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Visual Symptoms Associated with Prolonged Screen Exposure: A Descriptive and Analytical Cross-Sectional Study in the City of Maradi, Niger

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Abstract

Introduction: Intensive use of digital screens is a hallmark of modern life, leading to an increase in visual symptoms collectively referred to as computer vision syndrome or asthenopic symptoms. The objective of this study was to assess the prevalence and associated factors of these symptoms in a population in the city of Maradi, Niger. **Materials and Methods**: A descriptive and analytical cross-sectional study was conducted over a six-month period, from April to September 2025. A convenience sample of 210 participants, who were regular screen users, was recruited. Data were collected via a structured questionnaire covering sociodemographic characteristics, screen usage habits, and reported visual symptoms. Statistical analysis was performed using Epi Info software. **Results**: The mean age of the 210 participants was 34.64 ± 11.12 years, with a predominance of males (male-to-female ratio = 2.68). Students constituted the largest occupational group (36.67%). The cell phone was the most frequently used screen (40.48% for exclusive use). The overall prevalence of asthenopic symptoms was 82.38%. The most common symptoms were eye strain (13.81%) and blurred vision (13.81%), followed by headaches. Daily screen time exceeding 4 hours and the absence of regular breaks were significantly associated with a higher frequency of symptoms. Only 22.86% of symptomatic participants had consulted an eye care professional. **Conclusion**: Screen-related visual symptoms are highly prevalent in our study population, highlighting an emerging public health issue. Increased awareness of good ergonomic practices, such as the 20-20-20 rule, and encouragement of regular eye exams are necessary to prevent long-term consequences for eye health.

Keywords

Asthenopic Symptoms, Screens, Blurred Vision, Computer Vision Syndrome, Public Health, Niger

1. Introduction

The digital age has profoundly transformed lifestyles and work patterns worldwide. The ubiquity of screens—computers, smartphones, tablets, and televisions—has become a constant feature of professional, educational, and recreational settings [1]. While this technological revolution offers undeniable benefits in terms of communication, access to information, and productivity, it also brings new challenges for public health, particularly regarding eye health [2]. The range of ocular and visual symptoms associated with prolonged screen use is collectively referred to as "Computer Vision Syndrome" (CVS), or "Digital Eye Strain" (DES) in the English-language literature [3]. These symptoms, also known as asthenopic symptoms, include a wide range of manifestations such as eye fatigue, dryness, tingling, burning, blurred or double vision, headaches, as well as neck and shoulder pain [4] [5]. The prevalence of this syndrome is alarming, affecting, according to studies, between 50% and 90% of screen users [6] [7]. The pathophysiology of SVI is multifactorial. It results from the combination of several mechanisms that place intense strain on the visual system. The constant accommodative effort required to maintain a sharp focus on light-emitting pixels, a reduction in blink rate (from 15 - 20 times per minute to just 5 - 7 times), which disrupts the tear film and causes dry eye, as well as exposure to glare and high-energy blue light emitted by screens, are the main factors involved [8] [9]. Environmental factors, such as inadequate lighting or poor workplace ergonomics (screen distance and height), as well as individual factors such as uncorrected or poorly corrected refractive errors (myopia, hyperopia, astigmatism) or presbyopia, can exacerbate these symptoms [10].

Numerous studies have been conducted worldwide to quantify this phenomenon. In India, a study of office workers reported a 75% prevalence of asthenopic symptoms [11]. In Ethiopia, among bank employees, this figure reached 73.3% [12]. Similar prevalences were observed among university students in Malaysia (89.9%) [13] and Saudi Arabia (78.4%) [14], populations that are particularly at risk due to their academic and leisure activities. In Niger, as in many sub-Saharan African countries, the adoption of digital technologies, particularly smartphones, has grown exponentially over the past decade. However, data on the impact of this digital transition on the population's eye health remain scarce, if not nonexistent. The socioeconomic context, cultural habits regarding device use, and access to eye care can influence the prevalence and management of these symptoms in specific ways.

