

FACTORS AFFECTING DRY EYE SYMPTOMS AMONG MEDICAL STAFF IN CHONGQING HOSPITALS, CHINA

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Abstract

There is a high prevalence of dry eyes in the Chinese population, affecting 21-30% of the population. It is believed that many factors contribute to dry eye disease. The majority of medical staff work indoors with air conditioning and are employed long hours. Furthermore, some of them need to work in front of digital device to dealing with computer, smart phone, these factors could lead them more easily to having Dry Eye Disease (DED). This study evaluates the prevalence of dry eye symptoms among medical staff in Chongqing, China. This study adopted a quantitative Randomized method and involved medical staff from Chongqing, China. participants were asked to complete an online questionnaire survey in November 2023. The SPSS will used to analyse the data. A total of 325 participants participated in this study. In this study, 71% of participants feel eye fatigue, 56% have the feeling of dryness, 50% of participants feel itching, 24% feel gritty, 23% feel blurry. The value of the correlation coefficient between feeling dry eyes symptoms and feeling eye fatigue was 0.673 which was significant at 0.01 level. The correlation coefficient between dry eye sensation and gender was 0.050, with a p-value of 0.373 > 0.05. The correlation coefficients of screen time, myopia, astigmatism, and dry eye were 0.147, 0.200, and 0.116 respectively. It shows that more than half of the medical staff participants feel eye fatigue, dryness, itching, and dry eye symptoms. Additionally, the indoor environment may be a risk factor for dry eye symptoms. There is a need to pay more attention to dry eye symptoms in all the hospitals in Chongqing province, the government, and the medical staff themselves.

Keyword: Dry eye symptoms, medical staff, refractive error, dryness, eye fatigue, screen time.

INTRODUCTION

With an estimated global prevalence ranging from 5% to 50%, dry eye disease is a common multifactorial disease characterized by loss of tear film homeostasis. In ophthalmology hospitals and clinics, Dry Eye Disease (DED) is a common diagnosis (Sheppard et al., 2023). Today, it has become a global public health problem. It leads to symptoms of ocular pain, discomfort, and visual which can greatly impact the quality of life (QOL) (Pouyeh et al., 2021). Dry Eye Disease is a multi-factorial ocular surface disease causing ocular symptoms. It can be caused by different in screen time, environment, age, regions and other factors (TFOS DEWSII, 2017). Furthermore, the prevalence of dry eye disease (DED) is among the top ocular diseases found in the world today. The increasing use of information technology and rapid aging have contributed to a rise in dry eye disease (DED) in China (Song P et al., 2018).

1.1 Problem Statement

Research is focused more on classification, cases, students, armed police, and other factors than on whether the occupation of medical staff is associated with a high prevalence of dry eye disease. There is no dry eye data for medical staff. Furthermore, they work indoors with air condition, work over time and they need to work in front of digital device to dealing with computer, smart phone. These factors could lead them more easily to having Dry Eye Disease (DED). There are many type symptoms

of dry eye, and there is limited data on which type is more common. Symptoms of dry eye include photophobia, grindiness, soreness, and burning, blurriness, congestion, inflammation, puffiness and swollenness, fatigue and itching, dryness, windy conditions, and secretions that stick. In this study, we examined which types of symptoms are most common.

PURPOSE

This study's overarching goal is to investigate the variables influencing the dry eye syndrome among medical staff in chongqing hospitals, china, which can support its long-term growth in China. The following are the precise goals:

- To determine the prevalence of dry eye symptoms among medical staff in Chongqing, China.
- To compare differences between genders, ages, screen time and dry eye symptoms among medical staff in Chongqing, China.

LITERATURE REVIEW

The number of women is higher than the number of men and increases with age. According to a recent study based on a population of adults over 50, 11.3% have the condition, and 22.8% have the condition among women over 75 (Farrand et al., 2017). But it is not that the prevalence of older dry eye is definitely higher, and the prevalence of dry eye is also related to other pathogenic factors, and age is only one factor. For

example, the prevalence of dry eyes among senior three students in Shunde District, Foshan city was 41.6%, while the prevalence of senior three students was too high. Deeper myopia less outdoor activities, longer smartphone use, and higher the prevalence of dry eye disease (Duan Yongbo et al., 2020). Because of the high learning pressure, long close learning time and long electronic screen time, the prevalence of dry eyes among third-grade students reached a high rate of 41.6%, which suggests that the love of eye care for children and teenagers is not only very important for the management of myopia, but also for the management of dry eyes. (Mineshita, Y. et al., 2021).

It takes a lot of time and effort to treat dry eye, which is a multifactorial, chronic disease. It has been shown in previous studies that gender and age affect the prevalence and severity of dry eye. Gender is a significant risk factor for dry eye, with women having a significantly higher prevalence than men. According to research we have found that in addition to some biological factors (e.g. hormones) that affect both men and women themselves, there are some comorbidities that increase the risk of dry eye in women, such as autoimmune diseases. Because dry eye is a multifactorial disease, we need to evaluate the systemic and overall effects of dry eye in the treatment of dry eye. In addition, women with dry eye may face a high burden of comorbidities. Women are diagnosed with dry eye at an earlier age, and women are more likely to develop severe dry eye than men. Therefore, earlier diagnosis of dry eye in women may significantly improve their quality of life (Matossian et al., 2019).

Over the past few years, dry eyes have been prevalent in different groups in different parts of the world. Moreover, the Chinese government reports an increase of 10% per year in dry eye patients in China. Furthermore, among the 650 patients with dry eye disease in Shunde District, Guangzhou Province, with a prevalence rate of 23.4%, among which the traffic police, patrol police and internal police were significantly higher than those of public security police and criminal police (Li Zhihui et al., 2013).

