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Research Article

Assessing Awareness of Dry Eye Disease in Saudi Subjects Using a Designed Questionnaire

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Abstract

Aim: To assess the level of awareness about dry eye disease in Saudi subjects.

Method: A designed questionnaire containing 12 questions was distributed as a hard copy. A total of 1933 participants (801 males and 1132 females) with ages ranging from 18 to 60 years completed the questionnaire.

Results: The results showed that the majority (50.1%) of participants were not aware of dry eye disease. In addition, 52.2% of participants believed that dry eye is a common disease but does not affect daily life activities. A large proportion (40.3%) of the participants believed that dry eye disease is rising within the community. Information on dry eye awareness was received from ophthalmologists and optometrists (40.8%), friends (19.2%), websites (17.6%), leaflets (7.5%), and other sources (14.9%). Contact lens wearing was suggested to be the most significant contributing factor to dry eye (28.0%), followed by the prolonged use of digital screens such as computers, laptops, and video game consoles (24.7%). The common symptoms associated with dry eye disease were found to be itchiness (22.7%), redness (19.5%), eyestrain (15.6%), light sensitivity (14.9%), blurred visions (13.3%), and excessive tearing (9.7%). The majority (71.1%) of participants believed that artificial tears are the first choice to manage the discomfort symptoms associated with dry eye. The avoidance of the prolonged use of digital screens was believed to be the most common way to relieve dry eye symptoms (21.2%), followed by avoiding harsh conditions such as dusty and windy environments (19.0%), and contact lens use (18.4%).

Conclusion: The majority of participants were not aware of dry eye disease. The low level of dry eye awareness could lead to a rise in the prevalence of dry eye in the community. Much effort and innovative approaches are needed to increase awareness of dry eye disease in the community.

Keywords: *Dry Eye Disease; Tear Film; Awareness; Designed Questionnaire; Dry Eye Symptoms*

Introduction

The heath and stability of tear film are vital for good vision [1]. Tear film instability leads to several ocular surface disorders such as dry eye. Dry eye is a common chronic disorder that mainly results from excessive tear evaporation because of dysfunction of the meibomian gland or tears secretion deficiency due to lacrimal gland dysfunction [2,3]. Dry eye is associated with ocular surface discomfort symptoms [4]. The prevalence of dry eye varies (5 - 50%) based on the population, chronic illnesses, and the diagnostic tools used [5].

The most common risk factors that are associated with dry eye are gender (more females than males), aging, smoking, and environmental factors (e.g. low humidity, high temperatures, high air velocity, or air pollution) [6,7]. Nutritional factors (e.g. diets with a higher ratio of omega-6, or low omega-3 fatty acids) have a negative effect on the tear film [8]. In addition, systemic and topical anticholinergic medications (e.g. antidepressants, antispasmodics, or antihistamines), beta-blockers, chemotherapeutic agents, and topical ocular preservatives are considered as risk factors for dry eye. Moreover, refractive surgery (e.g. laser-assisted in-situ keratomileusis), diabetes mellitus, Parkinson's disease, or human immunodeficiency virus, wearing contact lenses, lifestyle, and daily activities (e.g. using digital screens and watching TV for long durations) have an impact on the tear film [9-12].

The diagnosis of dry eye is a challenge, since no signal test can give a definite result [13]. A combination of tests should be used to detect the volume and quality of tears, stability of tear film, osmolarity, and tear evaporation rate [14-17]. In addition, questionnaires such as MacMonnies, standard patient evaluation of eye dryness (SPEED), and ocular surface disease index (OSDI) can be used to assess dry eye symptoms [18,19]. Relatively few studies have aimed to investigate the prevalence of dry eye in the Saudi population [20-23]. The prevalence of dry eye symptoms is high in Saudi Arabia. For example, in the City of Jeddah, the prevalence of dry eye based on the experience of at least one symptom was very high (93.2%) [22]. However, the prevalence of dry eye in the Al-Ahsa region was much lower (32%) [23].

