

Awareness of the 20-20-20 Rule Among Smartphone and Computer Users

Ms Bhagyashree Sharma¹, Bhoomika Gupta², Komal Sharma Neha Yadav³, Jayeeta Dandapat⁴, Yasmeen Shahid⁵, Danish Bushra⁶

¹Assistant Professor, Department of Optometry, School of Allied and Healthcare Sciences, Noida International University, Greater Noida, India. ORCID ID: 0000-0002-1206-0372

²Assistant Professor, Department of Optometry, School of Allied Health Sciences, Max Institute of Allied and Paramedical Education, Delhi, India. ORCID ID: 0009-0004-4718-3972

³Assistant Professor, Department of Optometry, Noida International University, Greater Noida, India

⁴Department of Optometry, School of Allied and Healthcare Sciences, Centurion University of Technology and Management, Bhubaneswar. ORCID ID: 0009-0001-4305-7985

⁵Department of Optometry, G.G School of Nursing and Paramedical, Runakta, Agra, India

⁶Ph.D. Scholar, Department of Optometry, School of Allied & Health Care Sciences, Nims University Rajasthan, Jaipur, India

ABSTRACT

Background: The phenomenon known as Digital Eye Strain (DES), which manifests as eye fatigue, headache, dryness, and even blurred vision, is a consequence of the increased use of digital screens. Prevention strategies exist, such as the 20-20-20 rule, which recommends taking breaks of 20 seconds every 20 minutes while gazing at an object at least 20 feet away.

Materials and Methods: A cross-sectional survey was conducted using a Google Form. The sample included 164 users of smartphones and computers and aimed to assess the level of awareness and implementation of the 20-20-20 rule. Weighted associational analysis was performed using Chi-square tests and logistic regression analyses. Participants aged 18 and older with all possible backgrounds regarding screen time and work were included. Exclusion criteria included respondents suffering from advanced eye diseases or those who did not fully complete the survey.

Results: The outcomes indicate that adherence ranged from complete compliance of 12.20% to not following the rule at all, which was 42.68%, with 37.80% of respondents rarely following the rule. There was no significant association between age and occupation with Digital Eye Strain (DES) ($p > 0.05$). Logistic regression showed that rule adherence was the strongest predictor of symptom reduction ($\beta = -0.8656$, $p < 0.001$).

Conclusion: The 20-20-20 rule has been known to be effective in reducing symptoms of Digital Eye Strain (DES); however, the low adherence compliance means that there must be more focus on spreading awareness and how to implement these strategies.

Keywords: Digital Eye Strain (DES), Dryness, Adherence, 20-20-20 Rule.

Key Message: To prevent digital eye strain, use the 20-20-20 rule: every 20 minutes, gaze at anything 20 feet away for at least 20 seconds. This simple habit helps to avoid eye fatigue, dryness, and discomfort caused by extended screen use. Take regular pauses to protect your vision.

How to cite this article: Sharma B, Gupta B, Sharma K, Yadav N, Dandapat J, Shahid Y, Bushra D. Awareness of the 20-20-20 Rule Among Smartphone and Computer Users. *Int J Drug Deliv Technol.* 2026;16(51s): 1612-1617. DOI: 10.25258/ijddt.16.51s.122

INTRODUCTION

The increased usage of screens has resulted in an rise in the occurrences of Digital Eye Strain (DES) or computer syndrome.¹ This form of strain includes a multitude of injuries and disorders related to the computer, such as eye pain, exhaustion of the eye, headaches, and even blurry vision. Research proves that symptoms of Digital Eye Strain (DES) can arise within two hours of continued screen usage. 60 percent of adults using digital devices suffer from this syndrome.^{2,3} This shows the magnitude in which Digital Eye Strain (DES) is present and the importance for effective solutions is dire.

