

A HOSPITAL-BASED STUDY ON THE PREVALENCE OF DRY EYES IN A TERTIARY CARE HOSPITAL

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ABSTRACT

BACKGROUND

Dry eye syndrome is a common eye disease. Dry Eye Syndrome (DES), also known as Keratoconjunctivitis Sicca (KCS), is the condition of having dry eyes. Other associated symptoms include irritation, redness, discharge and easily fatigued eyes. Blurred vision may also occur. The symptoms can range from mild and occasional to severe and continuous. Scarring of the cornea may occur in some cases without treatment. Dry eye occurs when either the eye does not produce enough tears or when the tears evaporate too quickly. Tobacco smoke exposure or infection may also lead to the condition. Diagnosis is mostly based on the symptoms, though a number of other tests may be used. Prevalence of dry eyes are commoner in females than males. There is a positive relationship between glaucoma and ocular dryness as well as diabetic retinopathy and ocular dryness. Dry eye is a multifactorial disease of the tears and ocular surface. Ocular symptoms such as pain, irritation and poor vision can result from dry eye.

The aim of the study is to study the prevalence, symptomatology and distribution of dry eyes.

MATERIALS AND METHODS

A cross-sectional study was conducted during July 2016 to March 2017. Study place was Outpatient Department of Ophthalmology at Sree Mookambika Institute of Medical Sciences, Kulasekharam. Sample size was calculated by $4PQ/d^2$, which was 132. Systemic random sampling was used for the study.

RESULTS

Prevalence of dry eyes - 17.8%. Dry eyes in males - 16.8% and in females - 24.6%. Dry eyes in age <40 yrs. - 10.8%, >40 yrs. - 21.8%. Prevalence of dry eyes in contact lens wearers - 36.5%. Prevalence of dry eyes in glaucoma cases - 38.2%. Prevalence of dry eyes in farmers - 27.3%, in smokers - 36.7%. Dry eyes in emmetropes - 12.8% in myopes - 17.2% in hypermetropes - 28.6%.

CONCLUSION

Dry eyes prevalence obtained was 17.8%. Dry eyes were seen more in females. As age increases, prevalence of dry eyes increases. Ocular surface dryness was observed more in contact lens wearers. Among predisposing factors common were dust and smoke.

KEYWORDS

Dry Eyes, Prevalence, Ocular.

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BACKGROUND

Abnormality in preocular tear film causes dry eye. The preocular tear film classically is a three-layered structure consisting from posterior to anterior of the mucous, the aqueous and the lipid layers.¹ Any abnormality of any one of the three layers of tears produces an unstable tear film

resulting in symptoms of dry eyes. The prevalence of dry eyes varies from 10.8% to 57.1%.²⁻⁴ Prevalence of dry eyes are commoner in females than males.⁵ There is a positive relationship between glaucoma and ocular dryness⁶ as well as diabetic retinopathy and ocular dryness.^{7,8} Dust exposure and smoke exposure are predominant predisposing factors. Prevalence of ocular dryness rises as the age advances. About half of the patients of dry eyes have coexistent pterygium/pingecula.⁹ Dry eyes are more prevalent in hypermetropes than myopes.¹⁰ Among the symptoms of dry eyes, ocular tiredness stands first followed by dryness and irritation of eyes.^{11,12} Dry eye is a multifactorial disease of the tears and ocular surface.¹³ Ocular symptoms such as pain, irritation and poor vision can result from dry eye, severe dry eye affects, the patient's ocular and general health,