Given this observation, we felt it was essential to conduct a study to document the extent of the problem in our context. This study aims to move "from the abstract to the concrete" by quantifying screen-related visual symptoms within a population in the city of Maradi, Niger. The overall objective is to study the frequency and factors associated with visual symptoms related to screen use. More specifically, we will seek to: 1) determine the prevalence of various asthenopic symptoms; 2) assess screen exposure habits (type, duration, distance); 3) identify the sociodemographic and behavioral factors associated with the onset of these symptoms; and 4) propose prevention measures adapted to the local context.

2. Materials and Methods

2.1. Study Setting, Design, and Timeframe

This was a cross-sectional study with descriptive and analytical objectives. It was conducted in the city of Maradi, the economic capital of Niger, over a six-month period from April 1 to September 30, 2025. The study setting included various public and professional venues (universities, government offices, markets) in order to reach a diverse population.

2.2. Study Population and Sampling

The target population consisted of individuals aged 15 and older who regularly used at least one type of digital screen (cell phone, computer, tablet, etc.) in their daily, professional, or leisure activities. We used convenience sampling. Participants were approached at the selected sites and invited to participate after a clear explanation of the study's objectives. The total number of participants in this study was 210; we did not include those who refused to participate after we had clearly explained the study to them.

2.2.1. Inclusion Criteria

The study included participants who:

- Were 15 years of age or older;
- Used one or more digital screens for at least one hour per day;
- Who had given their free and informed consent to participate in the study (or the consent of a parent/guardian for minors aged 15 to 17).

2.2.2. Exclusion Criteria

The following subjects were excluded from the study:

- Those with a known, pre-existing severe eye condition (e.g., advanced glaucoma, AMD, proliferative diabetic retinopathy) that could constitute a major confounding factor;
- Who had undergone recent eye surgery (within the past 3 months);
- Who were unable to understand and respond coherently to the questionnaire.

A total of 210 individuals meeting the criteria were included in the study.

2.3. Data Collection

The data collection tool was a structured questionnaire that was pre-tested and administered in person by trained interviewers. The questionnaire was designed to collect information on several variables:

- Sociodemographic variables: age, gender, occupation, educational level.
- Screen usage habits: type (s) of screen (s) used, average daily usage time (in hours), usual eye-to-screen distance (estimated by the participant: <30 cm, 30 - 50 cm, >50 cm), taking regular breaks, use of visual protection measures (blue light filters, artificial tears, brightness adjustment, etc.).
- Visual symptoms (eye strain): presence, type, and frequency of symptoms experienced during or after screen use. The symptoms examined were: eye strain, blurred vision, dry eyes, headaches, and sleep disturbances. Frequency was classified as: daily, frequent, occasional, rare.
- Management of symptoms: approach taken toward symptoms (no treatment, self-medication, consultation with an eye care professional, consultation with a traditional practitioner).
- Knowledge and opinions: awareness of the "20-20-20" rule and personal opinion on preventive measures.

2.4. Statistical Analysis

The collected data were entered and analyzed using Epi Info version 7.2. Quantitative variables (such as age) were described using their means and standard deviations, as well as their extremes. Qualitative variables were described in terms of counts and percentages. The chi-square (χ^2) test was used to investigate associations between qualitative variables, particularly between the presence of symptoms and potential risk factors (duration of exposure, lack of breaks, etc.). The threshold for statistical significance was set at $p < 0.05$.

2.5. Ethical Considerations

The study was conducted in accordance with the ethical principles of the Declaration of Helsinki. Approval was obtained from the relevant authorities. Written informed consent was obtained from each participant prior to enrollment. The anonymity and confidentiality of the data were ensured throughout the process. Participants with severe symptoms were advised to consult an ophthalmologist.

3. Results

A total of 210 people participated in our study. The results are presented below, beginning with the sociodemographic characteristics of the sample, followed by screen-use habits and the prevalence of visual symptoms.

3.1. Sociodemographic Characteristics

Age: In our study, the 26 - 35 age group was the most represented, accounting for 33.33% (n = 70). The mean age was 34.64 years ± 11.12, with ages ranging from 15 to 63 years.

