

Dry eye disease: Prevalence and associated factors observed in a tertiary care institute

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Abstract

Introduction: Dry eye disease (DED) is a disorder of the tear film due to reduced tear production or excessive tear evaporation, which causes damage to the inter-palpebral ocular surface and is associated with symptoms of ocular discomfort and/or visual symptoms. **Aims and Objectives:** To estimate the prevalence and various clinico-epidemiological factors of dry eye disease observed in ophthalmology out-patients of a Tertiary Care Hospital **Materials and Method:** In the present study all the patients attending ophthalmology OPD and age more than 40 years of either sex were enrolled. Detail ophthalmic examination was also performed in all the patients. Schirmer test was performed to evaluate aqueous tear production and diagnose dry eye syndrome. The collected data was entered in Microsoft excel and was analyzed and presented with appropriate tables and graphs. **Results:** out of total 244 individuals attending ophthalmology outpatient department; 54 were diagnosed to be suffering from dry eye disease. Thus the prevalence of dry eye disease was 24.11%. Majority of the patients suffering from dry eye disease were in the age group of 61-70 years followed by 51-60 years. The prevalence of dry eye disease was found more in female patients as compared to male patients. 63.84% were involved in outdoor occupation. The most common presenting symptom reported by patients was watering of eyes followed by itching of eyes (20.09%) and gritty sensation (10.71%). **Conclusion:** The prevalence of dry eye disease in the present study was 24.11%. The dry eye disease was more prevalent in elderly female and individuals working outdoors. Watering and itching of eyes and gritty sensation were the common presenting symptoms.

Keywords: Dry eye disease, prevalence, risk factors.

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INTRODUCTION

Dry eye disease (DED) is a disorder of the tear film due to reduced tear production or excessive tear evaporation, which causes damage to the inter-palpebral ocular surface and is associated with symptoms of ocular discomfort and/ or visual symptoms.¹ In 2007, the International Dry Eye Workshop (DEWS) revised the original definition and classification scheme of dry eye disease (DED) and developed a new definition based on aetiology, mechanism, and severity of the disease. The term dry eye syndrome according to DEWS has been defined as “a multifactorial disease of the tears and ocular surface that

results in symptoms of discomfort, visual disturbance, and tear film instability with potential damage to the ocular surface. It is accompanied by increased osmolarity of the tear film and inflammation of the ocular surface”.² Reported prevalence of dry eye in the literature is diverse; ranging between 7.8% in one study from western world³ and 93.2% in one study from Asia.⁴ This is probably because of two factors: first, the geographical location of the study population and secondly, there is no standardization of the selected population, dry eye questionnaires, objective tests and dry eye diagnostic criteria.^{5,6} Patients with dry eye often complain of pain, heaviness, foreign body sensation, redness, photophobia and reflex watering due to corneal irritation. Because the tear film in dry eye patients is unstable and incapable of maintaining the protective qualities that are necessary for its structure and function, patients experience the symptoms of discomfort associated with dry eye, which are burning, stinging, grittiness, foreign body sensation, tearing, ocular fatigue, and dryness. Patients may complain of symptoms of dry eye in the presence or absence of signs of the disease.⁷

MATERIALS AND METHOD

The present study was conducted in the department of ophthalmology of Dr Ulhas Patil medical College, Jalgaon. The study was conducted from April 2014 to June 2014. Following inclusion and exclusion criteria were used to select the study patients.

Inclusion Criteria

- All the patients attending ophthalmology OPD and age more than 40 years.
- Patients of either sex.

Exclusion Criteria

- Patients less than 40 years of age.
- Not willing to participate the study

Thus by using the above mentioned inclusion and exclusion criteria total 224 patients were selected in the present study. The details of all the enrolled patients were recorded in a prestructured in proforma. The proforma also included demographic, medical, lifestyle data and symptoms of dry eye such as dryness, grittiness, burning, stickiness, heaviness, itching and watering. Detail ophthalmic examination was also performed in all the patients. Schirmer test was performed to evaluate aqueous tear production and diagnose dry eye syndrome. Informed consent was received from all the patients before performing the test. It was performed by placing a narrow filter-paper strip (Whatmann Filter paper No: 41) in the lower fornix. Aqueous tear production is measured by the length in millimeters that the strip wets during the test period, generally 5 minutes. The findings were recorded on the proforma. The collected data was entered in Microsoft excel and was analyzed and presented with appropriate tables and graphs.

RESULTS

Table 1: Prevalence of dry eye disease

Total patients screened	224
Dry eye disease positive	54
Dry eye disease negative	170
Prevalence	24.11%

In the present study we studied total 244 individuals attending ophthalmology outpatient department. Out of them 54 were diagnosed to be suffering from dry eye disease. Thus the prevalence of dry eye disease was 24.11%.

