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Research Article

**PREVALENCE AND RISK FACTORS OF DRY EYE IN
PATIENTS PRESENTING AT OPHTHALMOLOGY OPD PAK
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³Consultant Ophthalmologist, Al-Shifa Hospital, Bahawalpur.**Abstract:**

Objective: To determine the prevalence and risk factors of dry eye in patients presenting at Ophthalmology OPD Pak Red Crescent Medical College/Hospital Lahore.

Material and Methods: This cross sectional study was conducted at Department of Ophthalmology Pak Red Crescent Medical College Lahore from March 2018 to June 2018. Total 217 consecutive patients attending Ophthalmology OPD with symptoms of dry eye were included in the study and dry eye and risk factor were assessed in selected patients.

Results: Total 2017 patients with symptoms of dry eye were selected. Mean age of the patients was 36.83 ± 13.09 years. Out of 2017 patients with symptoms of dry eye, total 112 (52%) patients found with dry eye as per operation definition. Out of 217 patients, associated risk factor in 53 (24.42%) was allergy followed by Keratitis in 22 (10.14%) patients, Several drugs/Medications in 12 (5.53%) patients, contact lens in 3 (1.38%) patients and rest 127 patients were having dry eyes due to other causes which includes pterygium, conjunctivitis, blepharitis, depression, senile, vitamin A deficiency and senile.

Conclusion: Results of present study showed a higher prevalence of dry eye. Allergy and Pterygium, Conjunctivitis, Blepharitis, Depression and Senile were the most common risk factors. Dry eye was most prevalent in 3rd and 4th decade of life. Age was significantly associated with dry eye. Most of the patients presenting with symptoms of dry eye were male but no association of development of dry eye with gender was observed.

Key words: Risk factor, dry eye disease, etiology, quality of life

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INTRODUCTION:

Dry eye is a common condition that affects the quality of life of millions of people worldwide.¹ The International Dry Eye Workshop report estimates the prevalence of dry eye to range from 5% to 30% of persons 50 years or older, and this number will likely increase as our population ages.²

Dry eye disease is a frequent cause of ocular irritation for which patients seek ophthalmic care. In recent years dry eye is considered as an extremely common condition that causes varying degrees of ocular discomfort and disability.³ Dry eye is defined as a multifactorial disease of tears and ocular surface that results in symptoms of discomfort, visual disturbance and tears film instability with potential damage to the ocular surface. It is accompanied by increased osmolality of tear film and inflammation of ocular surface.⁴

Dry eye syndrome becomes increasingly prevalent with age and affects 5% of population during 4th decade of life, increasing to 10-15% adults over the age of 65.⁵

The prevalence of dry eye in Pakistan is 3.3% between 10-30 years of patients, 20 % between 30-40 years of patients, 33.3% between 40-50 years of patients, 23.3% between 50-60 years of patients and 6.6% between 60-70 years of patients. 30% dry eye was caused due to keratitis, 20% was result of bacterial and viral conjunctivitis and 10% was due to pterygium.⁶

Risk factors for symptomatic dry eye disease are Keratitis, allergy, contact lens, several drugs, thyroid disease, Lasik, Pterygium and smoking. Keratitis is an inflammation of the cornea, the cornea is the outermost part of the eye that covers the pupil and iris. The most common causes of keratitis are infection and injury.⁷

Better understanding of the key and important presenting symptoms, the external and systemic factors contributing to dry eye and the ideal battery of tests for dry eye will help in early diagnosis of this chronic condition, with more efficient and effective treatment and long term patient satisfaction.

RESEARCH METHODOLOGY:

This cross sectional study was conducted at Department of Ophthalmology Pak Red Crescent Medical College Lahore from March 2018 to June 2018. This study was approved by institutional review board and written consent was also taken from every patient. Total 217 consecutive patients attending Ophthalmology OPD with symptoms of dry eye were included in the study.

Patients with ocular surface infections, foreign body, extensive ocular surface pathologies and those who had undergone an ocular surgery within 2 months were excluded from the study.

History of all the patients were taken and noted on performa.

A complete slit-lamp examination and examination of other ocular structures was done.

Dry eye was diagnosed by using following criteria:

Tear break up time(TBUT), rose Bengal staining, Schirmer's tests was performed for the assessment of dry eye. Patients were labelled as having dry eye if at least two out of these three diagnostic tests were positive.