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well-being and quality of life.¹⁴ Typical symptoms of dry eye syndrome are dryness, burning⁹ and a sandy-gritty eye irritation that gets worse as the day goes on.¹⁰ Symptoms may also be described as itchy, scratchy, stinging or tired eyes.⁴ Other symptoms are pain, redness, pulling sensation and pressure behind the eye. Dry eyes can usually be diagnosed by the symptoms alone.¹ Tests can determine both the quantity and the quality of the tears.¹³ A slit-lamp examination can be performed to diagnose dry eyes and to document any damage to the eye.¹² A Schirmer's test can measure the amount of moisture bathing the eye.⁸ This test is useful for determining the severity of the condition.¹² A five-minute Schirmer's test with and without anaesthesia using a Whatman #41 filter paper 5 mm wide by 35 mm long is performed. For this test, wetting less than 5 mm with or without anaesthesia is considered diagnostic for dry eyes.¹⁰ A Tear Breakup Time (TBUT) test measures the time it takes for tears to break up in the eye.⁵ The tear breakup time can be determined after placing a drop of fluorescein in the cul-de-sac.⁵ These two tests are the common diagnostic tests.⁵

Objectives- To study the-

1. Prevalence of dry eyes.
2. Symptomatology of dry eyes.
3. Dry eyes - Distribution.

MATERIALS AND METHODS

Study design- Cross-sectional study period was from July 2016 to March 2017. Study was conducted at Department of Ophthalmology Outpatient Department, Sree Mookambika Institute of Medical Sciences, Kulasekharam. Sample size was (4PQ/d²) 132.³

Inclusion Criteria- People coming to Department of Ophthalmology Outpatient Department, Sree Mookambika Institute of Medical Sciences, Kulasekharam.

Exclusion Criteria- Those who are not willing. Sampling was done by systematic sampling technique. Data was entered in Microsoft excel version 2016 and statistical analysis was done using SPSS trial version 21. Institutional ethical committee clearance was obtained.

The study was conducted in patients coming to Ophthalmology OPD of our hospital, Sree Mookambika Institute of Medical Sciences. Patients were questioned about the symptoms of dry eyes and suspicious cases were further examined. We used two major tests for diagnosis- Schirmer's test, which helps to find out tear production and rose bengal staining. All the suspected cases were examined for the refractive state of eyes and other ocular and systemic diseases associated. High-risk cases as smokers, females, hypermetropes who initially didn't have symptoms of dry eyes were followed up for the development of dry eye syndrome.

RESULTS

1. Prevalence of dry eyes- 17.8%.
2. Dry eyes- Sex distribution-
 - Males- 16.8%.
 - Females- 24.6%.
3. Dry eyes- Age distribution-
 - <40 yrs.-10.8%.
 - >40 yrs.-21.8%.
4. Prevalence of dry eyes in diabetic retinopathy cases- 36.2%.
5. Prevalence of Sjogren's syndrome in dry eyes cases- 4.8%.
6. Symptomatology of dry eyes-
 - Tiredness of eyes- 58.0%.
 - Irritation of eyes- 38.8%.
 - Dryness- 47.0%.
 - Foreign body sensation- 21.0%.
7. Prevalence of dry eyes in contact lens wearers- 36.5%.
8. Dry eyes in contact lens non-wearers- 18.4%.
9. Prevalence of dry eyes in glaucoma cases- 38.2%.
10. Prevalence of pterygium in patients with dry eyes- 24.7%.
11. Dry eyes in emmetropes- 12.8%.
12. Dry eyes in myopes- 17.2%.
13. Dry eyes in hypermetropes- 28.6%.
14. Prevalence of dry eyes in farmers- 27.3%.
15. Prevalence of dry eyes in smokers- 36.7%.
16. Dry eyes in the elderly (more than 70 yrs.)- 34.2%.

