RISK OF EYE DISORDERS IN COMPUTER-USING EMPLOYEES AT DUMAI BRANCH OF BPJS KESEHATAN: ERGONOMIC ANALYSIS

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Abstract

The risk of eye disorders is a health problem frequently experienced by workers, especially those who work with digital devices for long periods of time. This condition is known as Computer Vision Syndrome (CVS) or Digital Eye Strain. CVS is characterized by symptoms such as dry eyes, blurred vision, headaches, and discomfort around the eyes. The purpose of this study was to determine factors associated with the risk of eye disorders in computer users. This research was quantitative. This study was conducted at the Dumai Branch of BPJS Kesehatan in July 2025. The number of respondents was 54 people. The results of the bivariate analysis using the chi-square test showed no significant relationship between age and gender. However, there was a relationship between the use of glasses, eye rest, and screen time duration with the risk of eye disorders in computer/laptop users at the Dumai Branch of BPJS Kesehatan. From the results of this study, it is recommended that the Dumai Branch of BPJS Kesehatan increase greater attention to factors related to the risk of eye disorders in computer users by providing educational guidance to employees.

Keyword: computer 1; eye 2; employee 3; excessive 4. risk

INTRODUCTION

The human eye plays a crucial role in the performance of tasks in various occupations. Therefore, maintaining eye health is essential for effective work performance. The risk of visual disturbances arises from eye strain caused by prolonged visual impairment, often accompanied by discomfort in vision. This visual disturbance risk, commonly referred to as eye strain or asthenopia, is characterized by ocular fatigue or tension in the visual organs, leading to eye discomfort and headaches associated with intensive eye use (Mappangile, 2018). Eye disturbance risks represent a significant health issue frequently experienced by workers, particularly those engaged in prolonged digital device usage. This condition is known as Computer Vision Syndrome (CVS) or Digital Eye Strain. CVS is marked by symptoms such as dry eyes, blurred vision, headaches, and discomfort around the eyes. The primary causes include continuous digital device use without adequate breaks, poor lighting, and non-ergonomic work positions (International Journal of Ophthalmology and Optometry 2023).

Occupational health and safety (OHS) programs are established by employers to prevent work-related accidents and occupational diseases. Contributing factors include inadequate implementation and monitoring of OHS protocols, as well as a general failure among workers and society to recognize the importance of OHS standards in the workplace (Siahaan & Hartono, 2022). In the current era of globalization, technology is rapidly advancing and has become essential for facilitating work processes, particularly computers. Computer usage spans various sectors, including retail, education, health, security, and transportation. According to data from the Central Statistics Agency (BPS, 2021), computer usage in Indonesia was at 18.24% in 2021. Provincial data indicates that Jakarta experienced an increase in computer usage, rising from 23.51% in 2019 to 25.34% in 2021. Alongside increased computer usage, various health symptoms have emerged, including eye fatigue. Eye fatigue can be defined as an uncomfortable condition affecting the eyes, potentially leading to visual disturbances, resulting from eye strain and prolonged screen staring (Marsya et al., 2024).

According to the World Health Organization (WHO) in 2014, the incidence of asthenopia or eye fatigue ranged from 40% to 90%. Data from worldwide internet usage in 2016 indicated that the number of computer users had reached 60%. In the United States, over 143 million people work with computers daily, with 90% experiencing eye fatigue. A survey conducted by the American Optometric Association revealed that over 10 million eye exams are performed annually for computer users, with approximately one million new cases reported each year (Firdani, 2020).

In Indonesia, complaints of eye disturbances among computer users are frequently observed. A study conducted on UNRIYO employees at Respati University Yogyakarta found that 60.9% experienced eye fatigue (Jehung, 2021). Computer usage is widespread acrossIndonesia, with rates of 24.5% in Sumatra, 11.5% in Kalimantan, 30.6% in Java, 8.3% in Bali and Nusa Tenggara, 15.6% in Sulawesi, and 9.5% in Maluku and Papua. Visual symptoms appear in 75-90% of computer users, leading to higher health issues compared to other occupations (Zuliana et al., 2022).

According to data from the Ministry of Health's Infodatin, in 2015, the incidence of visual disturbances affected 253 million people (3.38%), including 36 million who were blind and 217 million with moderate to severe visual impairments. In 2020, the prevalence of eye fatigue among computer users was reported at 46.3% in India, 31.9% in Italy, 68.5% in Mexico, and 63.4% in Australia (Marsya et al., 2024).

