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Factors Associated with Complaints Eye Fatigue in Office Workers at PT. X Jakarta Pusat Clinical Laboratory in 2019

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Abstract: Eye fatigue is intensive stress on eye functions such as the accommodation of the eye muscles in work that requires careful observation, or the retina as a result of contrast inaccuracies. Eye fatigue can cause physical disorders such as headaches, double vision, glare at night, red eyes and various other vision problems. The purpose of this study was to analyze the factors associated with eye fatigue. This research was conducted with quantitative research methods with a cross-sectional study design using primary data from measurements of light intensity, visibility, interviews, and questionnaires to 53 workers. The research sample was workers in the TQA, Finance and HR departments who met the inclusion and exclusion criteria. The dependent variables studied were complaints of eye fatigue and the independent variables were the lighting level, monitor duration, age, visibility and length of service. The results of the bivariate analysis showed a relationship between the intensity of lighting, the duration of use of the monitor, and the distance of the monitor with complaints of eye fatigue. Companies are advised to provide information on workers regarding eye fatigue, and workers are advised to rest their eyes from the monitor's view every 20 minutes for 20 seconds.

1 INTRODUCTION

The use of computers throughout the world has increased from time to time. With a computer, work can be done easily and quickly. But the use of computers also has an effect on health. The use of computers can cause stress, as found by NIOSH (The National Institute of Occupational Safety and Health). NIOSH found that computer operators have higher stress levels compared to other jobs (Djunaedi, 2003).

The computer is one of the working tools used to assist workers in processing data and storing data, this computer also has an impact on users such as complaints of eye fatigue and eye refraction abnormalities. (Komariah & Wahyu 2014). Tired, tense or aching eyes are disturbances experienced by the eyes because their muscles are forced to work hard especially when they have to look at close objects for a long time. The eye muscle itself consists of three muscle cells, namely the external muscle that regulates the movement of the eyeball, the ciliary which functions to focus the lens of the eye and the iris muscle which regulates light into the eye. All activities related to the coercion of these muscles to work hard can make the eyes tired (Santoso, 2004).

Complaints of eye fatigue is a symptom that is often found due to continuous eye interaction with the use of computers. The use of a computer that is done for a long time will make the eyes tired and dry because the eyes continue to be used to view the monitor screen. To prevent this, we need to pay attention to ergonomic visuals in using computers such as distance from the eye to the monitor screen, room lighting and the position of the monitor to the eye so that workers get visual comfort when doing their work (Affandi, 2005).

According to the WHO report (2012), 285 million people suffer from visual impairment, of which 39 million have blindness and 246 million have low vision. Ninety percent of vision problems occur in developing countries. In general, refractive disorders that cannot be corrected (nearsightedness, farsightedness, and astigmatism) are the main causes of visual impairment, while cataracts are the main cause of blindness in middle and low income countries (WHO, 2012). Eighty

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percent of vision problems can actually be prevented and treated.

The Professional Services Manager of the Australian Optometric Association stated that complaints of eye fatigue, vision problems, and poor health worsen as long as we continue working long hours and depend on the computer. The office worker group is one of the highest risk categories for complaints of eye fatigue, some studies indicate that 35–48% of office workers suffer from this problem (Hana, 2008).

In Indonesia, Complaints of eye fatigue are one of the symptoms that are often found because of continuous eye interaction with the use of computers. The results of research conducted at the "X" Hospital in 2004 obtained the prevalence rate of Complaints of eye fatigue in computer workers by 95.8% (Fauziah, 2004).

The impact of complaints of eye fatigue can cause physical disorders such as headaches, double vision, glare at night light, red eyes, inflammation of the lining of the eye, reduced eye acuity and various other eye health. With no occurrence of illness and accidents due to work, it means there is no absenteeism of the workers. The absence of absenteeism (or the low absenteeism rate) and the increasing health status of workers will obviously increase efficiency, which leads to increased company profits (Notoatmodjo, 2011).