Following the recommendation of the 20-20-20 rule can assist in alleviating the symptoms of Digital Eye Strain (DES). This calls for an explanation wherein, after every

20 minutes of screen time, an individual should take a 20 second break where they focus on something at least 20 feet away.³ This approach helps in reducing accommodative stress on the eyes. The American Optometric Association and American Academy of Optometry both support this method and encourage it as a way of lowering eye strain fambaique Technologies.⁴ The empirical studies conducted to assess the effectiveness of the 20-20-20 rule have reported differing results. Some studies suggest that following this rule may considerably reduce symptoms of eye strain, including eye dryness, sensitivity, and discomfort. In one case, participants who followed the 20-20-20 rule for two weeks reported significant reductions in those eye strain symptoms.^{4,5} Other studies, however, have not reported significant

changes in visual acuity, accommodative posture, or ocular alignment following attempts to apply the rule, which suggests that the rule may be beneficial only to a certain extent.

Regardless of the differing evidence, the 20-20-20 rule is yet another strategy that is easy to implement, and does not incur any cost.^{5,6} These features of the rule make it another easily accessible recommendation for individuals suffering from Digital Eye Strain (DES). In addition, taking regular breaks from visual concentration for any reason relieves eye strain, and enhances productivity and comfort during visual tasks. Incorporating such practices becomes more crucial as the use of digital devices increases.

Due to the already high rates of Digital Eye Strain (DES) and the growing dependence on electronics, more research is needed to determine the effectiveness of the 20-20-20 rule and other potential preventative strategies.⁶ Learning how people differ in their reactions to the 20-20-20 rule may enable more tailored advice to be issued. Moreover, in addition to the 20-20-20 rule, incorporating screen position and lighting modification as ergonomic interventions may provide a more holistic solution to Digital Eye Strain (DES).^{7,8,9}

MATERIALS AND METHODS

For this research, a cross-sectional survey method was employed to determine the awareness and adherence of respondents, concerning the 20-20-20 rule among digital screen users. The data was collected via an online Google Form survey that was shared. The structured questionnaire captured demographic information, patterns of screen usage, awareness and adherence levels of the 20-20-20 rule, and Digital Eye Strain (DES) experiences. Participants were also asked about the information sources, symptoms accompanying extended screen time, and the prevention methods they employ. Due to the nature of the study being an anonymous, voluntary online survey with no intervention, personal health information, or identifying details being collected – ethical approval was not required. Participants were informed about the study and gave consent before taking the survey.

To qualify for this study, individuals had to be at least 18 years old and fit within the following established age demographics 18-25, 26-35, 36-45, and 46-55. The participants were also chosen based on their screen time activities which included the use of digital devices ranging from 2-4 hours a day, 4-6 hours a day, and over 6 hours a day. People from different disciplines like students, office staff, and IT personnel were incorporated in order to analyse compliance behaviour across different fields of work. Moreover, the participants in this study had any degree of knowledge and adherence to the 20-20-20 rule (those who follow it always, sometimes, rarely, or never). In addition, participants with any level of eye strain symptoms were included, for example, those who reported such symptoms infrequently, several times a week, or daily.

The exclusion criteria eliminated participants suffering from advanced self-reported eye diseases, which in themselves could result in eye strain independent of using the computer or digital screen, such as severe pre-existing eye conditions. Also, participants who were non-respondents, or did not respond to some of the basic identifying questions in the survey, were omitted.

Following the application of the selection criteria, the study sample consisted of 164 participants. This approach enables the examination of digital eye strain and compliance with the 20-20-20 rule among various types of screen users with different professional and screen use profiles.

RESULTS

The study conducted on the self-reported awareness and adherence to the 20-20-20 rule with smartphone and computer users offers an updated understanding to its application in eye strain alleviation. The statistical analysis shows that only 12.20% of respondents followed the 20-20-20 rule consistently, while an alarming 42.68% admitted to never following it. Additionally, 37.80% claim to follow it rarely and only 7.32% claim to follow it sometimes.