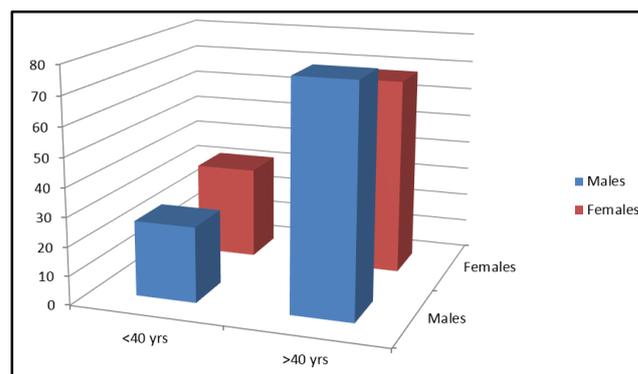


Chart 1. Age Distribution of Dry Eyes among Males and Females

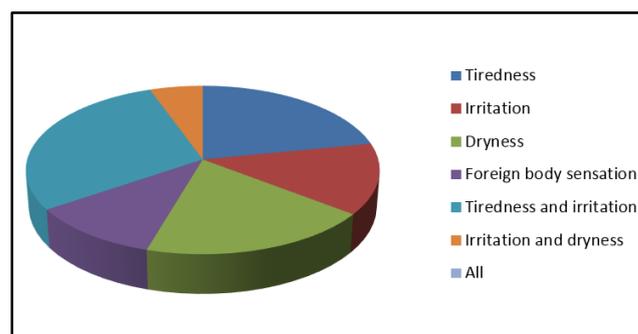


Chart 2. Distribution of Symptoms

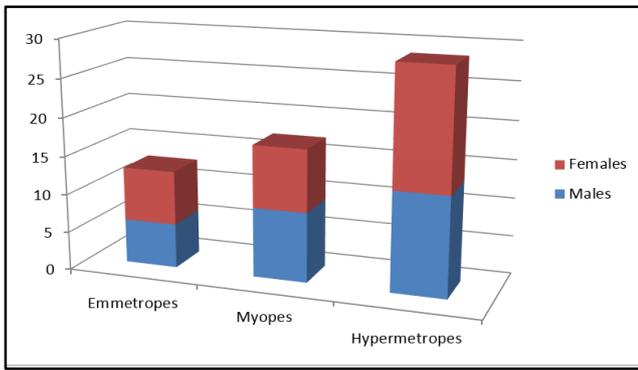


Chart 3. Relationship between Dry Eyes and Refractive Power of Eye

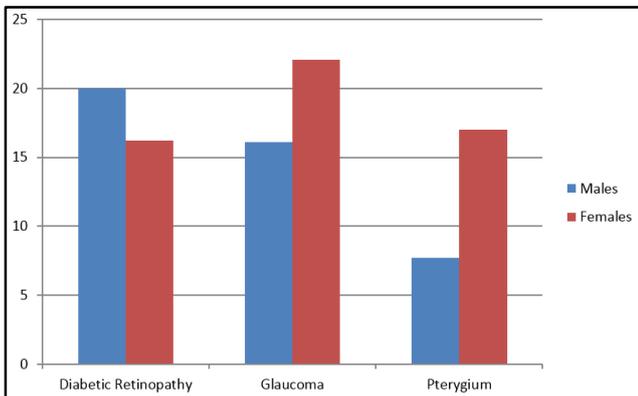


Chart 4. Dry Eyes in Cases with Other Ocular Disorders

DISCUSSION

Prevalence of dry eyes in the present study is 17.8%, whereas in Julie et al,¹¹ it is 10.85, 17.0% in Lee et al² and 25% in Biljana et al.³ The prevalence rates are comparable in various studies, which shows the minimal race difference. Dry eyes in males and females are 16.8% and 24.6% in the present study, 18.45% and 26.2% in Julie et al,¹¹ 17.2% and 25.0% in Scot et al,⁵ 14.9% and 22.8% in Sahai et al,¹ respectively. These studies are showing higher prevalence rates in females than males. Prevalence rates of dry eyes in people less than 40 yrs. and more than 40 yrs. are 10.8% and 21.8% in the present study, 7.3% and 18.1% in Julie et al,¹¹ 11.4% and 28.0% in Scot et al,⁵ 13.9% and 19.4% in Sahai et al,¹ dry eye syndrome increases as the age advances. Dry eyes in diabetic retinopathy cases are 36.2% in the present study, 25.1% in Scot et al,⁵ 59.3% in Masoud et al⁸ and 24.3% in Biljana et al.³ Prevalence of Sjogren’s syndrome in dry eye cases is 4.8% in the present study, 18.7% in Scot et al⁵ and 21.2% in Julie et al.¹¹ Percentage of the common symptoms of dry eyes namely tiredness, irritation, dryness and foreign body sensation of eyes are 58.0%, 38.7%, 47.0% and 21.0% in the present study, whereas 68.8%, 54.1%, 36.0% and 36.0% in Uchino et al;¹³ 56.0%, 26.0%, 37.0% and 18.0% in Carolyn et al;⁴ 49.0%, 36.0%, 68.0% and 18.0% in Guillon et al,¹² respectively. Prevalence of dry eyes in contact lens wearers and non-wearers are 36.5% and 18.4% in the present study; 32.2% and 12.0% in Carolyn et al;⁴ 43.1% and 15.2% in Guillon et al;¹² 64.2% and

28.2% in Uchino et al,¹³ respectively. Studies show a universal higher prevalence of dry eyes in people wearing contact lens as compared to people who are not wearing contact lens. Prevalence of ocular surface disease in glaucoma cases are 38.2% in the present study; 59.0% in Leung et al;⁷ 38.4% in Barisic et al¹⁰ and 43.1% in PJ Pisella et al.¹⁴ Pterygium in dry eyes cases are 24.7% in the present study, 49.9% in Lekhanont et al⁹ and 39.7% in Laung et al.