

**IMPACT OF ONLINE STUDY ON OCULAR HEALTH AMONG  
PRIMARY TO COLLEGE LEVEL STUDENTS IN TRIPURA DURING  
THE PANDEMIC AND EFFECTIVE REMEDIES****JEWEL NAMASUDRA**

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**ABSTRACT**

The COVID-19 pandemic compelled educational institutions worldwide to adopt online learning, including schools and colleges in Tripura, India. While this transition helped maintain continuity in education, it also raised concerns about its impact on students' ocular health. This research paper investigates the effects of prolonged online study on the ocular health of primary to college-level students in Tripura during the pandemic and explores effective remedies to mitigate potential ocular health issues.

**Keywords:** - Covid-19, Education, Institution, Adopt, Health.

**I. INTRODUCTION**

The COVID-19 pandemic brought about unprecedented disruptions to the global education system, forcing educational institutions in Tripura, India, to swiftly transition from traditional classroom-based learning to online education. While this shift was essential to ensure continuity in learning and comply with social distancing measures, it also raised concerns about its potential impact on students' ocular health. The increased reliance on digital devices, prolonged screen exposure, and altered study environments have raised questions about the effects of online study on the eyesight and ocular well-being of primary to college-level students in Tripura.

The human eye is a remarkable organ, but it is not designed to endure extended periods of screen time without consequences. The blue light emitted by screens, coupled with the constant focus and strain required during virtual learning sessions, may lead to a variety of ocular health issues. Furthermore, the pandemic-induced shift to online learning may have

exacerbated existing vision problems and contributed to the emergence of new ocular health challenges among students.

Understanding the potential impact of online study on ocular health among students in Tripura is of paramount importance. As the pandemic continues to shape the education landscape, it becomes imperative to evaluate the ocular health risks associated with prolonged screen time and identify effective remedies to mitigate these issues. By doing so, we can empower educators, parents, and policymakers to implement appropriate strategies and safeguards to promote students' ocular health during this new era of virtual learning.

In this research paper, we delve into the effects of online study on ocular health among primary to college-level students in Tripura during the pandemic. By reviewing relevant literature, conducting surveys, and analyzing eye examination data, we aim to provide a comprehensive understanding of the ocular health challenges faced by students in the current



learning environment. Additionally, we explore effective remedies, ergonomic practices, and educational interventions to protect students' eyesight and promote healthier study habits.

As we embark on this investigation, it is crucial to acknowledge that this research contributes to the growing body of knowledge concerning the impact of technology on human health, particularly in the educational context. By shedding light on the ocular health implications of online study, we hope to inform stakeholders and encourage collaborative efforts to safeguard the well-being of our young learners during these uncertain times.

In the subsequent sections, we will explore the existing literature on the subject, describe our research methodology, present the findings of our study, and propose actionable recommendations to foster ocular health awareness and better practices for students engaged in online learning. Together, let us strive to create a supportive and healthy learning environment for the students of Tripura during these challenging times.

## **II. IMPACT ON OCULAR HEALTH:**

The shift to online study during the pandemic has significantly impacted the ocular health of primary to college-level students in Tripura. Prolonged screen exposure and increased digital device usage have led to several ocular health issues, affecting students' vision and overall eye well-being. The following are some of the major impacts observed on ocular health:

**Digital Eye Strain:** Digital Eye Strain (DES), also known as Computer Vision Syndrome (CVS), is a common ocular

health issue experienced by students engaged in online learning. It is characterized by symptoms such as eye fatigue, dry eyes, headaches, and blurred vision. The continuous focusing and refocusing of the eyes while staring at screens for extended periods lead to eye strain and discomfort.

**Myopia Progression:** Myopia, commonly known as nearsightedness, is a condition in which distant objects appear blurred, while close objects remain clear. The prevalence of myopia has been increasing globally, and online study has been linked to its progression among students. Prolonged screen time and reduced outdoor activities during the pandemic may have contributed to the worsening of myopia in some students.

**Blue Light Exposure:** Digital screens emit blue light, which can penetrate deep into the eyes and potentially cause damage to retinal cells. Prolonged exposure to blue light may lead to retinal oxidative stress and phototoxicity, increasing the risk of age-related macular degeneration (AMD) and other retinal disorders in the long term.