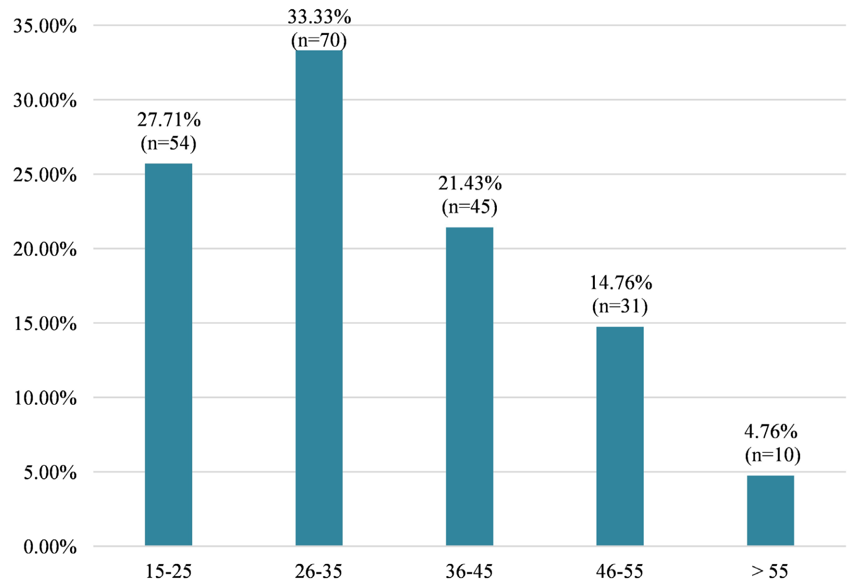

Figure 1. Breakdown of patients by age group.

The mean age of the participants was 34.64 years, with a standard deviation of 11.12. Ages ranged from 15 to 63 years. The most represented age group was 25 - 34 years.

Our sample was predominantly male, with 154 men (73.33%) and 56 women (26.67%), resulting in a male-to-female ratio of 2.68, as shown in **Figure 1**.

Table 1. Breakdown of participants by occupation.

Occupation	Number	**Percentage (%)**
Students	77	36.67
Civil servants	55	26.19
Teachers	27	12.86
Office workers	21	10.00
Self-employed	13	6.19
Retailers	6	2.86
Military	6	2.86
Elementary school students	5	2.38
Total	**210**	**100.00**

In terms of occupation, students constituted the largest group, accounting for 36.67% of the sample, followed by civil servants (26.19%) and teachers (12.86%). Details of the occupational breakdown are presented in **Table 1**.

Figure 2 shows the distribution of participants by educational level.

The majority of participants had a higher education background (university level), reflecting the composition of our sample, which includes a high proportion of students and civil servants.

Level of education

In our study, the majority of participants had a higher education level, accounting for 87.62% (n = 184).

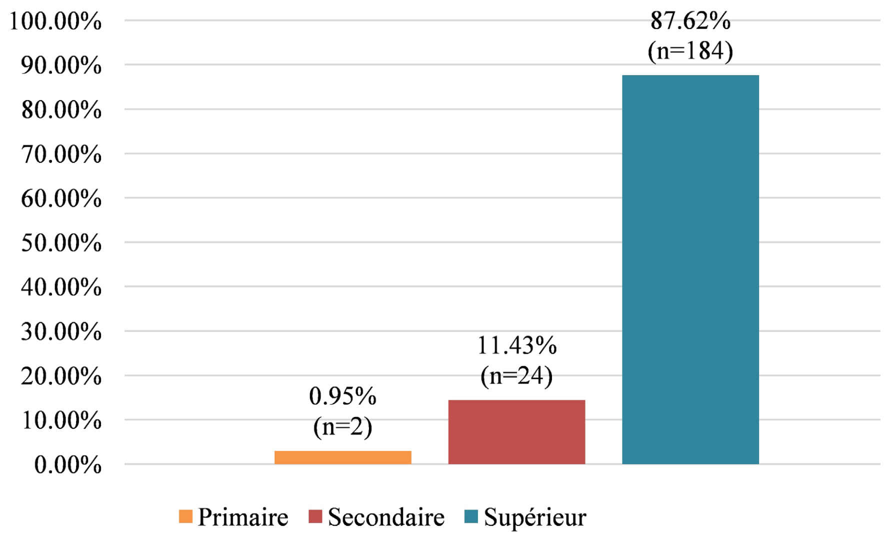

Figure 2. Distribution of patients by educational level.