Table 1: Distribution of Screen Time

Screen Time	Count	Percentage (%)
2-4 hours	64	39.02%
More than 6 hours	55	33.54%
4-6 hours	45	27.44%

Table 1: Distribution of Screen Time: This table highlights the distribution of screen time for respondents for three groups; 2-4 hours, 4-6 hours, and greater than 6 hours, including their counts and percentages.

This demonstrates the lack of awareness or willingness to follow the rule even when there is some possibility for improvement.

Table 2: Adherence to the 20-20-20 Rule

Adherence Level	Count	Percentage (%)
Never	70	42.68%
Rarely	62	37.80%
Always	20	12.20%
Sometimes	12	7.32%

Table 2: Adherence to the 20-20-20 Rule: This table demonstrates the level of adherence to the 20-20-20 rule among respondents classified as Never, Rarely, Always, and Sometimes and included their counts and percentages.

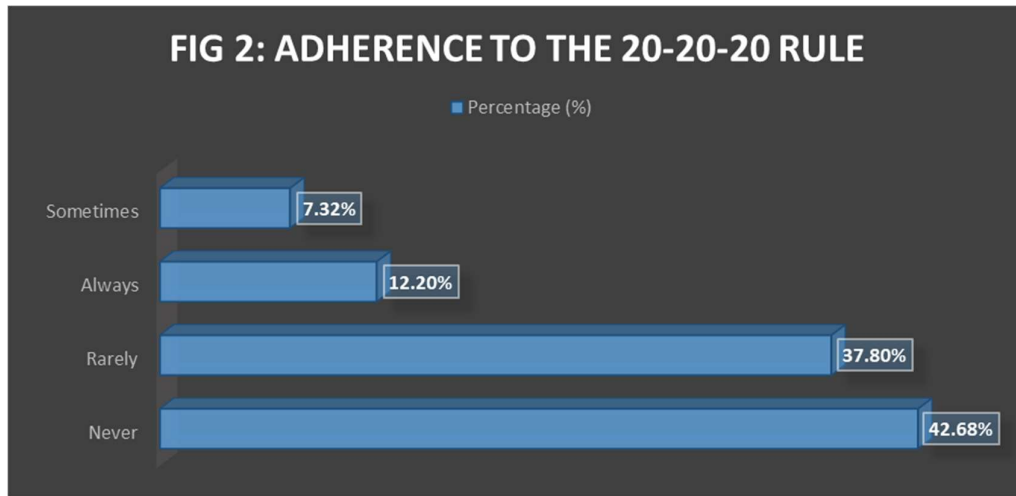


Figure 2: Adherence to the 20-20-20 Rule (The rule is consistently adhered to by only 12.20% of individuals, while 42.68% never do)

A chi-square test examining the relation between adherence to the 20-20-20 rule and eye strain evaluated the difference in daily eye strain due to adherence to the rule and confirmed that there is a significant difference at in daily eye strain due to adherence to the rule; those who follow the rule are significantly less likely to report daily

eye strain (Chi-square statistic = 78.30, p-value = 8.00e-15, highly significant). On the contrary, daily screen time by itself does not reveal significance as a predictor of daily eye strain (p = 0.969), indicating that simply cutting down on screen time without implementing preventive measures like the 20-20-20 rule does not reduce strain.

Table 3: Impact on Eye Strain Improvement

Noticed Improvement	Count	Percentage (%)
No improvement	132	80.49%
Significant improvement	16	9.76%
Slight improvement	16	9.76%

Table 3: Impact on Eye Strain Improvement: This table shows the improvement in eye strain that respondents reported which includes No improvement, Significant improvement, and Slight improvement, along with counts and percentages.