In Indonesia, based on Riskesdas data, the prevalence of severe low vision among the productive age group (15-64 years) is 1.49%. A study conducted on computer operators at PT Semen Padang in 2020 indicated that approximately 67.5% of 40 respondents experienced eye fatigue (Kemenkes, 2020). Symptoms of eye fatigue include redness, watering, irritation, heavy eyelids, blurred vision, and difficulty focusing. If not addressed, individuals my experience a decline in visual acuity, potentially leading to ocular diseases. Additionally, eye fatigue can negatively impact work performance, resulting in decreased productivity, increased errors, and a higher incidence of workplace accidents. In 2022, a study on computer users at Jambi Express found that 18 out of 35 respondents (85.75%) reported a correlation between eye fatigue and viewing distance. Research at PT Indonesia Power Up Semarang among computer users indicated a relationship between computer usage duration exceeding four hours and eye fatigue, with 32 out of 62 respondents (71.1%) affected (Marsya et al., 2024).

Factors influencing eye disturbances, according to Asnel and Kurniawan, indicate a significant relationship between age and monitor distance with eye disturbances among computer users. Workers over 45 years of age are at greater risk of experiencing eye fatigue compared to those under 45. Additionally, workers using computers at a distance of less than 50 cm from the monitor are at a higher risk of eye disturbances due to the proximity forcing the eyes to strain for extended periods (Mappangile, 2018). According to Putri and Siana (2022), a factor related to complaints of eye fatigue is the duration of computer use exceeding four hours. Computer users working over four hours are more likely to experience refractive changes. Darmawan and Wahyuningsih concluded that insufficient lighting intensity below 300 lux can contribute to eye fatigue (Darmawan & Wahyuningsih, 2021).

Suryatman and Hermawan asserted that there is a correlation between eye fatigue and lighting levels, suggesting that computer users are optimally supported with room lightingbetween 300-500 lux. Eye disturbances can result from various factors, including individual factors such as gender (Zulaiha et al., 2018), age (Nourmayanti, 2020), eyeglass use (Kharel et al., 2018), eye rest (Nopriadi & Pratiwi, 2019), and posture (Harahap, 2020). Factors related to digital devices include screen time duration (Putri & Siana, 2022), anti-glare features

(Sari et al., 2018), monitor/laptop distance (Yunitia et al., 2018), and smartphone distance (Maimanah, 2018). Environmental factors, including room lighting (Arianti, 2016) and temperature (Anggraini, 2013), also relate to eye disturbances. Workers in poor lighting conditions are 7.71 times more likely to experience eye disturbances compared to those in well-lit environments (Suryatman & Hermawan, 2021). According to Utami, excessive light intensity exposure has negative outcomes, impacting subjective complaints such as eye fatigue, reading difficulties, dizziness, shoulder and back pain, and concentration issues (Utami et al., 2021).

Initial global research on individuals using Video Display Terminals (VDT), including computers, laptops, and touchscreen phones, reported 40 users experiencing eye disturbances. At the Dumai Health BPJS Branch, the prevalence of eye fatigue among workers using computers/laptops reached 92.9%. The proportion of workers utilizing electronic media in their jobs experiencing eye disturbances is primarily attributed to prolonged computer or laptop use. Common symptoms of eye disturbances include a burning sensation in the eyes, itching, excessive blinking, redness, eye pain, heavy eyelids, blurred vision, double vision, difficulty focusing, deteriorating vision, and headaches (Seguí et al., 2015).

At the Dumai Health BPJS Branch, workers actively utilize computers/laptops as part of their health service delivery tasks. According to a preliminary study of five workers, symptoms of eye fatigue reported included: redness (40%), itching (60%), sensation of a foreign object in the eye (40%), watering (60%), excessive blinking (60%), redness (60%), eye pain (40%), heavy eyelids (60%), dryness (40%), blurred vision (40%), double vision (20%), difficulty focusing on near vision (40%), light sensitivity (60%), colored circles around objects (20%), worsening vision (40%), and headaches (80%). The data indicates that eye disturbances are likely to affect all workers, including employees at the Dumai Health BPJS Branch. The nature of their work, which involves data entry, claims verification, and data checking on applications under time constraints, requires employees to sit for an average of eight hours a day in front of a computer or laptop. The extended working hours often lead employees to neglect considerations regarding viewing distance to the computer, sitting posture during work, and room lighting.