**Reduced Blink Rate:** When students concentrate on digital screens, they tend to blink less frequently, leading to dry and irritated eyes. Blinking helps to lubricate the eyes and prevent dryness, so reduced blink rate during online study can exacerbate discomfort and eye strain.

**Disrupted Sleep Patterns:** Excessive screen time, especially close to bedtime, can disrupt the circadian rhythm and hinder the production of melatonin, a hormone that regulates sleep. Poor sleep quality can further contribute to eye fatigue and strain during waking hours.



**Posture-related Eye Problems:** Online learning often requires students to sit for extended periods, leading to poor posture. Incorrect viewing angles and improper screen positioning can strain the neck and shoulder muscles, which can, in turn, affect eye alignment and exacerbate eye strain.

**Existing Vision Problems:** Students with pre-existing vision problems, such as astigmatism or amblyopia (lazy eye), may experience worsening symptoms due to the additional stress imposed by prolonged screen time.

**Psychological Impact:** Ocular health issues can have a psychological impact on students, leading to increased stress and anxiety about their vision and academic performance.

Overall, the impact of online study on ocular health among primary to college-level students in Tripura is a matter of concern. As the reliance on digital devices continues to grow, it becomes essential to address these issues proactively and implement measures to promote healthier screen habits and safeguard students' eyesight.

In the subsequent sections of this research paper, we will explore the contributing factors behind these ocular health issues, delve into the findings of our study on ocular health among students in Tripura, and propose effective remedies and recommendations to mitigate the adverse effects of online study on ocular health. By understanding the challenges and adopting practical solutions, we can ensure a healthier and more productive learning experience for our students during these unprecedented times.

### **III. FACTORS CONTRIBUTING TO OCULAR HEALTH ISSUES:**

Several factors contribute to ocular health issues among primary to college-level students engaged in online study during the pandemic in Tripura. These factors, when combined, increase the risk of experiencing eye strain, discomfort, and other vision-related problems. Understanding these contributing factors is crucial to developing effective strategies for maintaining ocular health. The following are some key factors:

**Prolonged Screen Time:** The extended hours spent in front of digital screens, including laptops, tablets, and smartphones, is one of the primary contributors to ocular health problems. Prolonged screen exposure strains the eye muscles, leading to digital eye strain and fatigue.

**Blue Light Exposure:** Digital screens emit high-energy blue light, which can penetrate the eyes' delicate tissues and potentially cause retinal damage. Increased exposure to blue light, especially during evening hours, can disrupt sleep patterns and impact overall ocular health.

**Improper Viewing Distance:** Maintaining an inappropriate distance from the screen can strain the eyes. Sitting too close to the screen forces the eyes to accommodate continuously, while sitting too far away can cause eye strain due to the small font size or unclear visuals.

**Inadequate Lighting Conditions:** Poor lighting in the study environment can contribute to eye strain. Insufficient lighting can cause the eyes to work harder to view the screen, leading to discomfort and reduced visual acuity.



**Lack of Breaks:** Prolonged periods of continuous screen use without taking breaks strain the eyes and may lead to digital eye fatigue. Not adhering to the 20-20-20 rule (looking at something 20 feet away for 20 seconds every 20 minutes) can exacerbate ocular health issues.

**Reduced Blink Rate:** Staring at screens often results in reduced blink rates, leading to dry eyes. Blinking helps to keep the eyes moist and prevent dryness, but students may forget to blink as often while focusing on their screens.

**Ergonomic Issues:** Poor ergonomics in the study setup can lead to eye strain and discomfort. Improper screen height, chair height, or desk setup may force students into awkward postures that strain the eyes and neck.

**Pre-existing Vision Problems:** Students with pre-existing vision conditions, such as myopia, hyperopia, or astigmatism, may experience exacerbated symptoms due to increased screen time and inadequate vision correction.

**Lack of Outdoor Activities:** Reduced outdoor activities during the pandemic may contribute to myopia progression in some students, as exposure to natural light is beneficial for visual development and eye health.

**Psychological Stress:** The stress and anxiety associated with online learning and the uncertainties of the pandemic can impact students' ocular health indirectly. Stress can exacerbate existing eye conditions or lead to eye strain.

**Screen Brightness and Contrast:** Incorrect screen brightness and contrast settings can strain the eyes. Screens that are too bright or too dim can cause discomfort and reduce visual comfort.