The results of research conducted by Hijriani (2018) showed that there was a significant relationship between complaints of eye fatigue, computer use duration, the distance of vision to the monitor, and lighting intensity while age had no significant relationship to complaints of eye fatigue. Another study conducted by Septiansyah (2014) showed that there was a significant relationship between complaints of eye fatigue with abnormalities of refraction, monitor distance, duration of computer use, and lighting levels. A similar study conducted by Sofiati et al (2011) showed that there was a significant relationship between complaints of eye fatigue and length of service. Similar research conducted by Nourmayanti (2010) shows that there is a significant relationship between complaints of eye fatigue with age and lighting levels.

PT. X in Central Jakarta is one of the companies engaged in laboratories. The company consists of offices and laboratories. Where the Office is the management part which consists of Finance, TQA, marcorp, marcomm, legal and others, then the laboratory is a part of doing laboratory inspection work. In its work activities, especially the Office of Finance, HRD and TQA cannot be separated from the use of computers. Based on a preliminary study of the Office of 24 people who were interviewed through a questionnaire 20 people (83%) had complaints of eye fatigue complaints and 4 people (17%) had no complaints of eye fatigue complaints. Based on these problems, researchers want to find out what are the factors associated with complaints of eye fatigue in the Office of the clinical laboratory company at PT. X Central Jakarta in 2019.

1.1 Eye Fatigue

Eye fatigue or asthenopia according to Medical Science is a symptom caused by the excessive effort of the vision system that is in an imperfect condition to obtain visual acuity. Meanwhile, according to Henny (2001) eye fatigue arises as intensive stress on eye functions such as on accommodation muscles in jobs that need careful observation or to the retina as a result of inaccurate contrast.

1.2 Lighting Intensity

Suma'mur (2002) states that good lighting allows workers to see objects that are done clearly, quickly and without unnecessary efforts. In addition, poor lighting can result in eye fatigue with reduced work efficiency. Eye fatigue is caused by stress that occurs in vision function. Stress in the muscles that function for accommodation can occur when a person tries to look at small objects and close distances for a long time. In such conditions, the eye muscles will work continuously and be more forced. The tension of the accommodating muscles (corpus ciliary) is greater so that there is an increase in lactic acid and as a result, there is eye fatigue, stress on the retina can occur if there is excessive contrast in the field of vision and long observation time.

1.3 Monitor Usage Duration

Seeing for a long time at risk of tired eyes or asthenopia (Afandi, 2002). Eye fatigue is the strain on the eyes and is caused by the use of the sense of sight at work that requires the ability to see for long periods of time and is usually accompanied by uncomfortable vision conditions (Pheasant, 2016). Eye fatigue caused by prolonged use of the computer or Computer Vision Syndrome will appear after 4 hours or more exposure to the monitor screen light. The longer the exposure will have an impact on eye health such as tired eyes, headaches, blurred vision, dry eyes, sore eyes, burning eyes, eyes

become sensitive to light, double vision, pain in the neck and back, complaints of dizziness, nausea and vomit. (Miller, 2004).

1.4 Age

According to Guyton (2007), states that accommodation power decreases at the age of 45-50 years. A person is said to have a normal eye health condition at the age of 20-45 years, while at the age of 45-50 years the eye accommodation power will decrease or in other words, health conditions eyes will decrease (Ilyas, 2003).

1.5 Visibility with Monitor

Eyes should be facing towards the monitor. Head not too close or too far away from the monitor because it will quickly make the eyes tired. For that, you can adjust the position of the monitor or can also adjust your seat. Good eyesight around 20 inches (50 cm) (Maryono & Istiana, 2007). The screen filter is needed so that the radiation from the monitor does not directly affect the eyes so that eye health is maintained. The light fan's dark color settings on the monitor must also be precise, and the monitor's resolution needs to be considered. Try to adjust the color not too bright or too dark. Provide adequate lighting in the computer room so that the eyes do not get tired. If this is the case, the health of every computer user will be maintained (Sunarto, 2007).

1.6 Working Time

The working period is a period of time or length of time when the work works somewhere (Tarwaka, 2010). The length of work is one of the tools that can influence one's ability, by looking at the length of his work we can find out how long someone has worked and we can assess the extent of his experience (Bachori, 2006). Siagian (2008) states that the work period shows how long a person works in each job or position. Kreitner and Kinicki (2004) state that long work periods will tend to make an employee feel more comfortable in an organization, this is due to the fact that they have adapted to the environment long enough so that a worker will feel comfortable with his work. The working period according to Hani (2007) is categorized into two, covering the working period of the new category ≤ 3 years and the working period of the old category> 3 years.