RESEARCH METHODS

This study is a quantitative research project, which employs a numerical approach to measure the relationships between predetermined variables (Sugiyono, 2020). The research will be conducted among employees at the Dumai Health BPJS Branch. The study will span from proposal development to the presentation of results, planned for the period from April to August 2025. In this research, the sample comprises the entire population, totaling 54 employees. Data analysis involves the processing and interpretation of the data collected during the study to understand the phenomenon under investigation and draw valid conclusions. In quantitative research, data analysis is conducted using statistical methods to test hypotheses, evaluate relationships between variables, and obtain objective results. According to Sugiyono (2020), data analysis in quantitative research can be divided into two main stages: univariate analysis and bivariate analysis. These two stages help provide a comprehensive overview of the collected data.

RESEARCH RESULTS

Bivariate Analysis

Table 1. Relationship between Respondents' Age and the Risk of Eye Disorders

No	Age	Risk of Eye Disorders				Total		P Value	OR
		Risk		No Risk					
		N	%	N	%	N	%	0.357	.316
1	> 40 years	9	16.7	3	5.5	12	22.2		
2	< 40 years	38	70.4	4	7.4	42	77.8		
	Amount	**47**	**87.1**	**7**	**12.9**	**54**	**100.0**		

Sumber : Primary data analysis, 2025

Table 1 shows that of the 54 respondents, 12 (22.2%) were aged > 40 years and 42 (77.8%) were aged < 40 years. Of these 12 respondents, 9 (16.7%) were at risk of eye disorders and 3 (5.5%) were not at risk. Meanwhile, of those aged < 40 years, 38 (70.4%) were at risk of eye disorders and 4 (7.4%) were not at risk of eye disorders. The age variable obtained a p-value of 0.357 > 0.05, which means there is no relationship between age and eye disorders.

Table 2. Relationship between Respondent's Gender and the Risk of Eye Disorders

No	Gender	Risk of Eye Disorders				Total		P Value	OR
		Risk		No Risk					
		N	%	N	%	N	%	0 .671	1.965
1	Women	28	51.8	3	5.6	31	57.4		
2	Man	19	35.2	4	7.4	23	42.6		
	Amount	**47**	**87.0**	**7**	**13.0**	**54**	**100.0 0**		

Sumber : Primary data analysis, 2025

Table 2 shows that of the 54 respondents, 31 people or 57.4% were female and 23 people or 42.6% were male. Of the 31 respondents (57.4%) who were female, 28 or 51.8% had a risk of eye disorders and 3 or 5.6% were not at risk of eye disorders. Meanwhile, 23 male respondents (42.6%), 19 (35.2%) had a risk of eye disorders and 4 (7.4%) were not at risk. The chi-square test results showed a p-value of 0.671 with alpha = 0.05, and an OR of 1.965. From the p-value on the gender variable, a p-value of 0.671> 0.05 was obtained, which means there is no relationship between gender and eye disorders.

Table 3 Relationship of Respondents' Glasses to the Risk of Eye Disorders

No	Glasses	Risk of Eye Disorders				Total		P Value	OR
		Risk		No Risk					
		N	%	N	%	N	%	0 .938	1.552
1	Tidak Berkacamata	18	33.3	2	3.7	20	37.0		
2	Menggunkan Kacamata	29	53.7	5	9.3	34	63.0		
	Amount	**47**	**87.0**	**7**	**12.0**	**54**	**100.00**		

Sumber : Primary data analysis, 2025

Table 3 shows that of the 54 respondents, 20 people or 37.0% did not wear glasses and 34 people or 63.0% used glasses when working in front of a computer. Of the respondents who did not wear glasses at work, 18 people (33.3%) were at risk of eye disorders and 2 people (3.7%) were not at risk of eye disorders. Furthermore, 34 respondents or 63.0% used glasses, 29 people (53.7%) were at risk of eye disorders and 5 people (9.3%) were not at risk of eye disorders. The variable of eyeglass use obtained a p-value of 0.938 > 0.05, which means there is no significant relationship between eyeglass use and eye disorders.

