondents use digital devices for more than 1-6 hours daily, reflecting prolonged screen time that contributes to eye strain and fatigue.

In Item 3, 81% of respondents reported maintaining an appropriate viewing distance while using digital devices. This shows that most students are aware of proper screen positioning to reduce strain. However, Item 4 shows that only 61% maintain a correct seating position when using their devices, which may still lead to physical discomfort or posture-related issues connected to long screen use.

For Item 5, respondents stated that they take breaks while using digital devices. Although this is a positive result, it still shows that a large portion of students (58%) do not rest their eyes regularly, suggesting inconsistent adherence to practices like the 20-20-20 rule. Item 6 shows that no respondents (0%) use lubricating eye drops all the time, which is a negative indication that they do not engage in at least one active measure to relieve dryness caused by digital use.

Item 7 reveals that 64% of the respondents use a blue light filter on their digital devices. This indicates growing awareness of blue light's effects on vision and the importance of reducing eye strain. Item 8 shows that all students (100%) use eyeglasses or contact lenses, which suggests that most are already addressing existing vision needs or using protective lenses when using gadgets.

Finally, Item 9 shows that 37% of respondents work under proper lighting conditions while using digital devices. This demonstrates awareness that good lighting helps minimize glare and prevents additional eye strain.

Almuqrashi et al. (2025) reported that university students demonstrated a moderate level of DES management practices. Although students recognized the importance of proper posture and taking regular breaks, many still engaged in prolonged screen use without consistently applying preventive measures. AlQarni et al. (2023) similarly found that, despite identifying DES symptoms, students often neglected strategies such as using blue light filters or maintaining proper lighting conditions. These observations align with the present study, emphasizing the need for interventions to encourage consistent eye care practices.

Overall, the findings reveal that students exhibit a moderate level of practice regarding Digital Eye Strain. While they are aware of proper viewing distance, lighting, and the importance of protective measures like lubricating drops and eyeglasses, they still show inconsistent practices such as taking breaks and maintaining good posture. These results suggest that while awareness exists, there is still a need to strengthen consistent and mindful application of good digital habits to effectively prevent and manage Digital Eye Strain among students.

Correlation of Knowledge and Practice of Senior High School Students on Digital Eye Strain

Table 17 presents the statistical results on the relationship between the participants' knowledge and practice regarding Digital Eye Strain (DES). The data were analyzed using Spearman's rank-order correlation to determine the strength and direction of the association between the two variables. This analysis aims to identify whether a significant correlation exists between the students' level of knowledge about DES and their actual practices in preventing or managing it. The findings provide a quantitative basis for understanding how knowledge may or may not influence students' behavioral responses to prolonged digital device use.

Table 17. Correlation between Knowledge and Practice

Variable	Test Statistic	
Overall Knowledge Score on DES	Spearman's rho	-0.0704
	p-value	0.7187

Interval Scale: p = 0: No Correlation; 0 < p ≤ 0.19: Very Weak; 0.20 < p ≤ 0.39: Weak; 0.40 ≤ p ≤ 0.59: Moderate; 0.60 ≤ p ≤ 0.79: Strong; 0.80 ≤ p ≤ 1.00: Very Strong; 1.00: Monotonic Correlation

The table indicates that there is no significant relationship between Overall Knowledge on DES and the Overall Practice on DES, as evidenced by the very weak negative correlation (Spearman's rho = -0.0704) and a p-value of 0.7187, which is greater than the 0.05 significance level. This shows that variations in the participants' knowledge on DES are not meaningfully associated with changes in the other variable, suggesting a lack of statistical evidence to support any correlation between the two.

Ragavan et al. (2022) also highlighted that medical students' awareness of proper DES management did not always translate into action, reflecting a moderate level of practice. Parrey et al. (2023) reported similar findings, where students recognized symptoms and preventive measures but did not consistently implement effective strategies. These studies reinforce the current findings, pointing to the ongoing challenge of bridging the gap between knowledge and behavior in DES management.

Correlation of Attitude and Practice of Senior High School Students on Digital Eye Strain

Table 18 presents the statistical results on the relationship between the participants' attitudes and practices regarding Digital Eye Strain (DES). The data were analyzed using Spearman's rank-order correlation to determine the degree and direction of association between the two variables. This analysis aims to assess whether students' attitudes toward DES influence their preventive and management practices. The findings provide a quantitative understanding of how perceptions and behavioral responses toward DES are related among senior high school students.

Table 18. Correlation between Attitude and Practice

Variable	Test Statistic	
Overall Attitude Score on DES	Spearman's rho	0.0702
	p-value	0.2819

Interval Scale: p = 0: No Correlation; 0 < p ≤ 0.19: Very Weak; 0.20 < p ≤ 0.39: Weak; 0.40 ≤ p ≤ 0.59: Moderate; 0.60 ≤ p ≤ 0.79: Strong; 0.80 ≤ p ≤ 1.00: Very Strong; 1.00: Monotonic Correlation

The table shows that there is no significant relationship between Overall Attitude on DES and the Overall Practice on DES, as indicated by the very weak positive correlation (Spearman's rho = 0.0702) and a p-value of 0.2819, which is greater than the 0.05 level of significance. This suggests that the respondents' attitudes toward Digital Eye Strain do not have a meaningful or statistically significant association with the practice score being compared.