3.2. Screen Usage Habits

Table 2. Type of screen used.

Type of screen used	Number of respondents	**Percentage (%)**
Mobile phone	85	40.48
Mobile phone + Laptop/desktop computer + Television	63	30.00
Mobile phone + Laptop/desktop computer	26	12.38
Cell phone + Laptop/desktop computer + Tablet + Television	13	6.19
Other combinations	23	10.95
Total	**210**	**100.00**

The cell phone is the most ubiquitous device. It is used on its own by 40.48% of participants. The combined use of multiple devices (cell phone, computer, television) is also very common, as detailed in Table 2.

Average daily screen time

In our study, more than half (116, or 55.24%) had a screen time of ≤6 hours per day, as shown in Figure 3.

With regard to screen time, a significant proportion of the study population spends many hours in front of screens each day. More than half of the participants reported using screens for more than 4 hours a day.

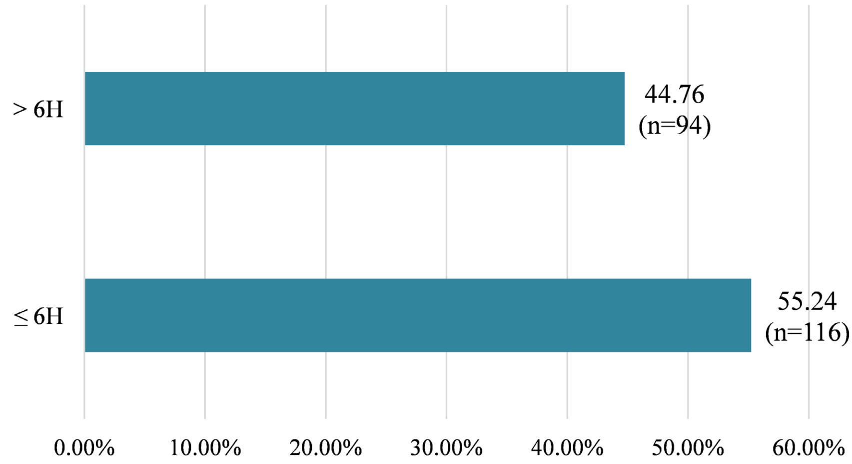

Figure 3. Distribution of patients by average daily exposure time.

The eye-to-screen working distance is a crucial ergonomic factor. Most participants estimate that they work at a distance of between 30 and 50 cm, which is considered adequate for most tasks. as shown in **Figure 4**.

Distance used by the maximum

An average eye-to-screen distance was the most common, accounting for 62.38%.

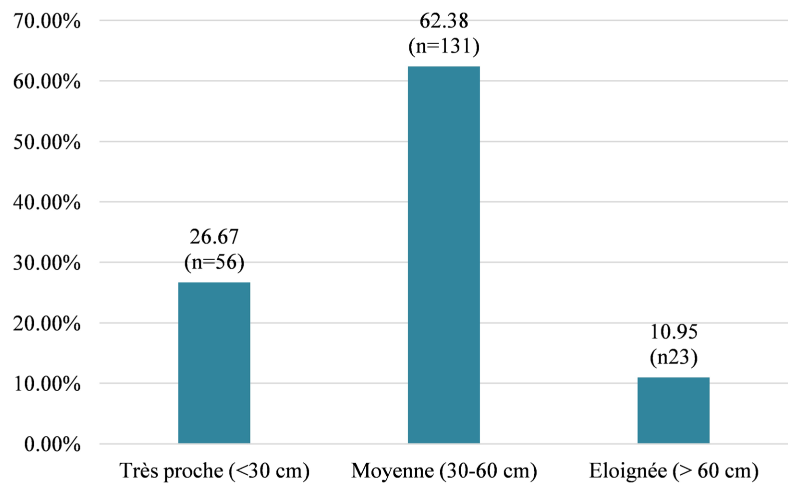

Figure 4. Distribution of patients based on the maximum distance used.