Table 4 Relationship of Respondents' Rest to the Risk of Eye Disorders

No	Rest	Risk of Eye Disorders				Total		P Value	OR
		Risk		No Risk					
		N	%	N	%	N	%	0.606	.130
1	No Rest	1	1.8	1	1. 9	2	3.7		
2	There's a break	46	85.2	6	11.1	52	96.3		
	Amount	**47**	**87.0**	**7**	**12.0**	**54**	**100.00**		

Sumber : Primary data analysis, 2025

Table 4 shows that of the 54 respondents, 2 people (3.7%) did not take breaks and 34 people (63.0%) used breaks while working in front of a computer. Of the respondents who did not use breaks while working, 1 person (1.8%) was at risk of eye disorders and 1 person (1.9%) was not at risk of eye disorders. Furthermore, 52 respondents (96.3%) used breaks, 46 people (85.2%) were at risk of disorders and 6 people (11.1%) were not at risk of eye disorders. With alpha = 0.05, the p-value for the eye rest variable was 0.606 > 0.05, which means there is no significant relationship between eye rest and eye disorders.

Table 5 Relationship between Respondents' Screen Time Duration and the Risk of Eye Disorders

No	Durasi *Screen Time*	Risk of Eye Disorders				Total		P Value	OR
		Risk		No Risk					
		N	%	N	%	N	%	0.049	18.400
1	> = 6 O'clock	46	85.2	5	9.2	51	94.4		
2	< = 6 O'clock	1	1.8	2	3.8	3	5.6		
	Amount	**47**	**87.0**	**7**	**13.0**	**54**	**100.00**		

Sumber : Primary data analysis, 2025

Table 5 shows that of the 54 respondents, 51 people or 94.4% had screen time duration of > = 6 hours and 3 people or 5.6% had screen time duration of < = 6 hours. Of the 51 people or 94.4% with screen time duration of > = 6 hours, 46 people (85.2%) experienced the risk of eye disorders and 5 people (9.2%) were not at risk of eye disorders. With alpha = 0.05, the p value for the screen time duration variable was 0.049 < 0.05, which means there is a significant relationship between screen time duration and eye disorders. Then the OR obtained 18,400 shows the comparison of the risk of eye disorders between those who use screen time duration between > 6 hours and < 6 hours. This means that respondents with screen time duration > 6 hours have a greater odds (18.4 times) of experiencing eye disorders than respondents with screen time duration < 6 hours.

DISCUSSION

Relationship between Respondent Age and Risk of Eye Disorders

The chi-square test results showed a p-value of 0.357 (>0.05), indicating no significant relationship between age and the risk of eye disorders among BPJS Kesehatan Dumai Branch employees. However, this interpretation requires physiological analysis and is supported by international research findings regarding the role of age, gender, and screen exposure in the risk of digital eye strain (DES). A study by Galindo-Romero (2023) in Frontiers in Public Health found that age was not a significant factor in Computer Vision Syndrome (CVS), but there was a tendency for younger age groups to report more symptoms than older participants. These results align with CooperVision (2023) which noted that millennials more frequently reported symptoms of digital eye strain (70%) than Baby Boomers (57%) due to their higher intensity of digital device use. Ophthalmic and Physiological Optics explains that the risk of screen-related eye disorders is more strongly influenced by duration of use and work ergonomics than chronological age. Physiologically, individuals over 40 years of age begin to experience presbyopia, which is a decrease in accommodation ability due to reduced elasticity of the eye lens. However, this disorder differs from digital eye strain, which is predominantly caused by temporary accommodation fatigue at a young age. A study of 18–35 year olds by Granthaalayah (2025) showed that 78.7% of respondents experienced symptoms of eye fatigue, primarily due to intensive use of digital devices and less ergonomic work postures. This supports the researchers' assumption that young workers who are more involved in intensive digital tasks actually show a higher tendency for eye disorders, although this is not statistically significant.

Biological differences also play a role. Kaštelan et al. (2025) in Experimental Eye Research found that women have more pronounced degenerative changes in the lacrimal glands due to the influence of sex hormones, making them more susceptible to tear film-related dry eye disease. Another study by Versura (2019) confirmed that androgens play a protective role in the tear film, while estrogen fluctuations can actually exacerbate eye dryness. While these findings are relevant, the association between gender and occupational eye disorders is not always significant when the sample size is small or the confidence interval encompasses a value of 1, as was the case in the Dumai study.

Overall, although the association between age and the risk of eye disorders was not statistically significant, the data pattern still suggests a functional trend related to screen exposure and hormonal variations that merits further investigation with larger sample sizes and longitudinal designs.