⁷ Prevalence of dry eyes in emmetropes, myopes and hypermetropes are 12.8%, 17.2%, 28.6% in the present study; 14.0%, 16.8% and 22.9% in Sahai et al;¹ 16.1%, 17.0% and 31.4% in Lekhanont et al⁹ and the reason for the higher prevalence of dry eye syndrome in hypermetropes still remains unexplained. Prevalence of dry eyes in farmers is 27.3% in the present study, 25.3% in Sahai et al¹ and 32.1% in Chopra et al.⁶ Dry eyes in smokers are 36.7% in the present study, 48.2% in Sahai et al¹ and 42.1% in Chopra et al.⁶ Smoke and dust exposure are predominant predisposing factors as evident in these studies. Prevalence of dry eyes in elderly (more than 70 yrs.) is 34.2% in the present study, 36.1% in Sahai et al,¹ 28.0% in Scot et al⁵ and 39.9% in Chopra et al.⁶

CONCLUSION

Prevalence of dry eyes in a hospital-based population is 17.8%. Dry eyes are more prevalent in females than males, which can be linked to the passive smoking and cooking smoke exposure in women of our community. It is to be a strong positive correlation between dry eyes and smoking. Prevalence of dry eyes rises as the age advances. Contact lens wearers are commonly affected by ocular surface dryness and it can be explained by the fact that contact lens prevents the cornea from acquiring nutrition from the atmospheric air. But, soft contact lens are found to be less commonly associated with dry eye syndrome. Dust exposure is a common predisposing factor as dry eyes are common in farmers. Tiredness and dryness of eyes are found to be the predominant symptoms of dry eye syndrome as per the current study. Keratoconjunctivitis sicca is commoner in hypermetropes, which remains unexplained and is an open topic for discussion. Topical ocular tension reducing agents used by glaucoma patients are found to predispose to dry eye syndrome.

Recommendation

More studies should be conducted on the prevalence and associations of dry eyes in larger population and community-based studies are recommended. Studies on the various diagnostic options and the sensitivity, specificity of various tests should be studied. Treatment options available can also be studied as many modalities of treatment are now available.

Limitation

The results cannot be generalised as it is a hospital-based study and the study involves only one area of Kanyakumari district.

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