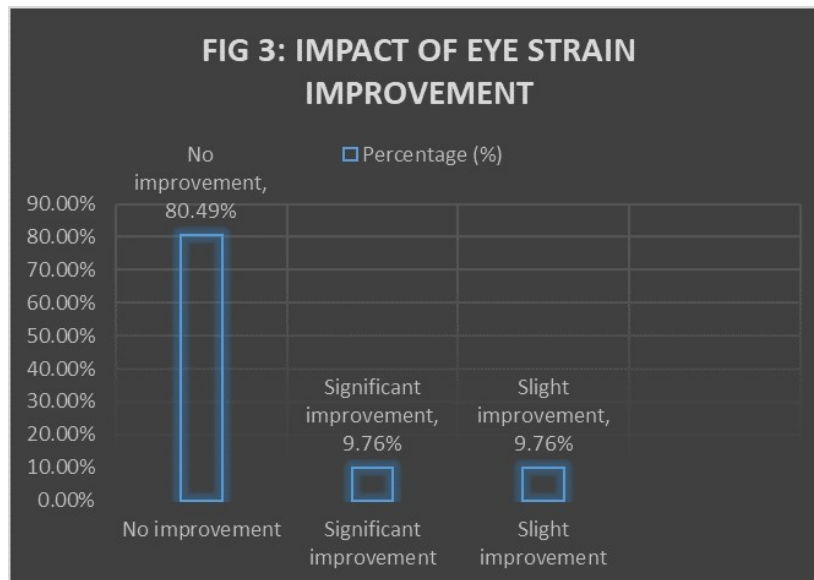


Figure 3: Impact of Eye Strain Improvement (While 80.49% of respondents reported no improvement, 19.52% observed at least some improvement).

Intriguingly, the highest percentage of daily eye strain symptoms sufferers were those who use screens for 2-4 hours, at 46.88%, followed by 41.82% of those who spend more than 6 hours on screens.

Table 4: Correlation Between Screen Time and Eye Strain Symptoms

Screen Time	A few times a week (%)	Daily (%)	Rarely (%)
2-4 hours	48.44%	46.88%	4.69%
4-6 hours	55.56%	28.89%	15.56%
More than 6 hours	49.09%	41.82%	9.09%

Table 4: Correlation Between Screen Time and Eye Strain Symptoms: This table captures how often respondents experienced eye strain in relation to how many hours they spent on the screen; Daily, A few times a week, or Rarely.

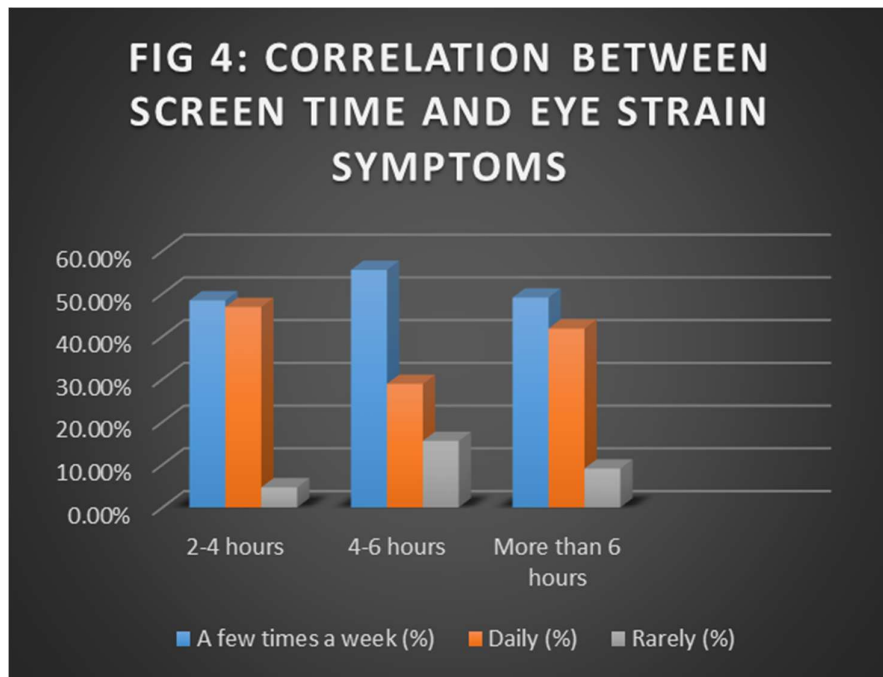


Figure 4: Correlation Between Screen Time and Eye Strain Symptoms (The group with 2-4 hours reported the highest percentage of daily eye strain symptoms [46.88%]. The largest proportion of people who experience eye strain occasionally [55.56%] are in the 4-6 hour category).