Tear break up time:

Tear break up time is determined by measuring the inter wall between instillation of fluorescein and appearance of first dry spots on the cornea. Measure it prior to instillation of any anesthetic eye drops. A fluorescein strip is moistened with saline and applied to the inferior fornix. After several blinks, the tear film is examined using a broad beam of slit lamp with a blue filter for the appearance of first dry spots on the cornea. Decrease tear break up time of <10 seconds is considered abnormal.

Positive: tear breakup time <10 seconds.

Rose Bengal staining:

1% liquid of rose Bengal is instilled into the eye, white light is used to assess the amount of staining in nasal conjunctiva, temporal conjunctiva and cornea.

Positive: if staining occurs in any 1 of the following:

1. nasal conjunctiva
2. Temporal conjunctiva
3. cornea

Schirmer's tests:

Schirmer test is performed by instilling a topical anesthetic and then placing a thin strip of filter paper in the inferior fornix. The corner of soft paper may be used to wick all liquid from inferior fornix by capillary attraction without any wiping or direct irritation before the paper is placed. The patients eyes are then closed for 5 minutes and the amount of wetting in the paper strip is measured. Less than 5mm of wetting is abnormal.

Positive: wetting of filter paper <5mm.

All the data was entered in pre-designed performa along with demographic profile of the patients.

All the data was entered in SPSS version 18 and analyzed. Mean and SD was calculated for numerical data i.e. age and frequencies were calculated for categorical data i.e. dry eye (Yes/No), gender and risk factors. Stratification for gender and age was done. Post stratification chi-square test was applied to see the effect of these on outcome variable i.e. dry eye. P-value ≤ 0.05 was considered as significant.

RESULTS:

Total 2017 patients with symptoms of dry eye were selected. Mean age of the patients was 36.83 ± 13.09 years. Out of 2017 patients with symptoms of dry eye, total 112 (52%) patients found with dry eye as per operation definition. (Fig. 1) Out of 217 patients, associated risk factor in 53 (24.42%) was allergy followed by Keratitis in 22 (10.14%) patients, Several drugs/Medications in 12 (5.53%) patients, contact lens in 3 (1.38%) patients and rest 127 patients were having dry eyes due to other causes which includes

pterygium, conjunctivitis, blepharitis, depression, senile, vitamin A deficiency and senile. (Table 1)

Age range in this study was 20-60 years. Patients were divided into two age groups i.e. age group 20-40 years and age group 41-60 years. Age group 20-40 years was consisted on 143 (65.90%) patients and age group 41-60 years was consisted on 74 (34.10%) patients. As per criteria, total 90 (62.94%) patients of age group 20-40 years and 22 (29.73%) patients of age group 41-60 years were found with dry eye. Age of the patients was significantly associated with development of dry eye with p value 0.001. (Table 2)

Most of the patients 125 (57.60%) were male and rest 92 (42.40%) patients were female. Total 65 (52%) male patients and 47 (51.09%) female patients were found with dry eye. But association of gender with development of dry eye was statistically insignificant with p value 1.000. (Table 3)