2 METHODOLOGY

This type of research is quantitative with a cross-sectional design. Data collection with primary data from questionnaires and measurements. The population is office workers (Finance, TQA, and HR) in the clinical laboratory of PT.X. The sampling technique was simple random sampling, which amounted to 53 respondents with the inclusion criteria of employees who were willing to become respondents and did not have eye refraction abnormalities.

3 RESULT AND DISCUSSION

3.1 Univariate Analysis

Table 1: A description of eye fatigue in office workers at the Central Jakarta PT.X Clinical Laboratory 2019.

Eye Fatigue	Frequency	Percentage
Eye fatigue	42	79,2%
No Eye fatigue	11	20,8%
Total	53	100%

Based on table 1. it can be seen that the highest proportion of workers who experience eye fatigue are found in respondents who experience eye fatigue that is there are 42 respondents (79.2%). This is in line with research conducted by Nourmayanti (2009) in the telecommunications industry showing that the proportion of workers who experience eye fatigue complaints is greater than the proportion of workers who do not experience eye fatigue complaints that is 90.2% as many as 46 respondents. This can be seen from the duration workers who use computers can reach more than 5 hours/day. To reduce the appearance of eye fatigue due to computer use, (Swamardika, 2001) recommends "3B" namely Blink, Breath, and Break. Blink is winking, under normal circumstances, one minute will blink 12-15 times. The winking frequency will increase when in a state of happiness, aroused, talking, doing physical activity. The frequency decreases when reading, thinking, and concentrating at work. Seeing without blinking will tire your eyes. By blinking the eyes will rest even for a moment and there will be an eye cleansing process and a process of re-wetting the eyes so that vision will remain clear. Because this blinking process is an automatic process, it must be

realized at an early stage that winking is important. Breath is breathing. If under stress, there is a tendency to hold your breath. This situation will cause the muscles to tense up unnoticed. Breathing correctly and regularly will cause muscle relaxation including eye muscles. The break is a break. If work on a computer requires high concentration, then a short break is needed to allow recovery time. In practice at work, the workers do not take a break from the eye, so it is necessary to take a break in the eye.

Table 2: A description of monitor lighting Intensity at Office workers at PT.X Clinical Laboratory in 2019.

Monitor lighting Intensity	Frequency	Percentage
Risk	38	71,7%
No Risk	15	28,3%
Total	53	100%

Based on table 2. it can be seen that the highest proportion of lighting levels in the monitor area is found by respondents with lighting levels in the risk category that is as many as 38 respondents (71.7%). This result is in line with Nourmayanti Research (2009) it is known that lighting levels in desk workers <300 lux as many as 94.1% workers. Whereas the lighting intensity of desk workers which is lux 300 lux is only 5.9%. When taking measurements, there were several respondents who claimed that they were comfortable being too close to the monitor, this was due to the lack of light in the monitor area, so the eyes needed to get closer to getting information from the computer clearly so that the eyes worked harder. The lighting in the monitor area is still lacking so it needs to be assisted with lighting on the monitor so that information from the monitor can be well received by the eye. Infield conditions there are no broken room lights but the lights used for large rooms need to be added so that each table gets bright lighting. Control that can be done on less lighting is to increase lighting according to a minimum standard of 300 lux and measuring the intensity of lighting in the work area monitor workers.

Table 3: description of the duration of the use of monitors in Office workers at the PT.X Clinical Laboratory in 2019.

Duration of The Use of Monitors	Frequency	Percentage
Risk	45	84,9%
No-Risk	8	15,1%
Total	59	100%

Based on table 3. it can be seen that the highest proportion of the duration of use of the monitor is found in respondents with the duration of the use of monitors at risk (duration> 4 hours) ie there are as many as 45 respondents (84.9%). This result is in line with research (Sya'ban and Riski, 2014) where the percentage of workers exposed to ≥ 4 hours is greater than 27 people (81.8%) than workers who experience a long duration of exposure <4 hours ie 6 people (18, 2 %). The work in PT.X clinical laboratory requires workers to do many tasks that are required to be completed and reach the target so that they cannot be delayed in doing so, there are some workers who have more working hours (overtime) so that the duration of work becomes longer according to the work and demands each position, the thing that must be done by workers is to increase the frequency of rest so that the eyes become relaxed and comfortable to return to work, workers can reduce exposure to the computer by doing regular eye rest so that there is a time lag of the eye muscles to rest.