The study also considers other characteristics such as age and occupation, but both are shown to be insignificantly related to eye strain. The chi-square test for age and eye strain results in a statistic of 5.33 with p 0.502, showing no significant correlation.

Moreover, the type of occupation does not significantly account for eye strain symptoms (Chi-square = 12.19, p 0.143).

The effect of following the 20-20-20 rule on eye strain improvement is clear in the logistic regression. From the participants, 80.49% report no improvement in eye strain while 19.52% report some improvement; 9.76% report slight improvement and 9.76% report significant improvement.

The regression showed that adherence to the 20-20-20 rule was the strongest predictor of reduced eye strain (coefficient $\beta = -0.8656$, $p < 0.001$).

Table 5: Logistic Regression (Multiple Factors Affecting Eye Strain)

Predictor	Coefficient (β)	p-value	Significance
Screen Time	-0.0079	0.969	Not significant
20-20-20 Rule	-0.8656	0	Highly significant
Age	0.0924	0.556	Not significant
Occupation	-0.2012	0.101	Not significant

Table 5: Logistic Regression (Multiple Factors Affecting Eye Strain): This table presents the results of carrying out a logistic regression analysis on the other variables screened such as screen time, adherence to the 20-20-20 rule, age, occupation and their respective coefficients, p-values, level of significance, and value of the impact each exerted.

In summary, age, occupation, and screen time in isolation do not contribute to eye strain, but following the 20-20-20 rule visibly reduces eye strain. Considering the very small percent of people who follow this rule, there is a great need

for attention and promotion of this practice for smartphone and computer users in order to reduce eye strain for a better visual health.

DISCUSSION

The present study evaluated self-reported knowledge and compliance of the 20-20-20 rule with smartphone and computer users. Only 12.20% of respondents reported compliance with 20-20-20 rule and 42.68% reported never complying with it. Moreover, 37.80% reported rarely complying with it and 7.32% reported sometimes complying with it. These findings suggest low compliance is registered with the 20-20-20 rule which, if followed, could help in reducing Digital Eye Strain (DES).^{10,11}

A chi-square test showed that adherence to the 20-20-20 rule and occurrence of daily eye strain is significantly associated, where followers of the rule reported lesser symptoms (Chi-square statistic = 78.30, p-value = 8.00e-15). However, daily screen time alone was not a significant predictor of daily eye strain (p = 0.969), showing the importance of implementing the 20-20-20 rule to reduce Digital Eye Strain (DES).^{12,13,14}

The most interesting pattern was the percentage of individuals suffering from daily eye strain who used screens for 2 – 4 hours daily (46.88%), or who used screens for more than 6 hours (41.82%). Age and occupation did not correlate significantly with eye strain, per the chi-square tests (age: Chi-square = 5.33, p = 0.502; occupation: Chi-square = 12.19, p = 0.143).¹⁵

The analysis served to show that the strongest predictor for decreased eye strain was adherence to the 20-20-20 rule (coefficient $\beta = -0.8656$, p < 0.001). In relation to the sample population as a whole, 19.52% of eye strain sufferers reported their condition as having improved – which may be divided as 9.76% noting slight improvement, while 9.76% reported significant improvement.^{16,17}

These findings are consistent with earlier research prioritizing taking regular rests to counteract Digital Eye Strain (DES). For example, Pucker wrote an article in 2023 where he described how the 20-20-20 rule is universally practiced to help alleviate the symptoms associated with Digital Eye Strain (DES). However, it was commented in the article that there is very little evidence to support it, and stronger research is needed to verify its benefits.¹⁸