There is always a connection between screen time and Video Terminal Syndrome (VTS). This condition is characterized by itching, redness, burning, tearing of the eyes, headaches, double vision, eye strain, and blurred vision. In individuals who spend more than four hours per day on video devices and screens, Video Terminal Syndrome is significantly more prevalent. It is also important to note that personal, environmental, and ergonomic factors are also relevant as well as the long-term use of video display terminals after work hours, as well as the use of mobile phones after work hours. (Kamøy et al., 2022).

It has been shown that patients who take glaucoma medication that contains benzalkonium chloride (BAK) are also at risk of dry eye; oral corticosteroids, antihistamines, antidepressants, and anti-anxiety medications, and antidepressant medications were also at risk. Low risk was associated with angiotensin-converting enzyme inhibitors. As part of the Women's Health Study, hormone replacement therapy, and in particular, estrogen use alone, increased the risk of clinically diagnosed dry eye disease or severe symptoms among 25,665 postmenopausal women. This relationship was also found between botulinum toxin injection and dry eye disease (IY Hasan, 2022).

With the increasing prevalence of dry eye disease and becoming an increasingly common disease, along with the advancement of medicine, medical workers have not given up on research on dry eye. In 2011 and 2015, in the statistics of the prevalence of early dry eye disease, it was concluded that: Dry Eye Disease's (DED's). The incidence and prevalence of dry eye disease are

higher in Asia than in Europe and North America, suggesting cultural or racial factors are involved (Uchino, M. et al., 2011; Tan, L.L. et al., 2015).

A study published in 2016 revealed that 47% of respondents reported seasonal effects on DED symptoms, and 15% reported none. Patients reported that wind was the most common cause of dry eye symptoms, followed by sunshine (60%) and heat (42%). Cold weather also worsened dry eye sensations according to 34% of patients. It was reported that 51% of patients had dry eye complaints during the summer and 43% during the winter. There is a high prevalence of seasonal and weather-related enhancements in dry eye sensations and symptoms, with only 8% of respondents claiming they were unaffected.

Changes have effects on the results of dry eye examination. The stability of tear film is the best in summer, followed by spring, autumn and winter. ITMH are higher in spring and summer, lower in winter and autumn (Zhang et al., 2018). This seasonality of ocular surface disease should be kept in mind when considering diagnosis and treatment and examination of the ocular surface. Environmental characteristics such as heat, cold and wind were the most frequently cited triggers, while the main seasons for dry eye complaints in Europe were winter and summer (Gysbert et al., 2016).

The prevalence of dry eyes in China has also been studied, because college students generally have a lot of screen time, are more concentrated, and cooperate more, so relevant data can be obtained relatively easily. For example, the dry eye and eye surface disease index of students in a university in Shenzhen was surveyed, and the disease risk rate was 17.17%. Among them, 14.40% were boys and 19.02% were girls, with no significant gender difference. The survey results show that the causes of college dry eyes include contact lens wearing, refractive surgery, eye medicine use habits and sleep quality (poor or staying up late), reflecting that the risk of dry eye disease among college students is above moderate, and refractive surgery and poor sleep quality or staying up late are the most common risk factors for dry eyes (Zhang Yanming et al., 2022). In addition, The prevalence of dry eyes among some college students in Beijing was 31.04% (Yin Lichun et al., 2020).

DISCUSSION

In previous studies, most researchers have concluded that gender affects dry eye. In general speaking, the prevalence of dry eye is generally higher in women than in men, whereas in the current study the prevalence of dry eye symptoms was no significant relationship with gender. The effect of gender on dry eye symptoms will need to be further validated in the future.

In contrast, previous studies have found that dry eye prevalence increases with screen time. In the current study, however, perhaps due to the large number of factors affecting dry eye in medical personnel, no positive correlation was derived between screen time and dry eye symptoms prevalence.

In previous studies of dry eye risk factors, only a small number of researchers have suggested that refractive error also affects the prevalence of dry eye compared to other influencing factors such as age and gender. In the present study, we concluded that the degree of refractive error and dry eye OSDI scores were positively correlated, and the OSDI scores tended to increase with increasing myopia or hyperopia, so we need to further determine whether refractive error is one of the risk factors for dry eye in the future.

Generally, the incidence of dry eye increases with age, but this was not the case in this study. This may be due to the fact that

only two of the participants were over the age of 40, i.e. there was not a sufficient number of older people.

Researchers believe that common sense dictates that the more aware a person is of eye care, the lower their risk of developing dry eye. Because dry eye has a very wide range of symptoms, in this study, the OSDI score was used to provide feedback on the degree of dry eye symptoms. Instead, the current study found no correlation between eye care awareness and OSDI scores for dry eye.

CONCLUSION

There was no significantly relationship between gender and dry eye symptoms. What is more, there is a negative correlation between age and dryness, in addition, age and sensitivity to light were negatively correlated. There is no significant relationship between screen time and average OSDI score. The diopter of myopia and hyperopia are positively correlated with the average OSDI score. Additionally, the astigmatism is not related to the average OSDI score among medical staff in Chongqing. 46% of participants frequently or constantly feel tiredness, 42% of participants frequently or constantly feel dryness, 39% of participants frequently or constantly feel sensitive to light and itching, 38% of participants frequently or constantly feel redness, gritty, inflammation. There was no significantly relationship between gender, screen time, astigmatism, eye care awareness and OSDI score. What is more, there is a negative correlation between age and dryness, in addition, age and sensitivity to light were negatively correlated. The diopter of myopia and hyperopia are positively correlated with the average OSDI score.

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