Original Article

The Impact of Dry Eye Syndrome on Vision-Related Quality Of Life

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Abstract

Objective: To assess the extent to which dry eye syndrome Impacts the quality of life related to vision in patients.
Study design: It was a descriptive cross-sectional hospital-based study
Place and duration of study: The study was conducted at Ophthalmology Department of Holy Family Hospital from 1st July 2023 to 10th December 2023.
Material and Methods: The study was conducted among 50 patients diagnosed with dry eye syndrome. Patients completed the Ocular Surface Disease Index (OSDI) questionnaire,Patient Performa and underwent clinical assessments for dry eye syndrome severity. A Tear Film Breakup Time Test (TBUT) was performed to assess the level of dry eye.
Results: Dry eye syndrome significantly impaired quality of patients' life related to vision, with symptoms like blur vision, discomfort, watering and photophobia. Females (76%) were more affected than males (24%). OSDI scores show mild, moderate and severe dry eye. IT students, individuals were having high screen time, adults (aged between 40 to 55 years) and older individuals were affected mostly. Individuals with severe dry eye symptoms reported greater difficulty in daily activities such as reading, during driving, while using a computer or ATM machine and while watching television associated with more severity and decreased quality of life. Windy conditions and low humidity areas were also problematic for the dry eye patients.
Conclusion: OSDI Questionnaire shows that the dry eye syndrome significantly influences the quality of life related to vision for individuals, impacting their daily activities and emotional well-being. So, there is a need for comprehensive management strategies that address both the physiological symptoms and associated decline in quality of life. Further research should be conducted to develop targeted interventions and improve the overall well-being of individuals with dry eyes.
Keywords: Dry eyes, the quality of life, ocular discomfort, Ocular Surface Index.

1. Introduction

Dry eye syndrome, also known as keratoconjunctivitis sicca, is marked by an imbalance in the tear film, stemming from insufficient tear generation or heightened evaporation. This condition results in harm to the ocular surface located between the eyelids, causing various symptoms that suggest discomfort in the eyes. It is a prevalent ocular condition marked by insufficient moisture and lubrication on the eye's surface. The imbalance in the tear film, responsible for maintaining proper eye moisture, lubrication, and protection, is a key factor in its development. The clarity of the eyes relies on the integrity of the precorneal tear film, which comprises three essential layers: an outer lipid layer, a central aqueous layer, and an inner mucin layer. These layers are generated by the meibomian glands, lacrimal gland, and conjunctiva's goblet cells, respectively. Tears, essential for eye health and comfort, lubricate the eye's surface, nourish the cornea, and provide protection against infections. Disruptions in tear film production can lead to various symptoms associated with dry eye syndrome, affecting millions of individuals globally.

Dry eye syndrome can significantly affect vision-related quality of life by causing discomfort, blurred vision, and many other symptoms like itching, watering, etc. Common symptoms of dry eye syndrome include a gritty or sandy sensation, itching, burning, redness, and a feeling of dryness in the eyes. Individuals may also experience blurred vision, sensitivity to light or photophobia, watering, increased blinking rate and discomfort when wearing contact lenses.

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Factors causing dry eyes include including age, hormonal changes, certain medications, environmental conditions (such as dry or windy climates), excessive and prolonged screen use and underlying health conditions like arthritis or Sjögren's syndrome. Cataract and refractive surgery have the potential to trigger dry eye syndrome or, at the very least, symptoms similar to dry eye. Tear film consists of a complex mixture of water, oils, mucus, and antibodies. An imbalance in any of these components can lead to dry eyes for example insufficient oil production from the meibomian glands can cause tears to evaporate too quickly leading to dry eyes.

Ophthalmologists utilize a thorough eye examination to identify dry eye, utilizing assessments like the Schirmer Test and Tear Film Breakup Time Test (TBUT). The diagnostic procedure includes gathering a patient's medical history, evaluating symptoms, measuring tear production, and examining tear quality. Fluorescein and other special dyes may be employed to highlight any abnormalities on the surface of the eye. Additionally, surveys and dry eye index scores, such as the Ocular Surface Disease Index (OSDI) play a crucial role in detecting dry eye and gauging the success of therapeutic measures.

Management and treatment of dry eyes aims to alleviate symptoms and improve tear production. This can involve the use of artificial tears, lubricant eye drops, prescription medications, lifestyle modifications, and in some cases, procedures to block tear drainage or improve oil gland function. In cases where dry eye syndrome is linked to corneal complications, the application of topical antibiotics may be required. Managing Meibomian gland disease involves recommending eyelid hygiene, employing warm compresses on the lids, and considering the use of topical or systemic antibiotics such as doxycycline if necessary. Dry eye syndrome is frequently a persistent ocular condition that may demand continuous care and attention. While it may not be entirely curable, appropriate treatment can significantly improves signs, symptoms and enhance eye comfort.