Addressing these contributing factors is essential to promoting better ocular health among students engaged in online study. Implementing strategies to reduce screen time, taking regular breaks, creating a well-lit study environment, and encouraging outdoor activities can help alleviate ocular health issues. Additionally, raising awareness among students, parents, and educators about proper screen use and ergonomic practices can contribute to maintaining healthier eyesight during this period of digital education. In the subsequent sections, we will explore the findings of our study on ocular health in Tripura's students and propose effective remedies and recommendations to mitigate these factors' impact on ocular health.

#### **IV. EFFECTIVE REMEDIES:**

To mitigate the impact of online study on ocular health among primary to college-level students in Tripura, implementing effective remedies and adopting healthier screen habits is crucial. The following are some remedies and strategies to promote better ocular health during virtual learning:

**Implement the 20-20-20 Rule:** Encourage students to follow the 20-20-20 rule to reduce eye strain. Every 20 minutes, students should take a 20-second break and look at something at least 20 feet away. This practice helps relax the eye muscles and prevent digital eye strain.

**Proper Screen Distance and Positioning:** Instruct students to maintain an adequate viewing distance from their screens. The ideal distance is about 20-30 inches from the eyes, and the top of the screen should be at eye level to reduce strain on the neck and eyes.

**Adjust Screen Brightness and Contrast:** Advise students to adjust their screen brightness and contrast settings to match



the ambient lighting conditions. Bright screens in dimly lit rooms or dark screens in bright environments can strain the eyes. Reduce Screen Glare: Minimize screen glare by positioning the screen perpendicular to windows or using anti-glare screen protectors. Glare can cause eye discomfort and make it challenging to read the screen.

**Optimize Study Environment:** Ensure that the study area is well-lit and free from distractions. Proper lighting reduces eye strain and improves focus during online learning sessions.

**Encourage Regular Breaks:** Encourage students to take regular breaks during online study. Breaks provide an opportunity for the eyes to rest and rejuvenate. Suggest activities that involve looking at distant objects or engaging in outdoor activities during breaks.

**Promote Outdoor Activities:** Advocate for outdoor activities to promote better eye health. Spending time outdoors exposes students to natural light, which is beneficial for visual development and helps prevent myopia progression.

**Proper Posture:** Educate students on maintaining good posture during online study. Provide guidelines on chair height, desk setup, and screen position to minimize strain on the eyes and neck.

**Blink Frequently:** Remind students to blink regularly while using digital devices. Blinking keeps the eyes moist and reduces the risk of dry eyes.

**Limit Screen Time:** Encourage students to limit unnecessary screen time. Establish a balance between online study, recreational screen use, and other activities that do not involve screens.

**Vision Check-ups:** Encourage regular eye check-ups to detect and address any vision

problems promptly. Early intervention can prevent further deterioration of vision.

**Blue Light Filters:** Consider using blue light filters or blue light-blocking glasses to reduce the exposure to harmful blue light emitted by screens.

**Parental Involvement:** Involve parents in monitoring their child's screen time and ensuring the implementation of healthy screen habits at home.

**School-based Interventions:** Educational institutions can incorporate ocular health awareness programs and vision care initiatives into their curriculum to promote good eye health among students.

**Mental Health Support:** Recognize the psychological impact of online learning on students and provide access to mental health support when needed. Reducing stress and anxiety can indirectly benefit ocular health.

By adopting these effective remedies and incorporating them into the daily routines of students, we can help mitigate the adverse effects of online study on ocular health in Tripura. It is essential for educational institutions, parents, and healthcare professionals to collaborate in creating a conducive and healthy learning environment for students, both during and beyond the pandemic.

## **V. AWARENESS AND EDUCATION:**

Promoting awareness and providing education on ocular health is crucial to safeguarding the well-being of primary to college-level students in Tripura during online study. By empowering students, parents, educators, and healthcare professionals with knowledge about ocular health, we can foster a proactive approach to eye care and encourage the adoption of healthier screen habits. The following



strategies can be employed to raise awareness and educate stakeholders:

**Ocular Health Workshops:** Educational institutions can conduct workshops and seminars dedicated to ocular health. Invite optometrists and eye care specialists to deliver talks on eye strain, digital eye fatigue, myopia prevention, and other relevant topics.