Table 4: A description of Age Office Worker at PT.X Clinical Laboratory in 2019.

Age	Frequency	Percentage
Risk	7	16,2%
No Risk	46	86,8%
Total	53	100%

Based on table 4. it can be seen that the highest proportion of age is found in respondents who are not at risk (age <45 years), there are 46 respondents (86.8%). This result is in line with research (Nourmayanti, 2009) where it is known that the majority of workers have age <45 years which is as much as 94.1% of workers. Whereas workers who have ≥ 45 years of age are only 5.9% of workers. At the PT.X clinical laboratory, many workers are still young or under 45 years because more workers have resigned before entering retirement. Recruitment activities are carried out when new

employees enter the contract system and if the employee meets the needs of the company, OJT (On the Job Training) will be conducted, the appointment for OJT is no longer than 1 year from the employment contract.

Table 5: A Description of Visibility with Monitors on Office Workers at the Central Jakarta PT.X Clinic Laboratory in 2019.

Visibility	Frequency	Percentage
Risk	18	34%
No-Risk	35	66%
Total	53	100%

Based on table 5. it can be seen that the highest proportion of visibility is found in respondents with visibility that is not at risk that there are as many as 35 respondents (66%). The results of this study are in line with (Supriati, 2008) where the highest proportion of respondents is according to the monitor's viewing distance, which is 19 respondents (86%) Workers in PT.X clinical laboratory companies in using monitors are in accordance with safe viewing distances standardized that is not less than 50 cm. This has been noted by facility service in companies where monitors are given a sufficient distance from the monitor user's desk so that more monitor users are at a standard distance.

Table 6: A Description Working Period in Office workers at the PT.X Clinical Laboratory in 2019.

Working Period	Frequency	Percentage
Risk	30	56,4%
No Risk	23	43,4%
Total	53	100%

Based on table 6 it can be seen that the highest proportion of tenure is found in respondents with tenure at risk, namely as many as 30 respondents (56.4%). The results of this study are in line with Fitri (2018) where the highest proportion of working years is risky working years (> 3 years), which is 42 respondents (76.4%). The working period is a period of time or the length of time the workforce works is a place. The work period will give a positive influence on performance if the longer the work period, the workforce will be more experienced in carrying out their work. Conversely, work tenure will have a negative effect if with increasing work tenure, workers experience losses such as work-related health problems (Aditya, 2010). The workers in the clinical laboratory company PT. X many workers who work more than 3 years or the same as 3 years this is because the company gives sufficient attention to employees and get more rights than other companies so that many choose to continue working at the PT.X Laboratory company in the long term. more than 3 years.

3.2 Bivariate Analysis

From table 7. shows that the respondents who experienced the highest level of lighting risk were the proportion of respondents who worked with complaints of eye fatigue as many as 37 respondents (97.4%), the workers with lighting levels were not at the highest proportion ie workers who did not complain of fatigue eyes as many as 10 respondents (66.7%). In the results of the crosstabulation, there is one cell with an expected count value <5 so that the p-value is read with Fisher's Exact and a value of p = 0,000 (p-value <0.05), which means statistically shows a relationship between the level of monitor lighting with eye fatigue at office workers at the PT.X Clinical Laboratory in 2019. Results of PR with 95% CI obtained 2.9 results so that workers who have lighting levels at risk (<300 lux) will experience 2.9 at risk for experiencing eye fatigue compared with workers with lighting levels not at risk (> 300 lux).

Good lighting according to Suma'mur (2013) is lighting that allows workers to easily see objects around them clearly without being accompanied by unnecessary efforts. Well-arranged and sufficient lighting will help to make the work environment pleasant and comfortable so that it can maintain the morale of the employees and increase productivity. Each job has different levels of lighting intensity, depending on the type and nature of the work. If the lighting intensity is less, it can cause visibility and eyestrain problems. (Tarwaka, 2011).