Patients can take steps to prevent or reduce the impact of dry eye, such as using humidifiers, taking breaks during prolonged screen use, staying hydrated, and avoiding environments with high levels of air movement. Therefore, our focus on effectively addressing Dry Eye Disease (DED) underscores the importance of directing our endeavors towards developing preventative measures to reduce the overall consequences of the condition. These measures include primordial prevention to prevent the development of risk factors, primary prevention to hinder the onset of the disease, secondary prevention concentrating on early detection and treatment, and tertiary prevention aimed at minimizing complications and visually restoring individuals with DED.

Neglected or severe cases of dry eyes can result in various complications, including damage to the eye's surface, an elevated risk of eye infections, and, in certain instances, severe impairment of vision.

Dry eyes frequently lead to a burning sensation, causing discomfort, a gritty feeling, and challenges in concentrating on tasks requiring extended visual attention, such as reading, writing, or using a computer. As stated by the International Dry Eye Workshop in 2007, dry eye is a complex condition that impacts tears and the surface of the eye, resulting in discomfort, visual disruptions, and instability in the tear film, which could potentially harm the ocular surface.

Insufficient and inadequate production of the tear film can result in inconsistent and uneven lubrication of the eyes. This may lead to blurred vision, particularly during tasks that require clear vision, such as reading, writing, driving, or watching television. Common visual issues linked to dry eyes include vision fluctuations upon blinking, blurred vision, sensitivity to glare, and eye fatigue.

Sensitivity to Light: Individuals with dry eyes may encounter heightened sensitivity to light (photophobia), making it challenging to tolerate bright environments. This sensitivity can impact outdoor activities and even indoor settings with strong lighting conditions.

Reduced Contrast Sensitivity: The ability to perceive contrasts between light and dark, known as contrast sensitivity function, is affected by dry eyes, making it difficult to distinguish objects or text. This challenge becomes particularly pronounced for patients in low-light conditions.

Impaired Visual Function: Dry eye syndrome can disrupt visual acuity and overall visual function. Tasks that require precise vision, such as reading small print or recognizing faces from a distance, may become more challenging.

Impact on Activities of Daily Living: Dry Eye Disease (DED) impacts multiple facets of patients' daily Quality of Life (QoL), encompassing physical, social, and psychological well-being, along with its influence on workplace efficiency. Symptoms of dry eye syndrome can influence daily activities, diminishing efficiency and affecting overall quality of life. This may include difficulties in performing work-related tasks, reading, writing, watching television, participating in hobbies, or engaging in social activities.

Emotional Impact: Persistent dry eye can lead to frustration, anxiety, and a decreased sense of well-being in affected individuals. The continual discomfort and visual challenges may contribute to stress and negatively impact one's emotional state.

Sleep Disturbances: Inadequate sleep is linked to dry eye disease, especially in relation to the manifestation of dry eye symptoms. Discomfort during sleep can lead to disturbances in sleep patterns, resulting in daytime fatigue and further contributing to a diminished quality of life.

Reduced Productivity: Individuals with dry eye syndrome may witness decreased productivity at work or school due to visual discomfort and difficulties in maintaining focus for extended periods. DED is linked to work productivity loss and impairment in daily activities.

Impact on Mental Health: Dry eye disease has been associated with a diminished self-perceived health status and an increased self-reported psychological stress load. Enduring symptoms of dry eye may contribute to challenges in mental health, leading to emotions such as frustration, anxiety, or depression. The continuous presence of the condition can give rise to a feeling of burden, impacting the individual's overall mental well-being.

Dry eye disease (DED) is a prevalent ocular condition, affecting 25% of patients seeking ophthalmic care and ranking among the most frequently diagnosed conditions by eye care practitioners. This condition goes beyond mere irritation, significantly impacting various aspects of vision-related quality of life, influencing daily activities, emotional well-being, and overall productivity. DED can present as episodic or chronic, with transient or persistent manifestations. After obtaining the patient's medical history and administering questionnaires, a clinical examination of the anterior segment and objective tests are essential to confirm the diagnosis. Early diagnosis and appropriate management strategies are crucial for alleviating symptoms and enhancing the overall visual experience. Treatment adjustments should be based on the patient's response, considering the delicate balance between efficacy, safety, and patient convenience. It is advisable for individuals with DED to avoid hot, windy, low-humidity, and high-altitude environments, as well as exposure to smog and smoke. In severe cases, surgical interventions like punctal occlusion may be employed to minimize tear drainage, and specific conjunctival and lid operations may be performed to address underlying causes.

Biljana Miljanović MD, MPH, MSc, Reza Dana MD, MPH, MSc, David A. Sullivan PhD, and Debra A. Schaumburg conducted research in 2007 that indicated individuals experiencing dry eye syndrome were more prone to encountering challenges in activities such as reading, performing professional tasks, utilizing computers, watching television, and driving both during the day and at night. The study underscores the quantifiable negative impact of dry eye syndrome on everyday tasks, highlighting its importance as a public

health concern that warrants heightened attention and resource allocation.