3.3. Prevalence and Nature of Visual Symptoms

Of the 210 participants, 173 (82.38%) reported at least one visual symptom related to screen use, while 37 (17.62%) reported none. The overall prevalence of asthenopic symptoms in our sample is therefore 82.38%, shown in **Table 3**.

The most frequently cited symptoms, either alone or in combination, were eye strain and blurred vision, each reported by 29 people (13.81%) as their primary or sole symptom. Headaches are also very common, often associated with eye strain.

Table 3. details the distribution of symptoms and their combinations.

Visual symptoms	Number of cases	Percentage (%)
None	37	17.62
Eye strain	29	13.81
Blurred vision	29	13.81
Eye strain + Headache	13	6.19
Blurred vision + Headache	10	4.76
Sleep disturbance	10	4.76
Headache	9	4.29
Eye strain + Blurred vision + Headache + Sleep disturbance	9	4.29
Eye strain + Blurred vision	9	4.29
Eye strain + Blurred vision + Headache	9	4.29
Other symptom combinations	47	22.38
Total	**210**	**100.00**

Table 4. Distribution of patients by symptom frequency.

Frequency of symptoms	Number of participants	Percentage (%)
Occasional	89	42.38
Rare	86	40.95
Frequent	32	15.24
Daily	3	1.43
Total	**210**	**100.00**

Regarding the frequency of these symptoms, they are described as "occasional" by 42.38% of participants and "rare" by 40.95%. However, 16.67% of the sample (35 people) report frequent or daily symptoms, indicating a significant impact on their quality of life. as shown in Table 4.

3.4. Management and Protective Measures

Table 5. Breakdown of patients by adherence to ergonomic posture.

Management of symptoms	Number of patients	Percentage (%)
No treatment	140	66.67
Eye care professional	48	22.86
Self-medication	21	10.00
Traditional healer	1	0.48
Total	**210**	**100.00**

In response to these symptoms, the majority of participants (66.67%) took no action to seek treatment. As shown in Table 5 only 48 individuals (22.86%) consulted an eye care professional. Self-medication was reported by 10% of participants.

Table 6. Breakdown of participants by protective measures.

Eye protection measures	Eye protection measures	**Percentage (%)**
None	56	26.67
Adjusting screen brightness	50	23.81
Blue light filters (glasses, apps)	52	24.76
Blue light filters + Brightness adjustment	32	15.24
Other combinations (including posture, artificial tears, etc.)	20	9.52
Total	**210**	**100.00**

With regard to protective measures, adjusting screen brightness is the most commonly adopted measure (23.81%), followed closely by the use of blue light filters (glasses or apps) (24.76%). However, more than a quarter of participants (26.67%) do not take any visual protection measures, as shown in Table 6.

Multivariate analysis

Sociodemographic variables and visual impairments age et troubles visuels.

Table 7. Relationship between age group and visual impairments.

	Vision problems		
Age group (years)	**YES**	**NO**	**Total**
15 - 25	45 (83.33%)	9 (16.67%)	**54 (100%)**
26 - 35	53 (75.71%)	17 (24.29%)	**70 (100%)**
36 - 45	41 (91.11%)	4 (8.89%)	**45 (100%)**
46 - 55	26 (83.87%)	5 (16.13%)	**31 (100%)**
> 55	8 (80%)	2 (20%)	**10 (100%)**
Total	**173 (82.38%)**	**37 (17.62%)**	**210 (100%)**

P: 0.30.

Table 7 of our study shows that, no statistically significant association was found between age group and the occurrence of visual impairments (P = 0.30).

Gender and Visual Impairments.

Table 8. Association between gender and visual impairments.

	Vision problems		
Sex	**YES**	**No**	**Total**
Male	122 (79.74%)	31 (20.26%)	**153 (100%)**
Feminine	51 (89.47%)	6 (10.53%)	**57 (100%)**
Total	**173 (82.38%)**	**37 (17.62%)**	**210 (100%)**

P: 0.07.

Table 8 of our study shows that, no significant association was observed between gender and the occurrence of visual disturbances (P = 0.07).

Profession et troubles visuels

Table 9. Association between occupation and visual impairments.