Since dry eye is a very common disorder in the Saudi population and as a continuation of our work in the area [24-27], the current study was one of the few that aimed to determine the awareness of the public about the disease, its common symptoms, causes, and risk factors among young people using a designed questionnaire.

Methods

A designed questionnaire containing 12 questions (Table 1) was distributed as a hard copy among Saudi subjects. A total of 1933 participants (801 males and 1132 females) with ages ranging from 18 to 60 years (25.8 ± 7.4 years) completed the questionnaire. The subjects were randomly selected from Riyadh City, Saudi Arabia, and were treated according to the Helsinki declaration. A signed consent form was obtained from each subject before distributing the questionnaire. The study was approved by the Institutional Review Board at the College of Applied Medical Sciences (CAMS-011-36/37). The data were collected and analyzed using Excel (Microsoft Office 2016).

No	Question	Possible answer
1	Do you suffer from diabetes?	Yes, no, or I do not know
2	Do you wear a contact lens?	Yes or no
3	Do you smoke?	Yes or no
4	What is dry eye?	Not a common condition, common but does not affect daily activities, a significant health problem
5	Do you suffer from dry eye?	Yes, no, or I do not know
6	If YES to question 7, how do you know?	Using a clinical method, feeling dry eye symptoms, or others
7	Do you have knowledge of dry eye?	Yes or no
8	If YES to question 9, how do you know?	Awareness leaflet, websites, lecture, media, ophthalmologist, optometrist, friends, or others
9	Which factors can cause dry eye?	Contact lens, vitamin A deficiency, refractive surgery, prolonged computer uses, medications, aging, smoking, diabetes, hepatitis, others, or I do not know
10	Which symptoms are associated with dry eye?	Itching, redness, burning, light sensitivity, blurred vision, feeling a drought, excessive tear secretion, eyestrain, others, I do not know
11	How symptoms of dry eye can be relieved?	Sunglasses, lifestyle modifications, avoid CL wearing, avoid windy and dusty conditions, avoid prolonged computer use, maintain air humidity, exercise eye blinking, artificial tears, others, or I do not know
12	Do you think dry eye disease is on the rise?	Yes, no, or I do not know

Table 1: *The designed questionnaire used in the current study.*

Results

The current study showed that the awareness of dry eye was high in females (50.0%) compared to males (35.6%) and was high (70.1%) among subjects with a high level of education. However, there was no difference in response based on age. The majority (50.1%) of participants were not aware of dry eye disease. In addition, the majority (52.2%) of subjects believed that dry eye is a common disorder, but does not affect daily activities (Figure 1), while 28.2% considered it a major health concern and 19.6% believed that it is not a common disease.

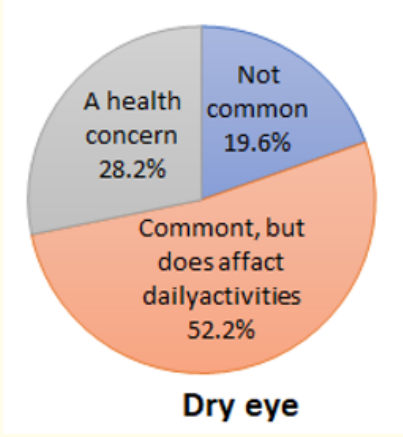

Figure 1: *Dry eye.*

The majority (43.2%) of participants did not suffer from dry eye, 26.6% did not know, and 30.2% believed that they had dry eye. Their awareness of dry eye disease had been acquired from ophthalmologists or optometrists (40.8%), friends (19.2%), websites (17.6%), leaflets (7.5%) and other sources (14.9%; Figure 2).