In a December 2012 research conducted by Qihua Le, Xiaodong Zhou, Ling Ge, Liangcheng Wu, Jiaxu Hong, and Jianjiang Xu with 229 participants, notable findings revealed elevated dry eye symptom scores among individuals exhibiting definite dry eye syndrome or experiencing dry eye symptoms alone. The study also noted diminished tear break-up time (TBUT) and Schirmer test values in those with dry eye syndrome or signs of dry eyes, emphasizing the correlation between dry eye symptoms and a detrimental influence on the quality of life related to vision.

In March 2014, Meiyan Li, Lan Gong, William J. Chapin, and Min Zhu conducted a comparative investigation with the objective of evaluating the vision-related quality of life. The study involved 87 individuals with dry eye conditions and 71 healthy volunteers. It assessed multiple subscales related to general health, general vision, ocular pain, short and long-distance vision activities, vision-related social function, vision-related mental health, vision-related role difficulties, vision-related dependency, and driving.

2. Materials & Methods

It was descriptive cross-sectional hospital based study of 06 months duration that was conducted from 1st of July 2023 to the 10th of December 2023 at the Ophthalmology Department of Holy Family Hospital. 9134 patients were referred to refraction room out of 24145 patients coming to the eye OPD. I selected sample size of 50 dry eye patients according to the time and availability. I used fluorescein strips for performing Tear film breakup time test (TBUT) on the dry eye patients. The data of dry eye patients were obtained on specially designed Performa with attached OSDI score questionnaire on the basis of inclusion and exclusion criteria. Ocular examination of dry eye patients included history taking, visual acuity assessment, objective refraction, subjective refraction, slit lamp examination, fundus examination, Tear film breakup time test and OSDI score. Both male and female patients, patients of all ages, patients with dry eyes having complaint of decreased vision, itching, watering, redness, photophobia and increased blinking rate were included in this study. I excluded non-cooperative patients, mentally handicapped patients and patients not willing to take part.

3. Results

Results showed that most dry eye patients came with symptoms like blur vision, itching, watering, redness, photophobia and increased blinking rate. Patients also had difficulty in doing routine activities like reading, writing, watching television, etc. Out of 50 dry eye patients, 38 were females (76%) and 12 were males (24%). The gender-based distribution reveals a higher prevalence of dry eye disease in females compared to males. In terms of age, the syndrome was frequently observed in individuals aged 40-55 years, as well as in older patients, those with thyroid conditions, and young individuals engaged in extended screen time activities, such as IT students. So the dry eye disease is most common in young people having prolonged screen time and age group of 40-55 years. OSDI Questionnaire showed severity of dry eyes as mild (20%), moderate (42%) and severe (38%) dry eyes. Dry eyes significantly impact the quality of life as patients have difficulty in performing daily life tasks. Climate changes and humidity also affects dry eye patients

Table 1: Severity of Dry Eyes

	Severity of Dry Eyes	**Frequency**	**Percentage**
1.	Mild	10	20%
2.	Moderate	21	42%
3.	Severe	19	38%
	Total	50	100%

4. Discussion

Dry eye syndrome is a prevalent condition that is marked by insufficient lubrication and moisture on the eye's surface. Insufficient tear production can lead to discomfort, watering, irritation, and pose a potential threat to the ocular surface's health, establishing it as a significant eye condition. The research, conducted between July 1, 2023, and December 10, 2023, involved 24,145 patients from the eye Outpatient Department (OPD) of Holy Family Hospital, Rawalpindi. Among them, 9,134 were referred to the refraction room. To form a sample, I selected 50 patients with dry eye based on time and availability. The objective of my study was to assess the impact of dry eye syndrome on vision-related quality of life of patients.

Among the 50 dry eye patients in my sample, I categorized them into age groups: 20 to 40 years, 41 to 60 years, and above 60 years. Predominantly, the patients were female, and they represented various occupational statuses, including employees. Some patients were not working or retired. Information Technology (IT) Students also visited the Eye OPD and they were also having symptoms of Dry Eye including watering, itching, photophobia and blurred vision. Patients were having medical history of diabetes mellitus, thyroid and surgical history. Some of the patients were categorized NAD (No Abnormality Detected). The patients covered have different severity level of dry eye. Patients report to have difficulty in performing daily life tasks. Patients were having difficulties in reading and driving at night at different levels. Most of the patients were having screen time effect on vision and categorized as Computer Vision Syndrome patients. So, dry eyes significantly affect the quality of life related to vision.

Conclusion:

Dry eye has a substantial impact on the quality of life concerning vision, as individuals encounter challenges in carrying out everyday activities such as reading, driving, and using electronic devices. They often experience symptoms like watering, itching, photophobia, and blurred vision, contributing to considerable discomfort in their daily lives.

Conflict of Interest:

The authors stated that they have no conflicts of interest.

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