	Vision problem		
Occupation	**YES**	**No**	**Total**
Retailer	4 (66.67%)	2 (33.33%)	**6 (100%)**
Teacher	21 (77.78%)	6 (22.22%)	**27 (100%)**
Student	69 (84.15%)	13 (15.85%)	**82 (100%)**
Civil servant	49 (89.09%)	6 (10.91%)	**55 (100%)**
Self-employed professional	8 (61.54%)	5 (38.46%)	**13 (100%)**
Military	6 (100%)	0 (0%)	**6 (100%)**
Office worker	16 (76.19%)	5 (23.81%)	**21 (100%)**
Total	**173 (82.38%)**	**37 (17.62%)**	**210 (100%)**

P: 0.17.

Table 9 of our study shows that, no significant association was found between occupation and the occurrence of visual impairments (P = 0.17).

Educational level and visual impairments

Table 10. Association between educational level and visual impairments.

	Vision problems		
Level of education	**Oui**	**Non**	**Total**
Elementary	1 (50%)	1 (50%)	**2 (100%)**
High school	20 (83.33%)	4 (16.67%)	**24 (100%)**
Superio	152 (82.61%)	32 (17.39%)	**184 (100%)**
Total	**173 (82.38%)**	**37 (17.62%)**	**210 (100%)**

P: 0.48.

Table 10 of our study shows statistical analysis did not reveal a significant association between educational level and visual problems (P = 0.48).

Screen exposure and visual problems

Screen type and visual problems

Table 11 of our study shows statistical analysis revealed a significant association between the onset of visual disturbances and the use of certain screens, particularly computers (P = 0.04) and televisions (P = 0.03).

Table 11. Association between screen type and visual problems.

	Vision problems		
Screen type	**Oui**	**Non**	**P-value**
Cell phone	172 (82.69%)	36 (17.31%)	**0.32**
Computer	100 (87.72%)	14 (12.28%)	**0.04**
Television	80 (87.91%)	11 (12.09%)	**0.03**
Tablet	16 (88.89%)	2 (11.11%)	**0.35**

Duration of exposure and visual disturbances

Eye-Screen Distance and Visual Problems

Table 12. Association between eye-screen distance and visual problems.

	Vision problems		
Eye-to-screen distance	**YES**	**No**	**Total**
Very close (<30 cm)	46 (82.14%)	10 (17.86%)	**56 (100%)**
Medium (30 - 60 cm)	109 (83.21%)	22 (16.79%)	**131 (100%)**
Far away (>60 cm)	18 (78.26%)	5 (21.74%)	**23 (100%)**
Total	**173 (82.38%)**	**37 (17.62%)**	**210 (100%)**

P: 0.84

In Table 12 of our study, no significant association was observed between eye-screen distance and the occurrence of visual disturbances (P = 0.84).

Clinical signs of visual disturbances

Types of signs and visual disturbances

Table 13. Association between types of signs and visual disturbances.

	Vision problems		
Type of signs	**YES**	**No**	**P-value**
Eye strain	92 (100%)	0 (0%)	**0.00**
Dry eyes	19 (100%)	0 (0%)	**0.02**
Blurred vision	76 (100%)	0 (0%)	**0.00**
Headaches	75 (100%)	0 (0%)	**0.00**
Sleep disorder	48 (100%)	0 (0%)	**0,00**

In Table 13 of our study, statistical analysis revealed a significant association between the occurrence of visual disturbances and most of the clinical signs examined (P = 0.00 for eye strain, blurred vision, headaches, and sleep disturbances), with dry eyes also showing a significant association, though with a P-value of 0.02.

Prevalence of visual symptoms and disorders

Table 14. Association between the prevalence of visual symptoms and visual disorders.

	Vision problems		
Frequency of symptoms	**YES**	**No**	**Total**
Casual	88 (98.88%)	1 (1.12%)	**89 (100%)**
Rare	50 (58.14%)	36 (41.86%)	**86 (100%)**
Frequent	32 (100%)	0 (0%)	**32 (100%)**
Daily	3 (100%)	0 (0%)	**3 (100%)**
Total	**173 (82.38%)**	**37 (17.62%)**	**210 (100%)**

P: 0.00.