**Informational Brochures and Posters:** Create informative brochures and posters that highlight essential tips for maintaining ocular health during online study. Distribute these materials to students and parents to serve as reminders for better screen habits.

**Ocular Health Webinars:** Organize webinars that cover various aspects of ocular health and its impact on students. Webinars can be accessed remotely, ensuring a wider reach and participation.

**Integration into Curriculum:** Integrate ocular health education into the school curriculum. Include relevant topics in health or science subjects to foster a culture of eye care awareness from an early age.

**Parent-Teacher Meetings:** Engage with parents during regular parent-teacher meetings to discuss the importance of ocular health and share practical strategies for reducing screen-related eye problems at home.

**School Announcements:** Make regular announcements on school notice boards or through virtual platforms to remind students about the significance of taking breaks and practicing proper screen habits.

**Online Resources:** Create and share online resources, such as articles, videos, and infographics, that offer tips and guidance on ocular health. Make these resources

readily available on school websites and social media platforms.

**Collaborate with Healthcare Professionals:** Work in collaboration with eye care professionals to provide students with access to eye screenings and vision check-ups, ensuring early detection and management of any vision issues.

**Optometrist Visits to Schools:** Organize visits by optometrists to schools, where students can receive on-site eye examinations and receive personalized recommendations for maintaining eye health.

**Peer Education Programs:** Encourage students to take the lead in promoting ocular health awareness among their peers. Establish peer education programs where students can share information and tips on eye care.

**Parental Workshops:** Host workshops for parents to educate them on the importance of monitoring their child's screen time and implementing screen hygiene practices at home.

**Public Service Announcements (PSAs):** Work with local media outlets to broadcast PSAs on ocular health during the pandemic, emphasizing the need for eye care while engaging in online learning.

By incorporating these awareness and education strategies, we can foster a culture of ocular health consciousness among students, parents, and educators in Tripura. Proactive education and awareness initiatives will not only mitigate the adverse effects of online study on ocular health but also promote lifelong habits that contribute to better overall eye health for the future generation.

## **VI. CONCLUSION**

The COVID-19 pandemic forced educational institutions in Tripura to



rapidly adopt online learning, resulting in a significant shift in the educational landscape. While this transition allowed for continuity in education during challenging times, it also brought attention to the potential impact of prolonged screen exposure on the ocular health of primary to college-level students. This research paper delved into the effects of online study on ocular health in Tripura during the pandemic and explored effective remedies and strategies to mitigate potential ocular health issues.

The findings revealed that prolonged screen time during online study led to various ocular health issues, including digital eye strain, myopia progression, reduced blink rates, and exposure to harmful blue light. Contributing factors such as improper screen positioning, inadequate lighting, and lack of outdoor activities further exacerbated the problem. Additionally, the psychological stress arising from the uncertainties of the pandemic had an indirect impact on ocular health.

To address these challenges, effective remedies were proposed, including implementing the 20-20-20 rule, optimizing study environments, encouraging outdoor activities, and promoting proper screen habits. Raising awareness and providing education on ocular health through workshops, webinars, and informational resources was highlighted as a vital step in promoting better eye care practices among students, parents, educators, and healthcare professionals.

As we conclude this research, it is evident that ensuring the ocular health of students during online study is of utmost importance. The implications of ocular

health issues extend beyond the immediate academic setting, potentially affecting students' overall well-being and academic performance. Therefore, it becomes a collective responsibility of educational institutions, parents, and policymakers to take proactive measures in promoting ocular health awareness and implementing effective strategies.

Moving forward, it is essential for educational institutions to continue integrating ocular health education into their curricula, providing regular eye screenings, and collaborating with eye care professionals. Parents play a crucial role in monitoring their child's screen time and supporting healthier screen habits at home. By working together and prioritizing ocular health, we can create a supportive and healthy learning environment for students in Tripura and beyond.

The COVID-19 pandemic has reshaped the way education is delivered, and online learning is likely to remain an essential part of the educational landscape. Therefore, continuous efforts to address ocular health concerns, improve screen habits, and promote eye care awareness are vital for the well-being and success of the future generation of learners. With a concerted and proactive approach, we can ensure that online study does not compromise the ocular health of students, enabling them to thrive academically and maintain good eye health throughout their lives.

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