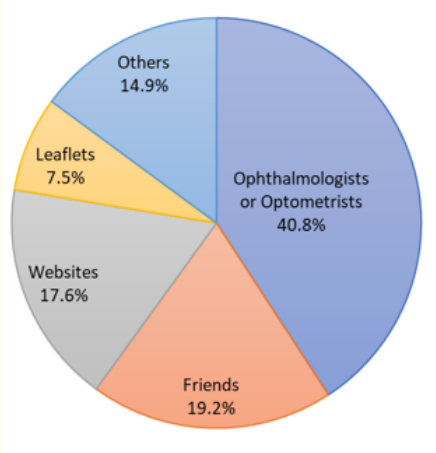

Figure 2: *Awareness about dry eye disease.*

Contact lens wearing was suggested to be the most significant contributing factor for dry eye (28.0%), followed by prolonged use of digital screens such as computers, laptops, and video game consoles (24.7%) and refractive error surgery (10.6%; Figure 3).

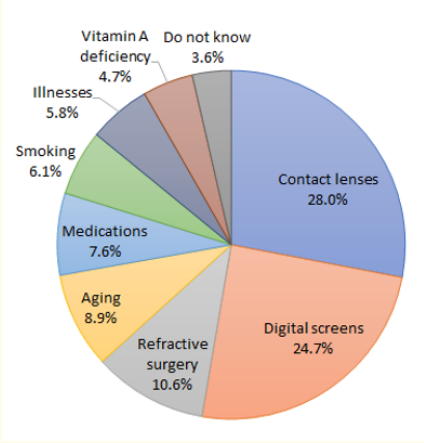

Figure 3: *Causes of dry eye disease.*

The common symptoms associated with dry eye disease were found to be itchiness (22.7), redness (19.5%), eyestrain (15.6%), light sensitivity (14.9%), blurred vision (13.3%), and excessive tearing (9.7%; Figure 4).

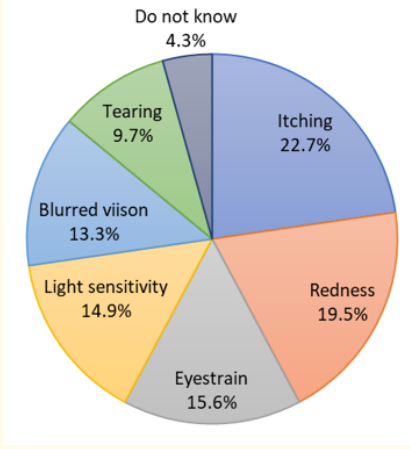

Figure 4: *Common symptoms of dry eye.*

The majority of respondents (71.1%) believed that artificial tears are the first choice to manage the discomfort symptoms associated with dry eye, followed by the use of creams (12.4%) and surgical intervention (9.1%; Figure 5).

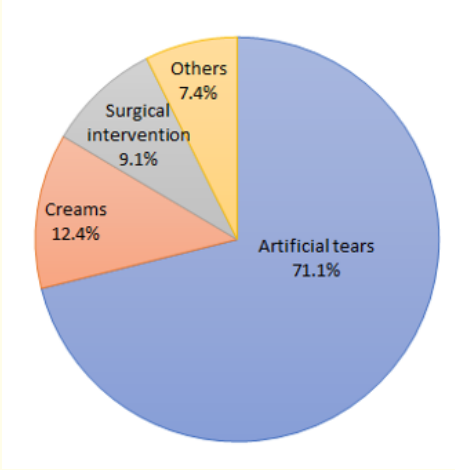

Figure 5: *Management of dry eye symptoms.*

The most suggested factors to relieve dry eye symptoms were the avoidance of the prolonged use of digital screens (21.2%), harsh conditions such as dusty and windy environments (19.0%), and contact lens use (18.4%). The avoidance of the prolonged use of digital screens was believed to be the most common factor to relieve dry eye symptoms (21.2%), followed by avoiding harsh conditions such as dusty and windy environments (19.0%) and contact lens use (18.4%; Figure 6). A large proportion (40.3%) of the participants believed that dry eye disease is rising within the community.