In Table 14 of our study, the frequency of symptoms was significantly associated with the onset of visual disturbances (P = 0.001).

Preventive Measures for Vision Problems

Table 15. Relationship between preventive measures and vision problems.

	Vision problems		
Preventive measures	**YES**	**No**	**P-value**
Regular break	137 (81.55%)	31 (18.45%)	**0.27**
The 20-20-20 Rule	19 (76%)	6 (24%)	**0.20**
Brightness adjustme	81 (82.65%)	17 (17.35%)	**0.46**
Ergonomic postures	11 (91.67%)	1 (8.33%)	**0.34**
Artificial tears	7 (77.78%)	2 (22.22%)	**0.49**

In Table 15 of our study, no significant association was observed between the various preventive measures examined and the onset of visual impairments.

3.5. Personal Views on Prevention

When asked about the best prevention strategies, the majority of participants suggested behavioral measures. The most common responses included reducing screen time, wearing protective eyewear (anti-glare/blue light filters), taking regular breaks, and adjusting screen brightness. Some also mentioned the importance of awareness and regular check-ups. These opinions, though subjective, reflect a general awareness of the risks, even if their implementation remains limited.

4. Discussion

This cross-sectional study, conducted in Maradi, Niger, is one of the first to document the extent of visual symptoms associated with screen use in this setting. Our results reveal a high prevalence of asthenopic symptoms (82.38%), a figure that falls within the upper range of data reported in the international literature and underscores the universality of this emerging public health problem.

4.1. Prevalence of Asthenopic Symptoms: An International Comparison

The prevalence of 82.38% observed in our study is comparable to in similar populations. For example, a study conducted among university students in Malaysia found a prevalence of 89.9% [13], while another in Egypt reported 87.2% [15]. Among office workers, high rates have also been documented, such as 73.3% in Ethiopia [12] and 75% in India [11]. This convergence of results, despite geographical and cultural differences, suggests that the pathophysiological mechanisms underlying VSI are universal and directly linked to eye-screen interaction. The slight variation may be attributed to methodological differences (case definition, data collection tools), characteristics of the studied populations (age, occupation), and the average duration of screen exposure. The most common symptoms in our study—namely eye strain (13.81%) and blurred vision (13.81%), followed by headaches—are also the most frequently reported in the global literature [5] [16]. Eye strain, or asthenopia, results from overuse of the ciliary muscles responsible for accommodation (focusing) and the extraocular muscles responsible for convergence [17]. Blurred vision may result from this accommodative fatigue or from tear film instability due to dry eye [9]. Headaches, on the other hand, are often tension-type headaches, linked to both visual strain and poor posture [18].

4.2. Associated Factors and Usage Habits

Our analysis revealed a significant association between daily screen time and symptom frequency. Participants who used screens for more than 4 hours a day were more likely to report frequent or daily symptoms. This causal link is well established. Rosenfield (2011) demonstrated that continuous computer work lasting more than two hours is sufficient to induce significant symptoms [4]. Similarly, the study by Loh and Redd (2008) confirmed that each additional hour spent in front of a screen increases the risk of developing VSI [19].

The lack of regular breaks is another major risk factor identified in our study, corroborating the findings of numerous other studies [20] [21]. The "20-20-20" rule (every 20 minutes, look at something 20 feet, or 6 meters, away for 20 seconds) is a simple ergonomic recommendation aimed at periodically relaxing accommodation and promoting blinking [22]. The low level of awareness and application of this rule in our sample suggests a lack of information and awareness.

The type of screen used also plays a role. The ubiquity of smartphones (used by over 90% of our sample, either alone or in combination) is an aggravating factor. Due to their small size, smartphones are held closer to the eyes, which increases the effort required for accommodation and convergence [23]. Furthermore, small font sizes and variable screen quality can contribute to eye strain. A Japanese study specifically linked increased time spent on smartphones to a higher prevalence of dry eye among office workers [24].