Tharman's 2024 piece also looked at how the 20-20-20 rule impacts Digital Eye Strain (DES) management, and noted that doctors of optometry need to give patients well-supported guidance since the rule is well-known and endorsed but its actual value needs further validation.^{11,19}

Differently, Rodriguez in 2023 looked at how 20-20-20 rule was born and the science behind it. The rule was designed to help alleviate Digital Eye Strain (DES) symptoms, but the author noted that its usage has grown much faster than the science behind it. This highlights the need for further evaluations of the rule to be conducted in diverse populations.^{12,20,21}

Additionally, this article also mentioned that there was evidence of relief from Digital Eye Strain (DES)

symptoms during the study in which participants were asked to follow the 20-20-20 rule.²²

This indicates that even though the rule may have some advantages, an individual's compliance along with the differences in screen usage patterns are paramount to its success.

The differences between our findings and other studies might be linked to study construction, population, and their subsequent evaluation. This study aimed at one specific urban population known to have increased use of digital devices which in turn may affect the rate of Digital Eye Strain (DES) as well as compliance to the preventive measures. Moreover, self-reported compliance data is prone to recall bias which, in turn, compromises the validity of our results.^{23,24}

As noted earlier, the 20-20-20 rule is accepted as a preventive measure for Digital Eye Strain (DES) but its use and success among digital screen users is not consistent. Longitudinal and interventional studies are required to propose comprehensive strategies for the prevention and management of Digital Eye Strain (DES).^{25,26}

CONCLUSION

Implementing the 20-20-20 rule was reported at a low compliance rate with only 12.20% consistently following it and 42.68% never adhering to it. The analysis estimations show that it is effective in preventing eye strain (p < 0.001), while screen time alone is insignificant. There are no age or occupational effects. However, adherence to the rule proves to be the strongest individual predictor of symptom relief. Although the rule has many advantages, the lack of information and implementation pose a problem that needs addressing through educational campaigns and digital notifications to increase compliance.

REFERENCES

1. Vision Center. Statistics on Digital Screen Use and Eye Health. Available at: <https://www.visioncenter.org/resources/digital-screen-impact-statistics/>
2. Pucker AD. Myth-Busting the 20/20/20 Rule. *Modern Optometry* 2023;3:45-49. Available at: <https://modernod.com/articles/2023-july-aug/myth-busting-the-202020-rule>
3. Sheppard AL, Wolffsohn JS. Digital eye strain: prevalence, measurement and amelioration. *BMJ Open Ophthalmol* 2018;3:e000146. doi:10.1136/bmjophth-2018-000146. Available at: <https://bmjophth.bmj.com/content/3/1/e000146>
4. Enagbare CL. The Digital Age Dilemma: Investigating the Impact of Screen Time on Ocular Health and Strategies for Mitigating Digital Eye Strain. *IRE J* 2024;8:104-114. Available at: <https://www.irejournals.com/paper-details/1706366>
5. Health line. 20-20-20 Rule: Does It Help Prevent Digital Eye Strain? Available at: <https://www.healthline.com/health/eye-health/20-20-20-rule>
6. Medical News Today. 20-20-20 rule: How to prevent eye strain. Available at: <https://www.medicalnewstoday.com/articles/321536>

