THE PLANET

Original Article

Prevalence and Risk Factors of Dry Eye Syndrome Among Office Workers Using Digital Screens in Dhaka

Faizur Razzaque Khan[1*], Tania Akbar[2], Sonia Akber Moon[3], Muntahina Jahan Khanam[4]

ARTICLE INFO

Received: 4 May 2026
Accepted: 10 May 2026
Published Online: 18 May 2026

DOI: 10.5281/zenodo.20263013

Volume: 9, Number: 3, Page: 93-95

e-ISSN: 2789-5912
ISSN: 2617-0817

*Corresponding author

ABSTRACT

Introduction: Dry eye syndrome (DES) is a disturbance of the eye surface with multiple causes, usually resulting in unstable tear film, eye discomfort and impaired vision, which may adversely impact one's daily life and work efficiency, among other things. That is why we conducted this research. The purpose of this research was to find out the prevalence of dry eye syndrome and exposure to risk factors of the condition among office workers, who use digital screens, in Dhaka. **Methods & Materials:** This cross-sectional observational study was carried out at the Department of Ophthalmology, Raipura Upazila Health Complex, Norshingdi, Bangladesh from July 2025 to December 2025 involving 60 office workers of Dhaka who regularly used computer display screens in their jobs. Dry eye syndrome was identified through the Ocular Surface Disease Index (OSDI) questionnaire that has already been validated, and the extent of symptoms was divided into mild, moderate, and severe according to standard scoring norms. Statistical analysis was performed using SPSS package version 26.0. **Result:** Most of the 60 office workers involved in the study were between 30 and 39 years old (36.7%), and there were more men than women (56.7%). Most of the participants (66.6%) admitted to spending more than 6 hours per day in front of digital screens. More than half of the participants (53.3%) suffered from dry eye syndrome, and among them, many had mild (43.8%) to moderate (37.5%) symptoms. Prolonged screen time, air-conditioned workplace environments, and infrequent blinking turned out to be the major factors contributing to dry eye ($p<0.05$), whereas gender and contact lens use, among other aspects, showed no significant differences. **Conclusion:** This research shows that dry eye syndrome is very common (53.3%) among office workers using digital screens in Dhaka. Most of the cases are mild to moderate in severity. The results point out that people who work actively, especially those who spend more than 6 hours a day in front of the screen, have a higher chance to suffer from this problem.

Keywords: *Dry Eye Syndrome, Office Workers, Digital Screens.*

1. *Assistant Surgeon, Raipura Upazila Health Complex, Narshingdi, Bangladesh (ORCID: 0000-0002-7217-083X)*
2. *Assistant Professor, Department of Obstetrics & Gynaecology, Enam Medical College & Hospital, Dhaka, Bangladesh*
3. *Research Physician, Center for Medical Research and Development, Bangladesh*
4. *Assistant Surgeon, Tongibari Upazila Health Complex, Munshiganj, Bangladesh*

INTRODUCTION

Dry eye syndrome (DES), also called dry eye disease (DED) is a multifactorial disorder of ocular surface that is characterized by tear film instability, ocular discomfort and visual disturbances. It also has the potential to cause damage to the corneal epithelium. It is increasingly recognized as a major public health problem because of its widespread occurrence and its great impact on people's quality of life and work productivity [1,2]. The condition may arise from either reduced tear secretion or increased tear evaporation and in most cases also involves inflammation and neurosensory abnormalities of the ocular surface [1]. Recently, the speed of digitalization has significantly increased the use of computers, smartphones, and other types of Visual Display Terminals (VDTs), especially among office workers. Exposure to digital screens for a long time has been identified as one of the major causes of DES since it changes the blinking pattern of the eye (decreased blink rate, incomplete blinking) and results in increased tear evaporation [3,4]. Researchers have found out that people who use digital screens for more than 4-8 hours are significantly more likely to experience dry eye symptoms than those who use them for shorter periods of time [5]. Often the phenomenon is represented as one of the symptoms of "digital eye strain" or "computer vision syndrome" that covers a variety of ocular and visual symptoms [3]. Around the world, the prevalence of DES is highly diverse and depends on which population is studied and what diagnostic criteria are used; it ranges from about 5% to more than 50% [2,6]. For office workers, the prevalence is generally thought to be much higher due to their occupational exposure to screen and indoor environmental conditions. Likewise, research in Asian communities has revealed that the use of digital devices for over 8 hours a day greatly raises the chance of getting DES [5]. When we talk about Bangladesh, the problem of dry eye disease is growing alongside other serious issues. Last year, researchers working in Dhaka's offices found that more than half of the people there (51.4%) had DES, which really shows how the problem is growing in cities and workplaces. Heavy screen time, less blinking, wearing contact lenses, and working in a cold air-conditioned office were the main reasons found [7]. In a separate research, Bangladeshi workers were the subjects of a study that also looked at how the environment and work factors might affect the risk of developing the problem. These factors included low humidity and long periods of staying indoors [8]. Several factors have been identified as contributing to DES in office workers. Apart from individual factors such as age, female gender and systemic diseases, occupational and environmental factors also play a role, including duration of screen use, poor ergonomics, low air humidity and air conditioning [4,7]. The rate of blinking drops significantly during screen use, from a normal rate of 15-20 blinks/minute to as low as 5-7 blinks/minute, resulting in more tear evaporation and dryness of the eyes [3]. Additionally, poor workplace ergonomics, improper screen positioning, and inadequate lighting further exacerbate ocular strain and contribute to DES [4]. Therefore, this study aims to determine the prevalence of dry eye syndrome and identify associated risk factors among office workers using digital screens in Dhaka.