Relationship between Gender and Risk of Eye Disorders

The chi-square test results with a p-value of 0.671 (>0.05) indicate no significant association between gender and the risk of eye disorders among BPJS Kesehatan Dumai Branch employees. However, this finding still has important physiological and behavioral implications, as several international studies have shown differences in the prevalence of eye disorders based on gender, although often not statistically significant.

Research indicates that women tend to have a higher prevalence of digital eye strain (DES) than men. A study by Portello et al. (2012) and a report by The Vision Council (2016) noted that 69% of women reported DES symptoms compared to 60% of men, which was attributed to physiological differences in the tear film. Similar findings from Frontiers in Public Health (2025) also indicated that women are more susceptible to symptoms of digital eye strain, particularly during the pandemic when screen time increased.

Furthermore, a 2023 study by Kimetal in PLoS ONE showed that the prevalence of dry eye disease (DED) is higher in women (48.4%) than in men (30.5%), and women with DED have higher stress and anxiety scores, which can exacerbate the perception of eyestrain symptoms. Hormonal factors—particularly changes in estrogen and androgen levels—play a significant role in reducing lacrimal gland secretion, leading to tear film thinning and increasing the risk of dry eyes.

In addition to biological factors, digital device usage style is a key variable. A 2018 study by BMJ Ophthalmology reported that individuals who use two or more devices simultaneously have a higher risk (75%) than those who use only one device (53%). Several studies also indicate that women have a higher average screen time and tend to focus more on administrative tasks, which increases the risk of visual fatigue due to a longer visual attention span.

Thus, although statistical results do not show a significant relationship between gender and eye disorders, various international studies support that physiologically and behaviorally, women have a higher functional risk of digital eye disorders and need special attention in prevention efforts based on visual ergonomics and hormonal balance.

The Relationship Between Glasses Use and the Risk of Eye Disorders

The chi-square test results with a p-value of 0.938 (>0.05) indicate no significant association between eyeglass use and the risk of eye disorders among BPJS Kesehatan Dumai

Branch employees. This means that statistically, eyeglass use—either refractive correction or anti-radiation—is not a dominant factor in the development of eye disorders. However, a review of international literature indicates that eyeglasses remain physiologically and ergonomically important in maintaining visual comfort while using digital devices.Studi dalam *Ophthalmic and Physiological Optics* (2022) menyebut bahwa kacamata anti-radiasi (blue-light filtering lenses) can reduce subjective eye fatigue and improve visual comfort, but empirical evidence of retinal protection or improved visual function is limited. These lenses minimize blue light with a wavelength of 440–500 nm, which is associated with digital eye strain.

Additionally, anti-reflective (AR coating) glasses are also effective in reducing glare from screen reflections, thereby reducing ciliary muscle activity and feelings of fatigue. Wearing corrective glasses for nearsightedness, farsightedness, or astigmatism has been shown to help maintain focus at medium distances (20–26 inches), which are common among long-term computer workers. Although many users report comfort and reduced complaints of eye fatigue, the effectiveness of anti-reflective glasses does not completely prevent digital eye strain from excessive screen exposure. The American Academy of Ophthalmology emphasizes that strategies for managing digital exposure—such as taking 20-20-20 visual breaks, increasing room lighting, and maintaining a distance from the screen—are more important than relying solely on anti-reflective glasses. Thus, even though the statistical results show no significant relationship, the use of glasses is still practically recommended as part of visual ergonomics, eye fatigue control, and digital work comfort, especially when integrated with good eye protection behavior.

The Relationship Between Eye Rest and the Risk of Eye Disorders

The chi-square test results with a p-value of 0.606 (>0.05) indicated no significant relationship between eye rest habits and the risk of eye disorders among BPJS Kesehatan Dumai Branch employees. Statistically, this means that eye rest is not yet a dominant factor in influencing the onset of eye disorder symptoms, although physiologically and ergonomically, eye rest has been shown to be important in preventing digital eye strain (DES).