Table 2: Demographic details of patients

	No. of patients	%	
Age group	41-50	49	21.88
	51-60	63	28.13
	61-70	80	35.71
	71-80	27	12.05
	> 80	5	2.23
Sex	Male	96	42.86
	Female	128	57.14
Occupation	Outdoor	143	63.84
	Indoor	81	36.16

It was observed that majority of the patients suffering from dry eye disease were in the age group of 61-70 years followed by 51-60 years. The prevalence of dry eye disease was found more in female patients as compared to male patients. It was seen that 63.84% were involved in outdoor occupation whereas 36.16% were involved in indoor occupation.

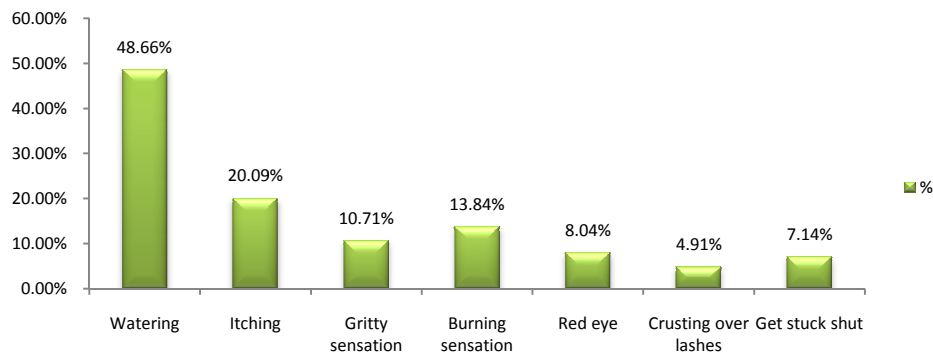
Table 3: Distribution of patients according to presenting symptom

Presenting symptom*	No. of patients	%
Watering	109	48.66
Itching	45	20.09
Gritty sensation	24	10.71
Burning sensation	31	13.84
Red eye	18	8.04
Crusting over lashes	11	4.91
Get stuck shut	16	7.14

* Multiple responses obtained

The most common presenting symptom reported by patients was watering of eyes followed by itching of eyes (20.09%) and gritty sensation (10.71%).

distribution of patients according to presenting symptom



DISCUSSION

In the present study we studied total 244 individuals attending ophthalmology outpatient department. Out of them 54 were diagnosed to be suffering from dry eye disease. Thus the prevalence of dry eye disease was 24.11%. Similar findings were also reported by A J Lee et al⁸ in their study where prevalence of dry eye disease was 27.5%. Lin PY et al⁹ observed prevalence of 33.7% in their study. Wide variation has been observed in the prevalence of dry eye disease. Studies have reported the prevalence of dry eye to be varying from 5% to as high as 73.5%.^{10,11} It was observed that majority of the patients suffering from dry eye disease were in the age group of 61-70 years followed by 51-60 years. The prevalence of dry eye disease was found more in female patients as compared to male patients. Similar findings were also observed by A J Lee et al⁸ and Suchi Shah et al¹². Thus we can state that prevalence of dry eye disease was more in elderly women. In clinical experience it has been observed that menopausal and postmenopausal women both have more tendencies to suffer from dry eye disease. The reason behind this could be due to significant decrease of tear production around the sixth decade of life in women.¹³ Various hormonal studies have suggested that sex hormones have influencing effect on ocular surface conditions through their effects on tear secretions, meibomian gland function, and conjunctival goblet cell density. Conner and colleagues¹⁴ pointed out those women who were taking oral contraceptives had significantly higher goblet cell density than those who were not taking oral contraceptives. Krenzer and colleagues¹⁵ reported that chronic androgen deficiency is associated with meibomian gland dysfunction. Schaumberg and colleagues and Uncu and colleagues reported that postmenopausal women who use hormonal replacement therapy (HRT) have a higher prevalence of DED compared with those who have never used HRT.^{16,17} This was particularly true for women who used estrogen alone. Likewise, Smith and colleagues noted that women with primary ovarian failure developed clinically significant DED.¹⁸ It was seen that 63.84% were involved in outdoor occupation whereas 36.16% were involved in indoor occupation. Similar findings were also reported by Suchi Shah et al¹². Though type of occupation doesn't have direct effect in causation of dry eye syndrome. Exposure to sun, dust, and wind exacerbate or precipitate DED.¹⁹ Kjæregaard and colleagues²⁰ reported that low ambient temperature and high relative humidity were associated with more tear film stability than low RH and high temperature. These indoor and outdoor factors can lower the quality of life and productivity of dry eye patients. The most common presenting symptom reported by patients was watering of eyes followed by itching of

eyes (20.09%) and gritty sensation (10.71%). Suchi Shah¹² also reported similar findings in their study. Variation has been also observed in the presenting symptoms in many studies.

CONCLUSION

The prevalence of dry eye disease in the present study was 24.11%. The dry eye disease was more prevalent in elderly female and individuals working outdoors. Watering and itching of eyes and gritty sensation were the common presenting symptoms.

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