METHODS & MATERIALS

It is a cross-sectional observational study which has been conducted at Department of Ophthalmology, Raipura Upazila Health Complex, Norshingdi, Bangladesh during the period July 2025 to December 2025 among 60 office workers in Dhaka who mostly use digital screens for their work. A convenience sampling technique was used to select the participants from various offices and individuals of 20 years and above who had at least 6 months of regular digital screen exposure were included. Those who had pre-existing ocular surface diseases, recent ocular surgery, or systemic conditions affecting tear production were excluded from the study. Data were collected through a structured questionnaire that recorded social demographic details, duration of daily exposure to screens, workplace environment, and behavioral factors like blinking habits and contact lens use. Presence of dry eye syndrome was tested with the reliable Ocular Surface Disease Index (OSDI) questionnaire. Its severity was then divided into mild, moderate, and severe based on the standard scoring criteria. SPSS software version 26.0 was utilized for the data analysis, where descriptive statistics were employed to present variables, and the relationship between risk factors and dry eye syndrome was studied by the chi-square test. A p-value of < 0.05 was considered as statistically significant. Ethical clearance was taken from the institutional review board.

RESULTS

Majority of study participants were aged 30-39 years as per the age distribution results which accounted for 36.7% of overall sample. Secondly came 20-29 years with 30.0%, then 40-49 years with 23.3%. Participants aged 50 years and above were the smallest group (10.0%) *Table I.*

Table I
Distribution of Participants by Age Group (n = 60).

Age Group (years)	Frequency (n)	Percentage (%)
20–29	18	30.0
30–39	22	36.7
40–49	14	23.3
≥50	6	10.0

This study population showed a slight male predominance in which males were 56.7% and females 43.3% (*Table II*).

Table II
Gender Distribution of Participants (*n* = 60).

Gender	Frequency (n)	Percentage (%)
Male	34	56.7
Female	26	43.3

When daily digital screen exposure was considered, the findings revealed that a large number of participants (66.6%) used screens for more than 6 hours per day. Among them, the 6-8 hours as well as the more than 8 hours groups were equal with 33.3% each. Only 10.0% of participants reported screen use of less than 4 hours per day (*Table III*).

Table III
Duration of Daily Digital Screen Use (*n* = 60).

Screen Time (hours/day)	Frequency (n)	Percentage (%)
<4 hours	6	10.0
4–6 hours	14	23.3
6–8 hours	20	33.3
>8 hours	20	33.3

More than half of the study participants, exactly 53.3%, were affected by dry eye syndrome. This implies that only 46.7% participants didn't show any dry eye features (*Table IV*).

Table IV
Prevalence of Dry Eye Syndrome (*n* = 60).

Dry Eye Status	Frequency (n)	Percentage (%)
Present	32	53.3
Absent	28	46.7

Out of the 32 dry eye syndrome cases, the majority of the sufferers had either mild (43.8%) or moderate (37.5%) stages of the disease, while 18.7% were severely affected (Table V).