Parrey et al. (2023) emphasized that even when students were generally aware of DES and its preventive measures, their attitudes did not always result in consistent practices. Hung, et al. (2025) similarly

found that healthcare students' positive knowledge of DES was not strongly associated with routine preventive behaviors. These findings support the present results, highlighting the need for interventions that help students translate awareness and attitude into consistent eye care practices. score being compared.

3.3 Summary of Findings

1.The overall knowledge score of respondents was 7, interpreted as good. This indicates that students generally have a solid understanding of the causes, symptoms, and preventive measures of Digital Eye Strain. However, some misconceptions persist, particularly regarding the duration of DES symptoms.

2.The overall attitude score of respondents was 20.66, interpreted as negative. While many students show awareness of preventive practices and personal responsibility, the negative score suggests that positive behaviors and consistent eye care habits are still limited.

3.The overall practice score of respondents was 3.51, interpreted as moderate. Students are aware of proper viewing distance, lighting, and protective measures such as eyeglasses or lubricating drops, but they inconsistently apply these practices, such as taking regular breaks and maintaining correct posture.

4.There was no significant relationship between overall knowledge on DES and overall practice, as shown by a very weak negative correlation (Spearman's rho = -0.0704, p = 0.7187). This suggests that having knowledge about DES does not necessarily lead to better preventive practices.

5. There was no significant relationship between overall attitude on DES and overall practice, indicated by a very weak positive correlation (Spearman's rho = 0.0702, p = 0.2819). This implies that students' attitudes toward DES do not strongly influence their actual practices.

4. Conclusion and Recommendation

4.1 Conclusion

Senior high school students at Philippine School Bahrain generally demonstrate good knowledge of Digital Eye Strain, particularly in understanding its causes, symptoms, and preventive measures. Most students recognize the effects of prolonged screen use, refractive errors, and strategies such as the 20-20-20 rule and the use of lubricating eye drops. Despite this, some misconceptions remain, particularly regarding the duration of DES symptoms, suggesting that while students are aware of the basic concepts, further education is needed to reinforce the temporary and reversible nature of the condition.

Although students possess knowledge of DES and its preventive strategies, their overall attitude toward eye care is negative. Many students understand the importance of personal responsibility and seeking professional advice, yet a considerable number remain indifferent or inconsistent in applying these practices.

This indicates that awareness alone is not enough to cultivate a proactive mindset, highlighting the need for interventions that foster more positive and consistent attitudes toward eye health.

In terms of actual behavior, students exhibit a moderate level of practice in managing Digital Eye Strain. While they demonstrate some proper habits, such as maintaining appropriate viewing distance, using blue light filters, and wearing eyeglasses when needed, practices like taking regular breaks and using lubricating drops are applied inconsistently. This reveals a gap between awareness and action, emphasizing the need to encourage consistent implementation of preventive measures in daily routines.

The study found no significant relationship between students' knowledge of DES and their practices, indicating that having information about the condition does not necessarily translate into better preventive behavior. This underscores the challenge of converting awareness into action and suggests that additional strategies are required to bridge this gap.

Similarly, no significant relationship was observed between students' attitudes toward DES and their actual practices. Even when students hold positive or responsible views about eye care, these attitudes do not consistently influence preventive behaviors. This highlights the importance of designing interventions that not only raise awareness but also motivate students to consistently apply healthy eye care practices.

4.2 Recommendations

DES has become a growing concern among students due to prolonged exposure to digital devices. Although the findings of this study reveal that students possess good knowledge and moderate practices regarding DES, several misconceptions, inconsistencies, and negative attitudes remain evident. The following recommendations are proposed to enhance awareness, improve attitudes, and promote better preventive practices toward DES:

1. For Students: Students will be motivated and guided to apply healthy eye-care habits by using class reminders for the 20-20-20 rule, tracking their daily screen time through built-in device features, and following simple posture and screen-distance cues displayed in classrooms. Regular participation in brief eye-care activities and awareness sessions will reinforce these practices and ensure consistent application of what they know.
2. For the School Community: Schools should implement informational health campaigns focusing on Digital Eye Strain and its prevention. Integrating DES education into existing wellness programs or health modules can help raise collective awareness. Digital posters, infographics, or announcements can be displayed around the campus to remind students about proper screen usage habits and ergonomic practices.
3. For Teachers: Teachers are encouraged to incorporate brief discussions on the importance of eye care and digital health in their lessons, especially in subjects that involve frequent gadget use. They can also model proper screen practices during online or digital activities and remind students to take visual breaks regularly.
4. For Health Personnel: School nurses can conduct regular eye health assessments and provide practical guidance on minimizing DES symptoms. They can distribute printed materials to teach students and staff about the signs, symptoms, and preventive measures of DES.

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