4.3. Treatment and Public Health Implications

One of the most concerning findings of our study is the low rate of seeking care. Two-thirds of symptomatic participants (66.67%) did not seek any form of treatment, and only 22.86% consulted an eye care professional. This finding can be explained by several factors: the trivialization of symptoms, viewed as a "normal" consequence of computer work; economic or geographic barriers to accessing eye care; or a lack of awareness regarding available solutions [25]. This situation is particularly concerning because persistent symptoms may mask an uncorrected refractive error, convergence insufficiency, or chronic dry eye, all of which require specific treatment [10].

Self-medication, reported by 10% of participants, also poses a risk. The use of over-the-counter vasoconstrictive eye drops to relieve redness can, in the long term, cause a rebound effect and mask signs of severe dry eye [26].

These findings highlight an urgent need for public health awareness and education campaigns in Niger. These campaigns should aim to inform the public about the reality of ODS, its causes, and, above all, its preventive and curative solutions. Promoting visual ergonomics in the workplace and in schools is essential. This includes recommendations on posture, screen distance, ambient lighting, and the importance of regular breaks [27].

Furthermore, it is crucial to encourage regular eye screenings. Proper vision correction is the first step toward reducing visual strain. Glasses specifically designed for computer work, with an anti-glare coating and a blue light filter, can provide additional comfort, although the benefit of the latter is still the subject of scientific debate [28] [29].

4.4. Limitations of the Study

Our study has several limitations that should be acknowledged. First, convenience sampling may introduce selection bias, and the results therefore cannot be generalized to the entire population of Maradi or Niger. Our sample was predominantly male and comprised a high proportion of students and civil servants, which may not reflect the structure of the general population. Second, data on exposure duration and work distance were self-reported and subject to recall and estimation bias. Objective measurements (e.g., via screen time tracking apps) could have provided more accurate data. Third, the study did not include an ophthalmological examination, which prevented us from correlating reported symptoms with objective clinical signs (e.g., tear film break-up time measurement, refractive status assessment). Finally, the cross-sectional nature of the study allows for the identification of associations but not definitive causal links.

Despite these limitations, our study provides valuable baseline data on a health issue that has been little explored in our context to date and paves the way for more in-depth future research, including prospective studies or clinical trials to evaluate the effectiveness of preventive interventions.

5. Conclusions

Screen use is deeply ingrained in contemporary social and professional life in Maradi, as it is everywhere else in the world. Our study has shown that this prolonged exposure is not without consequences, with a very high prevalence (82.38%) of asthenopic visual symptoms in our population. Eye strain, blurred vision, and headaches are the most common complaints, affecting quality of life and potentially individuals' productivity.

Modifiable risk factors, such as prolonged exposure and the lack of breaks, play a major role. However, awareness of the risks and the adoption of preventive measures remain insufficient, and the use of specialized care is alarmingly low. It is imperative to move beyond simply noting these symptoms to taking concrete action in the realm of public health. Rational and cautious use of screens must be promoted to avoid long-term harmful consequences for the population's eye health.

6. Recommendations

Based on the results of our study, we make the following recommendations:

- For public authorities and health institutions: Launch national awareness campaigns on computer vision syndrome, using mass media to disseminate clear messages on ergonomic best practices (the 20-20-20 rule, posture, lighting). Incorporate screening for screen-related visual disorders into occupational health and school health checkups.
- For employers and educational institutions: Set up ergonomic workstations and study areas. Actively encourage visual breaks and educate employees and students about the risks associated with prolonged screen use.
- For eye care professionals: Systematically ask patients about their screen usage habits during consultations. Provide personalized advice on visual ergonomics, appropriate optical correction, and dry eye management.
- For the general public: Adopt mindful and moderate screen use. Practice the 20-20-20 rule. Ensure that the eye-to-screen distance is approximately 50 - 60 cm. Adjust the screen's brightness and contrast. Blink frequently and consciously. Consult an ophthalmologist or optometrist if symptoms persist.
- For research: Conduct longitudinal studies to better understand the long-term impact of screen exposure, particularly on the development of myopia. Conduct intervention studies to evaluate the effectiveness of various prevention strategies in the Nigerien context.

Ethical Aspects

This study does not violate the Declaration of Helsinki, as no experiments were conducted on humans or animals.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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