Table V
Severity of Dry Eye Syndrome (*n* = 32).

Severity Level	Frequency (n)	Percentage (%)
Mild	14	43.8
Moderate	12	37.5
Severe	6	18.7

Risk factors analysis showed that having screen exposure for a long period of time (>6 hours per day) was the strongest factor associated with dry eye syndrome, whereby 81.3% of dry eye cases were daily screen users as compared to 50.0% in non-dry eye group ($p<0.05$). On the other hand, working in air-conditioned environments and infrequent blinking habits have also been identified to substantially contribute towards dry eye ($p<0.05$) *Table VI*.

Table VI
Association of Risk Factors with Dry Eye Syndrome (n = 60).

Risk Factor	Dry Eye Present (n=32)	Dry Eye Absent (n=28)	p-value
Screen time >6 hours	26 (81.3%)	14 (50.0%)	<0.05
Air-conditioned workplace	24 (75.0%)	12 (42.9%)	<0.05
Infrequent blinking	22 (68.8%)	10 (35.7%)	<0.05
Use of contact lenses	8 (25.0%)	3 (10.7%)	>0.05
Female gender	16 (50.0%)	10 (35.7%)	>0.05

DISCUSSION

As far as age distribution is concerned, most of the people who took part in this research were from the 30-39 years age range (36.7%). The next biggest group was 20-29 years (30.0%). In a similar study, Chowdhury et al. showed that 42.0% of their participants were in the 30-39 years age group, while 33.0% were 20-29 years old [6]. Likewise, Uchino et al. showed that the greatest number of DES cases were among those in their working years, especially individuals aged 30-40 years, with a prevalence close to

48.7% among this age group [9]. Regarding the gender ratio, the finding of this research was that men comprised 56.7% of the study sample and women - 43.3%. On the other hand, Stapleton et al. reported that females accounted for nearly 60-65% of dry eye syndrome (DES) cases worldwide [2]. Similarly, Farrand et al. also found a significantly higher rate among females (8.8%) as compared to males (4.5%) in the general population [10]. The somewhat higher rate of males in our study simply might be indicative of the workplace population structure rather than a difference in biological susceptibility according to the training literature. As far as digital screen exposure is concerned, 66.6% of our study subjects indicated that they use the Internet on screens for more than 6 hours a day, while 33.3% declared usage in excess of 8 hours. According to a study done by Mowatt et al. 62.0% of the office workers had been using digital screens for their work for more than 6 hours each day. In fact, the prevalence of DES was found to be significantly higher at 64.0% among the ones who had long exposure to screens [11]. In a similar vein, Moon et al. reported that individuals who spent more than 4 hours daily on their screens had a DES prevalence of 57.6%, which is much higher as compared to the 30.0% exposure of less than 2 hours [12]. Generally, this study found the prevalence of DES to be 53.3%. Chowdhury et al. also revealed a similar prevalence of 51.4% among office workers of Dhaka [6]. Uchino et al. revealed that 47.4% of Japanese office workers using visual display terminals suffered from DES [9]. On the other hand, Farrand et al. found the prevalence to be only 6.8% in the general population [10]. To add, the current research indicated a severity of 43.8% cases to be mild, 37.5% moderate, and 18.7% severe. Likewise, Mowatt et al. showed a comparable pattern, with 45.0% mild, 35.0% moderate, and 20.0% severe cases of DES among office workers [11]. Besides this, Uchino et al. discovered that about 70% of DES cases are on the mild to moderate levels of severity [9]. The risk factor analysis indicated that 81.3% of the DES group had screen time >6 hours compared to only 50.0% of the non-DES group. Uchino et al. also found very similar results since users who spend more than 8 hours in front of a visual display terminals had a significantly higher DES prevalence (61.0%) than those with shorter exposure (34.0%) [9]. In this study, 75.0% of the DES group were exposed to air-conditioned workplace, whereas 42.9% of non-DES participants were likewise exposed, whereas Chowdhury et al. also found 72.0% vs 40.0%, respectively [6]. In 68.8% cases of DES, infrequent blinking was noticed, which is 33.1% more than in non-DES individuals (35.7%). On the other hand, some other studies have indicated that the blink rate goes down from 1520 blinks/min to 57 blinks/min when looking at the screen [12]. The use of contact lens (25.0% vs 10.7%) and the female gender (50.0% vs 35.7%) were more common in DES cases although the difference was not statistically significant, which goes along with the results of Bazeer et al. who stressed the stronger role of occupational factors [13].