The workers at the PT.X clinical laboratory have provided good lighting in the room, but in the work, area using a monitor the level of lighting does not meet this standard considering the light level on the monitor each worker has their respective settings according to the comfort of workers and socialization related to the level of lighting has not been given so that the eye's vision area on the monitor does not get enough light, in the end, the eye works harder to get information on the monitor screen, this causes the eyes to get tired quickly. Suggestions for companies to provide socialization related to the use of monitors, especially at the level of monitor lighting so that workers are able to work comfortably and avoid complaints of eye fatigue.

Table 7: The Relationship Between Lighting Levels and Eye Fatigue for Office Workers at PT.X Clinical Laboratory in Central Jakarta in 2019.

Lighting Levels	Eye Fatigue				Total		P-value	PR (95% CI)
	Yes		No					
	N	%	N	%	N	%		
Risk	37	97,4	1	3,6	38	100	0,000	2.921 (1.425-5.987)
No Risk	5	33,3	10	66,7	15	100		

Table 8: Relationship Between Monitor Usage Duration and Office Workers' Eye Fatigue in PT.X Clinical Laboratory 2019.

Monitor Usage Duration	Eye Fatigue				Total		P-value	PR (95% CI)
	Yes		No					
	N	%	N	%	N	%		
Risk	39	86,7	6	13,3	45	100	0,006	2,3 (0,938-5,695)
No Risk	3	37,5	5	62,5	8	100		

From table 8. above shows that the respondents with the duration of use of the monitor were at the highest proportion, namely the respondents who complained of eye fatigue as many as 39 respondents (86.7%), the respondents with the duration of using the monitor were not at the highest proportion, namely the workers who did not complain eyestrain is as many as 5 respondents (62.5%). In the results of the crosstabulation, there is one cell with an expected count value <5 so that the p-value is read with Fisher's Exact and a value of p=0.006 (p-value <0.05), which means that statistically shows a relationship between the duration of monitor use and eye fatigue in office workers at the PT.X Clinical Laboratory in 2019. The results of PR with 95% CI were obtained at 2.3 so that workers who have a duration of use of the monitor are at risk (> 4 hours) will experience 2.3 are at risk for experiencing eye fatigue compared to workers with a duration of use a monitor that is not at risk (<4 hours).

The duration of the use of the computer is no more than 4 hours a day. If it exceeds this time, the eyes tend to experience refraction. In this case, it is recommended that the National Institute for Occupational Safety and Health (NIOSH) VDT Studies and Information take a 15-minute break from using the computer for two hours. Frequency of regular breaks is useful to cut the fatigue chain so that it will increase comfort for computer users (Murtopo and Sarimurni, 2005). Seeing for a longtime risk of tired eyes or asthenopia (Afandi, 2002). Eye fatigue is tension in the eye and is caused by the use of the sense of sight at work that requires the ability to see for long periods of time and is usually accompanied by uncomfortable visual conditions (Pheasant, 2016). Complaints of eye fatigue caused by prolonged use of the computer or Computer Vision Syndrome will appear after 4 hours or more exposure to the monitor screen light. The longer the exposure will have an impact on eye health such as tired eyes, headaches, blurred vision, dry eyes, sore eyes, burning eyes, eyes become sensitive to light, double vision, pain in the neck and back, complaints of dizziness, nausea and vomit. (Miller, 2004).

At the current PT.X Clinical Laboratory, demanding workers to perform many tasks that are required to be completed and reach the target so that it cannot be delayed in doing so, some workers have more work hours (overtime) so that the duration of work becomes longer according to work and demands each position. The thing that must be done by workers is to increase the frequency of rest so

that the eyes become relaxed and comfortable to return to work, workers can reduce exposure to the computer by taking regular eye breaks so that there is a pause in time for the eye muscles to rest. To reduce the appearance of computer fatigue, ophthalmologists recommend rules 20 - 20 - 20. This rule recommends that every 20 minutes work in front of the computer, workers must take a break of at least 20 seconds by looking at an object or object about 20 feet (20 feet) =6 meters (Flammini, 2013).