Fig. Frequency of dry eye

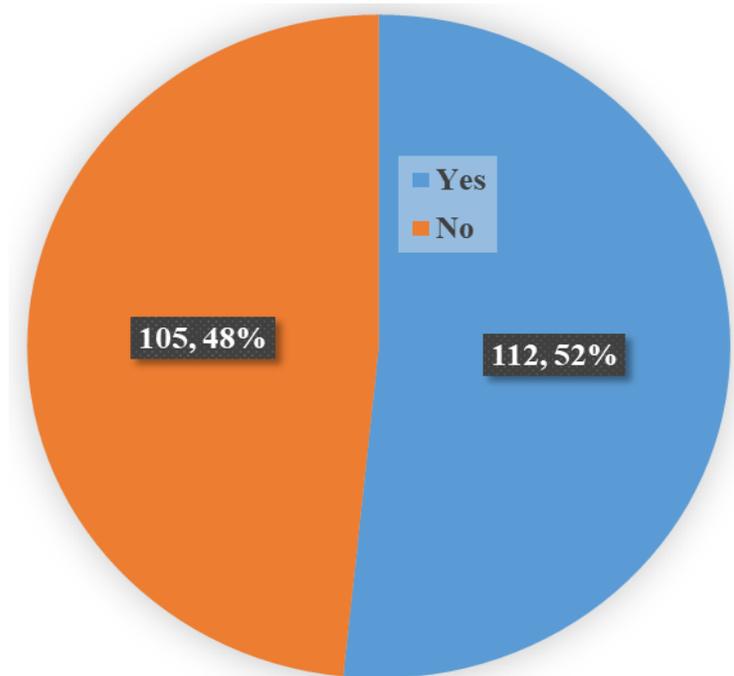


Table 1: Risk factors of dry eye

Risk factors of Dry Eye	Frequency	%
Others (Pterygium, Conjunctivitis, Blepharitis, Depression and Senile)	127	58.53
Allergy	53	24.42
Keratitis	22	10.14
Several drugs/Medications	12	5.53
Contact lens	3	1.38
Total	217	100

Table 2: Stratification for age

Age Group	Dry eye		Total	P value
	Yes	No		
20-40	90 (62.94)	53 (37.06)	143 (65.90)	0.001
41-60	22 (29.73)	52 (70.27)	74 (34.10)	
Total	112 (52)	105 (48)	217	

Table 3: Stratification for age

Gender	Dry eye		Total	P value
	Yes	No		
Male	65 (52)	60 (48)	125 (57.60)	1.000
Female	47 (51.09)	45 (48.91)	92 (42.40)	
Total	112 (52)	105 (48)	217	

DISCUSSION:

This study describes the frequency and risk factors for DE in patients attending a tertiary ophthalmology center in Lahore. Mean age of the patients was 36.83 ± 13.09 years. Out of 2017 patients with symptoms of dry eye, total 112 (52%) patients found with dry eye as per operational definition. In one study by Martinez et al,⁸ total 338 patients were assessed for dry eye and dry eye was found in 43% patients which is comparable with our findings. In another study by Shah et al,⁹ total 400 patients were consecutively selected and underwent a routine ophthalmological examination along with tear film break-up time (TBUT) as a screening tool for detecting the presence of dry eye and dry eye was found in 54.3% patients. In published literature, prevalence of dry eye varying from 5% to 73.5%.¹⁰⁻¹¹ In a population based study in Indonesia, conducted by Lee AJ et al¹² the prevalence of dry eye was 27.5%. In a study

conducted by Moss et al¹³ the overall prevalence of dry eye was 14.4%. In a study conducted by Jie Y et al¹⁴ the prevalence of dry eye was found to be 21% in the adult population in china, based on symptoms.

Age range in this study was 20-60 years. Patients were divided into two age groups i.e. age group 20-40 years and age group 41-60 years. Age group 20-40 years was consisted on 143 (65.90%) patients and age group 41-60 years was consisted on 74 (34.10%) patients. As per criteria, total 90 (62.94%) patients of age group 20-40 years and 22 (29.73%) patients of age group 41-60 years were found with dry eye. Age of the patients was significantly associated with development of dry eye with p value 0.001. Most of the patients 125 (57.60%) were male and rest 92 (42.40%) patients were female. Total 65 (52%) male patients and 47 (51.09%) female patients were found with dry eye. But association of gender with development of dry eye

was statistically insignificant with p value 1.000. In one study by Kamalakshy *et al*,¹⁵ proportion of Dry eye disease was 63.6%, majority was in the age group of 50-59 years (26.41%). Male: Female ratio was 1:3.5. In one study of 100 patients, 65 were female and rests were male. Among 41.0% of dry eye patients 25% were female and 16% were male.¹⁶ Sahai *et al*¹⁷ had showed 34% of dry eye, in which 12% were male and 22% were female. In a Japanese study 21.6% of the female individuals aged 40 years or over were diagnosed with dry eye disease or severe symptoms, significantly higher than their male counterparts were 12.5%.¹⁸

CONCLUSION:

Results of present study showed a higher prevalence of dry eye. Allergy and Pterygium, Conjunctivitis, Blepharitis, Depression and Senile were the most common risk factors. Dry eye was most prevalent in 3rd and 4th decade of life. Age was significantly associated with dry eye. Most of the patients presenting with symptoms of dry eye were male but no association of development of dry eye with gender was observed.