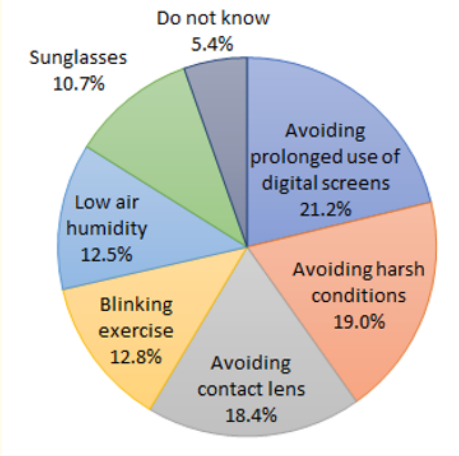

Figure 6: *Relieving factors of dry eye symptoms.*

Discussion

Diagnosis and treatment of the illnesses associated with the ocular tear film are a challenge, since the condition affects the economy and the quality of life for many around the world. Health care in Saudi Arabia has improved significantly over the years; however, dry

eye prevalence is increasing [22,23]. Knowledge about dry eye and its symptoms is important for the management and treatment of this disorder. Therefore, the current study was designed to fill the gap in research related to dry eye awareness in an attempt to determine the knowledge that the participants had about this disorder.

The results obtained suggest that half of the subjects who participated in the current study were aware neither of dry eye as a common ocular disease nor of its impact on daily life activities. On the other hand, more than half of the participants believed that dry eye is a common disorder. The most significant contributing factors for dry eye are contact lenses and the use of digital screens for long-duration. Itchiness, redness, eyestrain, light sensitivity, blurred vision, and excessive tearing are the common symptoms experienced by subjects with dry eye. Artificial tears can be used to relieve the discomfort symptoms associated with dry eye.

A previous study conducted among 175 subjects visiting a general eye clinic in China concluded that dry eye awareness was 26.9%, which was much lower than in the current study (49.9%) [28]. Dry eye awareness was better (41.7%) among older participants (40-60 years). In addition, the awareness was better among females (33.8%) than males (18.2%), which is consistent with the current study. Participants used artificial tears, and those who had ocular diseases, those had allergies to the harsh environment, contact lens wearers, those with a history of ocular surgery, those who had regular ocular examinations, and those who had taken medications had better dry eye awareness compared with healthy ones [28].

Another study conducted among Saudi subjects (N = 451; 18 - 55 years) to test their awareness and knowledge about dry eye diseases using an online questionnaire showed that the majority (71.6%) of participants used electronic devices for a long duration [29]. That proportion was much higher than the one obtained in the current study (24.7%). In general, the use of digital screens was found to be the most important factor causing dry eye symptoms, possibly due to the blink rate abnormality and the dysfunctions of goblet cells and the meibomian gland [30]. It was found that 46.3% of the participants were not aware of dry eye, compared with 50.1% in the current study. The most common dry eye symptoms experienced by the participants were burning (55.7%), foreign body sensation (48.1%), redness (46.8%), and eye strain (43.2%) [28]. This result was in conflict with the one obtained from the current study, which indicated that the common symptoms were itchiness, redness, eyestrain, and light sensitivity, in that order.

Another study conducted among Saudi subjects (N = 400; 46.3% females and 53.8% males) in the Hail province showed that 46% of the subjects were aware of different types of diseases that are associated with the ocular surface, such as cataracts, glaucoma, dry eye, and diabetic retinopathy [31]. Their information about dry eye disease had been received mainly from pharmacists (43.3%), physicians (40.3%), the internet (37.3%), and the community (37.3%) [31]. The majority of subjects believed that gender (79%); aging (69.2%); other illnesses (69%); the exposure to environmental conditions such as dry weather, wind, or smoke (61.2%); and medications (55.5%) and are the main risk factors for dry eye.

Conclusion

The majority of participants were not aware of dry eye disease. The low level of dry eye awareness could lead to an increase in the prevalence of dry eye in the community. Much effort and innovative approaches are needed from eye specialists, optometrists, other health professionals, and academic institutions to increase awareness about dry eye disease in the community and how to manage the symptoms associated with the disease.

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Disclosure

The authors report no conflicts of interest in this work.

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