From table 9. Below shows that the highest proportion of age-at-risk workers is 5 respondents (age> 45 years) complaining of eye fatigue (71.4%), and the highest proportion of respondents not at risk are workers complained of eye fatigue of 37 respondents (age <45 years) (68.6%). In the results of the crosstabulation, there is one cell with an expected count value <5 so that the p-value is read with Fisher's Exact and a p-value = 0.626 (Pvalue> 0.05), which means statistically shows there is no relationship between age and eye fatigue in workers office at PT.X Clinical Laboratory in 2019. Results of PR with 95% CI showed a result of 0.88 (<1) with a p-value of 0.62 (<1) So that age at risk of workers is a protective factor from eye fatigue.

According to Guyton (2007), states that accommodation power decreases at the age of 45 - 50 years. Someone said to have normal eye health conditions at the age of 20-45 years, while at the age of 45-50 years the eye accommodation power will decrease or in other words, the condition of eye health will decrease (Ilyas, 2003). Suma'mur (2013) believes that poor lighting can result in eye fatigue with reduced power and work efficiency. Distance monitor can also affect the occurrence of eye fatigue. The results of the study by Venkatesh, et al (2016) showed that workers who use computers with a distance of <25 inches or equivalent to <50 cm experience eyestrain as much as 34.7% of workers. In addition, it can be influenced by the long duration of computer use. Research by Berliana and Fauzia (2017) at Bangko City Bank on Factors Associated with Complaints of Eye Fatigue in Computer User Workers, showed complaints of eye fatigue as much as 96.3% of workers who worked at risk with a duration of computer use> 4 hours.

The absence of a significant relationship between the two age variables and eye fatigue complaints in this study could be due to the fact that most of the workers were young (<45 years) so the risk was lower for old age (> 45 years) to get a higher proportion of eye fatigue complaints.

Table 9: Relationship Between Age and Office Workers' Eye Fatigue at PT.X Clinical Laboratory in 2019.

Age	Eye Fatigue				Total		P-value	PR (95% CI)
	Yes		No					
	N	%	N	%	N	%		
Risk	5	71,4	2	28,6	18	100	0,626	0,888 (0,544-1,499)
No Risk	37	68,6	9	19,6	46	100		

Table 10: Relationship Between Monitor Visibility and Office Workers' Eye Fatigue at PT.X Clinical Laboratory 2019.

Monitor Visibility	Eye Fatigue				Total		P-value	PR (95% CI)
	Yes		No					
	N	%	N	%	N	%		
Risk	18	100	0	0	18	100	0,010	1,458 (1,165-1,825)
No Risk	24	68,6	11	19,6	35	100		

Table 11: Relationship Between Working Period and Eye Fatigue in Office Workers at PT.X Clinical Laboratory in Central Jakarta in 2019.

Working Period	Eye Fatigue				Total		P-value	PR (95% CI)
	Yes		No					
	N	%	N	%	N	%		
Risk	24	80	6	20	30	100	1,000	1,022 (0,773-1,353)
No Risk	18	78,3	5	21,7	23	100		

From table 10. shows that the respondents with monitor visibility were at the highest proportion, namely workers who complained of eye fatigue, 18 respondents (100%), while those with visibility were not at risk, the highest proportion of workers who complained about eye fatigue were 24 respondents (68.6%). In the results of the crosstabulation, there is one cell with an expected count value <5 so that the p-value is read with Fisher's Exact and a value of p = 0.01 (p-value <0.05), which means that statistically shows the relationship between the monitor's visibility and fatigue eyes on office workers at PT.X Clinical Laboratory in 2019. Obtained PR results (95% CI) 1.4, so that workers who have visibility at risk (<50 cm) will experience 1.4 times the risk of experiencing eye fatigue compared with workers whose duration of monitor use is not at risk (> 50 cm).

Efforts that can be done in order to prevent the occurrence of complaints of eye fatigue is to pay attention to the distance of the eye to the object seen when the eye is used to see from close range, the eye is forced to do the process of accommodation and convergence. Accommodation is the process when the eye changes or adjusts the focus to see things from a certain distance so that the object being seen can be focused, a set of convergence is a movement that is done in order to avoid the occurrence of double vision. so that the further the visibility of the meta-object the possibility of eye irritation due to accommodation and excessive conference will be smaller. Another effort related to the monitor itself is to flatten the monitor screen in such a way (Wardhana, 1997).