7. Nova Eye Care Center. The 20-20-20 Rule: A Simple Solution to Reduce Digital Eye Strain. Available at: <https://www.novaeyecarecenter.com/post/the-20-20-20-rule-a-simple-solution-to-reduce-digital-eye-strain>
8. New York Post. I'm a vision expert - this quick, easy exercise can relieve screen-related eye strain. Available at: <https://nypost.com/2024/10/25/lifestyle/im-a-vision-expert-this-quick-easy-exercise-can-relieve-screen-related-eye-strain>
9. Health.com. How To Improve Your Eyesight: 10 Effective Techniques To Try for Better Vision. Available at: <https://www.health.com/how-to-improve-eyesight-8777347>
10. PopSugar. Where Did All the Blue-Light Glasses Go? Available at: <https://www.popsugar.com/fitness/double-blue-light-glasses-help-with-headaches-47913598>
11. Tharman A. Putting a Spotlight on the 20-20-20 Rule. Eyes On Eyecare 2024. Available at: <https://eyesoneyecare.com/resources/putting-spotlight-on-20-20-20-rule>
12. Rodriguez T. Digital Eye Strain: Another Look at the 20-20-20 Rule. Optometry Advisor 2023. Available at: <https://www.optometryadvisor.com/features/digital-eye-strain-may-not-be-solved-by-the-20-20-20-rule/>
13. StudyFinds.org. Following the '20-20-20 rule' helps alleviate eye strain from staring at screens. Available at: <https://studyfinds.org/20-20-20-rule-eye-strain-screens/>
14. Chou B. Deconstructing the 20-20-20 Rule for digital eye strain. Optometry Times 2018. Available at: <https://www.optometrytimes.com/view/deconstructing-20-20-20-rule-digital-eye-strain>
15. Aston University. Simple 20-20-20 screen rule really does help eye strain. Available at: <https://www.aston.ac.uk/latest-news/simple-20-20-20-screen-rule-really-does-help-eye-strain-research-shows>
16. Appelbaum B. I'm a vision expert - this quick, easy exercise can relieve screen-related eye strain. New York Post 2024. Available at: <https://nypost.com/2024/10/25/lifestyle/im-a-vision-expert-this-quick-easy-exercise-can-relieve-screen-related-eye-strain/>
17. Outside Clinic. 20-20-20 Rule: What is it and does it work? Available at: <https://www.outsideclinic.co.uk/blog/20-20-20-rule>
18. Optometry Times Editors. Behind the creation of the 20-20-20 rule for digital eye strain. Optometry Times 2021. Available at: <https://www.optometrytimes.com/view/behind-the-creation-of-the-20-20-20-rule-for-digital-eye-strain>
19. Wisner D, Watts A. How to Protect Your Eyes While Staring at a Screen All Day. Time Magazine 2025. Available at: <https://time.com/7213841/digital-eye-strain-blurry-vision>
20. American Optometric Association. Computer Vision Syndrome. Available at: <https://www.aoa.org/healthy-eyes/eye-and-vision-conditions/computer-vision-syndrome>
21. Rosenfield M. Computer vision syndrome: a review of ocular causes and potential treatments. *Ophthalmic Physiol Opt* 2011; 31:502-515. Available at: <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1475-1313.2011.00834.x>
22. Gowrisankaran S, Sheedy JE. Computer vision syndrome: A review. *Work* 2015; 52:303-314. Available at: <https://content.iospress.com/articles/work/wor152162>
23. Bhandari DJ, Choudhary S, Doshi VG. A community-based study of asthenopia in computer operators. *Indian J Ophthalmol* 2008; 56:51-55. Available at: <https://www.ijo.in/article.asp?issn=0301-4738;year=2008;volume=56;issue=1;spage=51;epage=55;aulast=Bhandari>
24. Logaraj M, Madhupriya V, Hegde SK. Computer vision syndrome and associated factors among medical and engineering students in Chennai. *Ann Med Health Sci Res* 2014;4:179-185. Available at: <https://www.amhsr.org/articles/computer-vision-syndrome-and-associated-factors-among-medical-and-engineering-students-in-chennai.pdf>
25. Blehm C, Vishnu S, Khattak A, Mitra S, Yee RW. Computer vision syndrome: a review. *Surv Ophthalmol* 2005;50:253-262. Available at: <https://www.sciencedirect.com/science/article/abs/pii/S0039625705000197>
26. Portello JK, Rosenfield M, Bababekova Y, Estrada JM, Leon A. Computer-related visual symptoms in office workers. *Ophthalmic Physiol Opt* 2012; 32:375-382. Available at: <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1475-1313.2012.00925.x>