Effectiveness of Eye Rest and the 20-20-20 Rule Based on a study by Talens-Estarelles et al. (2023) in Elsevier, it showed that implementing the 20-20-20 rule (looking at an object 20 feet or ±6 meters away for 20 seconds every 20 minutes) can significantly reduce subjective symptoms of digital eye strain and eye dryness ($p \leq 0.045$), although it does not significantly impact physiological changes, such as tear film thickness or permanent accommodation function. A follow-up study by Kumar and Pandey (2024) in the International Journal of Science and Healthcare Research also supports that digital reminders or apps based on the 20-20-20 rule improve user compliance and reduce symptoms of eye strain, especially in computer-intensive workers. However, its effectiveness is reduced if breaks are not taken consistently or do not completely shift focus away from the digital screen, as the ciliary muscle continues to work during near accommodation. Research by Sumitra (2025) showed a positive correlation between screen time duration and eye fatigue scores ($r=0.72$; $p<0.001$), as well as a negative correlation with tear stability and blink frequency. Workers with screen time exceeding 6 hours per day experienced impaired focus and an increased risk of eye irritation, regardless of break frequency. Furthermore, environmental factors such as lighting, room temperature, and air humidity exacerbated DES symptoms. A study by Fanetal. (2024) in Scientific Reports showed that ambient lighting and light color temperature significantly affected eye fatigue and visual comfort, with unbalanced lighting increasing accommodation stress and sensitivity to glare. Similar results were also found in research by Seattle EyeCare (2025), which reported that 69–74% of office workers experienced DES symptoms due to suboptimal office lighting, including glare and color temperatures that were too cool. Thus, although statistical results show no significant relationship between eye rest habits and eye disorders, scientific literature supports the physiological benefits of regular breaks to reduce visual stress and maintain long-term visual performance, especially in intensive digital work environments.

The Relationship Between Screen Time Duration and the Risk of Eye Disorders

The chi-square test results showed a significant relationship between screen time duration and the risk of eye disorders in BPJS Kesehatan Dumai Branch employees with a p-value of 0.049 (<0.05) and POR of 18.4. This means that employees with screen time of more than 6 hours per day are 18 times more likely to experience eye disorders than those who use screens for less than 6 hours. This finding is consistent with various international and national studies on digital eye strain (DES) or computer vision syndrome (CVS). Research by Savitri (2024) on PTPLNIconPlus employees showed a significant relationship between work duration and eye fatigue (p = 0.016), where workers with computer usage duration of more than 4 hours/day were much more at risk of experiencing visual disturbances. A study by Rohmawati (2025) also found that computer usage duration ≥4 hours/day significantly increased the risk of eye fatigue (p = 0.000), especially if not accompanied by periodic breaks or the application of the 20 20 20 method. Similar results were reported by Pramadani (2024) in the Aesculapius Medical Journal, which found that bank employees with computer usage >4 hours had a 5.14 times greater risk of experiencing eye fatigue than those with usage ≤4 hours. Even in the study of Jusufetal. (2020), screen exposure duration was significantly associated with eye fatigue disorders (ρ = 0.008), confirming that the accumulative effect of screen exposure exacerbates accommodation stress, especially if the monitor distance is <50cm. Physiologically, screen use of more than 4–6 hours/day causes a decrease in blink frequency of up to 60%, which causes dryness, nutrient and oxygen deficiencies in the cornea, and conjunctival inflammation. Blue light radiation with a wavelength of 450–495 nm also contributes to retinal oxidative stress, accelerates visual nerve fatigue, and has the potential to disrupt circadian rhythms due to decreased melatonin secretion. Environmental factors also amplify the impact of screen time, such as viewing distances of less than 40 cm, static working postures, excessive lighting/glare, and the absence of anti-glare filters. Room conditions with lighting <500 lux or too cool color temperatures (<4000K) exacerbate visual strain, thereby increasing DES symptoms. This study strengthens the evidence that long screen time significantly increases the risk of eye disorders, and ergonomic factors such as viewing distance, body position, and lighting contribute to worsening the condition.

CONCLUSION

A study of computer/laptop users at the Dumai Branch of BPJS Kesehatan (Social Security Agency for Health) showed that age, gender, eyeglass use, and eye rest habits were not significantly associated with the risk of eye disorders, even though work duration exceeded 4 hours. However, screen time was significantly associated with an increased risk of eye disorders, indicating that prolonged screen exposure is a major factor affecting eye health in these employees.. List authors and the role each had in researching and writing the article. For research articles with several authors, specify individual contributions such as conceptualization, methodology, software, validation, formal analysis, investigation, writing original draft preparation, review and editing, supervision, project administration, funding acquisition, etc. All authors have read and agreed to the published version of the manuscript." Authors are those who have contributed substantially to the work

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