When using a computer, the eye is forced to focus on the computer. A computer user must constantly focus his eyes to keep the image sharp (Roestijawati, 2007). There were 18 respondents in the clinical laboratory of PT.X whose visibility was too close then complained about complaints of eyestrain, while the computer's arrangement was set so that it was far from the eyes with a monitor. This is due to the lack of lighting so the eyes must approach the monitor to get information on the monitor screen so that the close distance causes complaints of eye fatigue. Computer worker workers should pay more attention to eye distance when using a computer to not get too close, at least 50 cm. Then it is necessary to do promotions related to the visibility of the computer's eyes through stickers, posters and others.

From table 11. above shows that the workers with tenure at risk were the highest proportion, namely in workers who complained of eye fatigue, 24 respondents (80%) and those with tenure who were not at risk the highest proportion, among workers who complained of eye fatigue as many as 18 respondents (78.3%). In the results of the crosstabulation, there is one cell with an expected count value <5 so that the p-value is read with Fisher's Exact and obtained a value of P = 1,000 (Pvalue> 0.05), which means that statistically shows there is no relationship between work period and eye fatigue in office workers at PT.X Clinical Laboratory in 2019. Obtained PR results (95% CI) 1.02 So that workers who have no risk of the working period (<3 years) will experience 1.02 times the risk of experiencing eye fatigue compared to workers with the duration of use of the monitor at risk (> 3 years).

The working period is a period of time or the length of time that the workforce works in one place (Tarwaka, 2010). The length of work is one of the tools that can influence one's ability, by looking at the length of his work we can find out how long someone has worked and we can assess the extent of his experience (Bachori, 2006). Siagian (2008) states that the work period shows how long a person works in each job or position. Kreitner and Kinicki (2004) state that long work periods will tend to make an employee feel more comfortable in an organization, this is due to the fact that they have adapted to the

vironment long enough so that a worker will feel comfortable with his work. Other causes are also due to the policies of agencies or companies regarding life insurance in old age.

In the PT.X Clinical Laboratory company in the results of the chi-square test found no relationship of work period with complaints of eye fatigue compl-aints, but in the proportion found 24 respondents who experienced complaints of eye fatigue in the working period category of more than 3 years, so this situation needs to be considered. The existence of workers with a work period of more than 3 years who did not complain about eye fatigue complaints occurred because of the long use of the respondents there were less than 4 hours so minimized to complain of eye fatigue. Then this relates to the age of the worker where the highest proportion is found at a young age or not at risk so that at a young age the work period is still classified as not at risk of being affected by eye fatigue so this causes no meaningful relationship at work with eye fatigue.

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

1. The highest proportion of workers who experience eyestrain is workers who do not experience eyestrain complaints
2. The highest proportion of lighting levels in the worker's monitor area is found in respondents with lighting levels at risk.
3. The highest proportion of the duration of monitor use is found in respondents with the duration of monitor use at risk.
4. The highest proportion of age found in respondents with age who are not at risk.
5. The highest proportion of visibility is found in respondents with visibility that is not at risk.
6. The highest proportion of work period is for respondents with a risky work period.
7. There is a relationship between monitor lighting levels and eye fatigue in Office workers at PT.X Clinical Laboratory in 2019.
8. There is a significant relationship between the duration of monitor use with eye fatigue in Office workers at the PT.X Clinical Laboratory in 2019.
9. There is no significant relationship between age and eye fatigue of Office workers at PT.X Clinical Laboratory in 2019.
10. There is a relationship between monitor visibility and eye fatigue in Office workers at the PT.X Clinical Laboratory in 2019.
11. There is no relationship between work period with eye fatigue in Office workers at PT.X Clinical Laboratory in 2019.

4.2 Recommendations

1. Suggestions for companies to provide information related to eye fatigue.
2. Suggestions for companies to be able to check lighting intensity routinely in the work area of workers' monitors.
3. Suggestions for workers should turn away from the computer at least every 20 minutes and close a distant object (at least 20 feet or 6 meters) for 20 seconds.
4. Suggestions for workers to maintain visibility on the monitor screen that is at least 50 cm from the monitor.

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