LIMITATIONS

- The study had a relatively small sample size (n = 60), which may limit the generalizability of the findings to a larger population of office workers.
- The cross-sectional design restricts the ability to establish a causal relationship between digital screen exposure and dry eye syndrome.
- Data on screen time, blinking pattern, and workplace environment were based on self-reporting, which may introduce recall and reporting bias.
- Objective diagnostic tests such as Schirmer's test, tear film break-up time (TBUT), or corneal staining were not performed, which may reduce diagnostic precision.

CONCLUSION

This study reveals that dry eye is a common problem (53.3%) among computer users of office workers in Dhaka, with the mild to moderate cases making up most of the dry eye cases. Results also indicate that people in their active working years, especially those whose daily screen time goes beyond 6 hours, are more susceptible to this.

RECOMMENDATION

Office workers that involve using screens are advised to use preventive methods such as breaking continuous screen time, the 20-20-20 rule, and blinking frequently to possibly mitigate the risk of dry eye syndrome. Changes in the workplace such as fixing the screen at the right height, eliminating glares, and ensuring the air-conditioned spaces have proper humidity levels are definitely worth getting these modifications done.

FUNDING

No funding sources

CONFLICT OF INTEREST

None declared

REFERENCES

1. Craig JP, Nichols KK, Akpek EK, Caffery B, Dua HS, Joo CK, Liu Z, Nelson JD, Nichols JJ, Tsubota K, Stapleton F. TFOS DEWS II definition and classification report. The ocular surface. 2017 Jul 1;15(3):276-83.
2. Stapleton F, Alves M, Bunya VY, Jalbert I, Lekhanont K, Malet F, Na KS, Schaumberg D, Uchino M, Vehof J, Viso E. TFOS DEWS ii epidemiology report. The ocular surface. 2017 Jul 1;15(3):334-65.
3. Eltidar TR, Utama WT. Dry Eye Syndrome Pada Pekerja Kantor: Tinjauan Pustaka. Medical Profession Journal of Lampung. 2026;16(2):116-9.
4. Bazeer S, Jansonius N, Snieder H, Hammond C, Vehof J. The relationship between occupation and dry eye. The Ocular Surface. 2019 Jul 1;17(3):484-90.
5. Al-Mohtaseb Z, Schachter S, Shen Lee B, Garlich J, Trattler W. The relationship between dry eye disease and digital screen use. Clinical Ophthalmology. 2021 Sep 10:3811-20.
6. Chowdhury AS. Evaluation of dry eye syndrome among office workers using digital screens-clinical and environmental determinants. The Planet. 2024 Dec 28;8(01):179-83.
7. Yamada M, Mizuno Y, Shigeyasu C. Impact of dry eye on work productivity. ClinicoEconomics and Outcomes Research. 2012 Oct 10:307-12.
8. Rashid MA, Teo CH, Mamun S, Ong HS, Tong L. Prevalence and risk factors of severe dry eye in Bangladesh-based factory garment workers. Diagnostics. 2020 Aug 26;10(9):634.
9. Uchino M, Schaumberg DA, Dogru M, Uchino Y, Fukagawa K, Shimmura S, Satoh T, Takebayashi T, Tsubota K. Prevalence of dry eye disease among Japanese visual display terminal users. Ophthalmology. 2008 Nov 1;115(11):1982-8.
10. Farrand KF, Fridman M, Stillman IÖ, Schaumberg DA. Prevalence of diagnosed dry eye disease in the United States among adults aged 18 years and older. American journal of ophthalmology. 2017 Oct 1;182:90-8.
11. Mowatt L, Gordon C, Santosh AB, Jones T. Computer vision syndrome and ergonomic practices among undergraduate university students. International journal of clinical practice. 2018 Jan;72(1):e13035.
12. Moon JH, Lee MY, Moon NJ. Association between video display terminal use and dry eye disease in school children. Journal of Pediatric Ophthalmology & Strabismus. 2014 Mar 1;51(2):87-92.
13. Bazeer S, Jansonius N, Snieder H, Hammond C, Vehof J. The relationship between occupation and dry eye. The Ocular Surface. 2019 Jul 1;17(3):484-90.