REFERENCES:

1. Uchino M, Schaumberg DA. Dry eye disease: impact on quality of life and vision. *Current ophthalmology reports*. 2013 Jun 1;1(2):51-7.
2. Gipson IK, Argüeso P, Beuerman R, Bonini S, Butovich I, Dana R, Dartt D, Gamache D, Ham B, Jumblatt M, Korb D. Research in dry eye: report of the Research Subcommittee of the International Dry Eye Workshop (2007). *Ocular Surface*. 2007 Apr;5(2):179-93.
3. Hessen M, Akpek EK. Dry eye: an inflammatory ocular disease. *Journal of ophthalmic & vision research*. 2014 Apr;9(2):240.
4. International Dry Eye Workshop Subcommittee. The definition and classification of dry eye disease: report of the definition and classification subcommittee of the International Dry Eye Workshop (DEWS - 2007). *Ocul Surf* 2007;5:75-92.
5. Lemp MA. Report of the National Eye Institute/Industry workshop on Clinical Trials in Dry Eyes. *CLAO J* 1995;21:221-32.
6. Jehangir S. Dry eye syndrome in Pakistani community. *J Pak Med Assoc*. 1990 Mar;40:66-7.
7. Lee AJ, Lee J, Saw SM, Gazzard G, Koh D, Widjaja D, Tan DT. Prevalence and risk factors associated with dry eye symptoms: a population based study in Indonesia. *British Journal of Ophthalmology*. 2002 Dec 1;86(12):1347-51.
8. Martinez JD, Galor A, Ramos-Betancourt N, Lisker-Cervantes A, Beltrán F, Ozorno-Zárate J, Sánchez-Huerta V, Torres-Vera MA, Hernández-Quintela E. Frequency and risk factors associated with dry eye in patients attending a tertiary care ophthalmology center in Mexico City. *Clinical ophthalmology (Auckland, NZ)*. 2016;10:1335.
9. Shah S, Jani H. Prevalence and associated factors of dry eye: Our experience in patients above 40 years of age at a Tertiary Care Center. *Oman journal of ophthalmology*. 2015 Sep;8(3):151.
10. International Dry Eye Workshop Study Group. The epidemiology of dry eye disease: report of the Epidemiology Subcommittee of the International Dry Eye Workshop (2007). *Ocul Surf*. 2007;5(2):93-107.
11. Uchino M, Dogru M, Yagi Y, Goto E, Tomita M, Kon T, Saiki M, Matsumoto Y, Uchino Y, Yokoi N, Kinoshita S. The features of dry eye disease in a Japanese elderly population. *Optometry and vision science*. 2006 Nov 1;83(11):797-802.
12. Lee AJ, Lee J, Saw SM, Gazzard G, Koh D, Widjaja D *et al*. Prevalence and risk factors associated with dry eye symptoms : A population based study in Indonesia. *Br J Ophthalmol* 2002;86:1347-51.
13. Moss SE, Klein R, Klein BE . Prevalence of and risk factors for dry eye syndrome. *Arch Ophthalmol* 2000; 118 : 1264-68.
14. Jie Y, Xu L, Wu YY, Jones JB. Prevalence of dry eye among adult Chinese in the Beijing eye study . *Eye* 2009;23:688-693.
15. Kamalakshy J, Nandini K, Vijayamma N, Rajesh PS. Proportion of dry eye disease and its clinical profile in patients presenting with ocular surface symptoms to the ophthalmology OPD of a tertiary care centre in South India over a period of one year. *Indian Journal of Clinical and Experimental Ophthalmology*. 2016;2(4):345-9.
16. Shaheerah G, Adil S J, Muhammad F F. Frequency and Risk Factors of Symptomatic Dry Eye Disease at Tertiary Care Eye Hospital, Karachi. *Biostat Biometrics Open Acc J*. 2018; 4(3): 555639. DOI: 10.19080/BBOAJ.2018.04.555639.
17. Sahai A, Malik P. Dry eye: prevalence and attributable risk factors in a hospital-based population. *Indian journal of ophthalmology*. 2005 Apr 1;53(2):87.
18. Uchino M, Nishiwaki Y, Michikawa T, Shirakawa K, Kuwahara E, Yamada M, Dogru M, Schaumberg DA, Kawakita T, Takebayashi T, Tsubota K. Prevalence and risk factors of dry eye disease in Japan: Koumi study. *Ophthalmology*. 2011 Dec 1;118(12):2361-7.