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A clinical study of prevalence, risk factors and management of dry eye at regional eye hospital

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Abstract
Background and Objectives: Dry eye is a common multifactorial disorder of tear film resulting in ocular discomfort and tear-film instability with potential damage to ocular surface, due to decreased tear production or increased tear evaporation. It progressively increases in severity and if not detected may lead to sight threatening complications. This study was undertaken to study the prevalence, risk factors and diagnostic tests for dry eye.
Methods: This study was conducted in Ophthalmology OPD at Regional Eye Hospital and attached to kakatiya Medical College, Warangal from September 2017 to August 2019. 300 patients were enrolled in this study. Occupation, smoking history and other systemic co-morbidities were documented. They were given OSDI questionnaire and subjected to four tests (Schirmer's test, TBUT, Rose Bengal test, Fluorescein staining). If ≥2 tests were positive, the patients were diagnosed as dry eye. All dry eye patients were treated with tear substitutes and those with MGD were treated with tablet Doxycycline 100mg BD.
Results and Conclusion: Dry eye prevalence was found to be 46.7%. It was more prevalent in females >40 years of age (60.4%). The prevalence increased with increasing age more among patients >50 years of age (49.3%) followed by age group 30-39 years (35%). Patients with outdoor jobs such as farmers, labourers had higher percentage of dry eye (50%) followed by office workers (22.1%). 70% of the dry eye patients had refractive error with or without history of spectacle use ($p<0.00$). It was more among the smokers than non-smokers. Patients having diabetes mellitus had higher prevalence of dry eye (29.3%) ($p<0.00$). TBUT showed high sensitivity and specificity while Schirmer's test was highly specific, followed by other tests. Based on OSDI scores, most patients had moderate dry eye symptoms. During follow-up there was improvement in OSDI scores while no significant improvement in diagnostic test scores.

Keywords: Dry eye, OSDI, Schirmer's test, Rose Bengal test, Fluorescein staining.

Introduction
The term _dry eye 'can be attributed to the Swedish Ophthalmologist Henrik Sjogren, who described the triad of dry eye, dry mouth and joint pains in the year 1933. A new definition of dry eye was developed to reflect current understanding of the disease by International Dry Eye Work Shop (2007-DEWS study) which has identified the roles of tear hyperosmolarity and ocular surface inflammation in dry eye and the effects of dry eye on visual function. DEWS defined Dry eye as ―A multifactorial disease of the tears and ocular surface that leads to symptoms of discomfort [2-4], visual disturbance [5-7], and tear film instability[8-10] with potential damage to the ocular surface. It is also accompanied by increased osmolarity of the tear film [11-14] and inflammation of the ocular surface‖ [15, 16].
Dry eye is also recognized as a disturbance of the Lacrimal Functional Unit (LFU), an integrated system comprising the lacrimal glands, ocular surface (cornea, conjunctiva and meibomian glands) and lids, and the sensory and motor nerves that connect them [17].
Thus, Dry eye is a chronic, multifactorial condition characterized by disturbances in the tear film and ocular surface and increase in tear osmolarity. It can be caused either by deficiency of any one or more of the tear film constituents, or can be a component of systemic diseases, including Sjogren's syndrome, lupus and Steven-Johnson syndrome. Females on postmenopausal estrogen therapy, patients exposed to anti-androgens for prostatic cancer show an increase in the signs and symptoms of dry eye. External factors such as contact lens wear and adverse environmental exposures such as arid environments, windy conditions or visual tasking with prolonged exposure can exacerbate the symptoms of dry eye. Prevalence also increases with increasing age.
Dry eye has been one of the most common reasons for patients to visit an eye care professional. The common symptoms of dry eye are ocular discomfort such as irritation, foreign body sensation, or redness and may cause disease of ocular surface.

With the changing lifestyle and environment, newer diagnostic instruments, recent knowledge of dry eye, we are better equipped to treat dry eye though there is an increase in number of patients presenting with symptoms of dry eye. However a better understanding of the presenting symptoms, external and systemic factors contributing to dry eye and the tests for dry eye are the key which will help in the diagnosis of this chronic condition, thereby leading to more efficient and effective treatment and long term patient satisfaction.

Aim & Objectives

- To study the prevalence of dry eye in symptomatic patients attending the ophthalmology OPD.
- To study the risk factors and diagnostic tests done for evaluation of dry eye.

Materials and Methods

The study titled Study of prevalence, risk factors and evaluation of Dry eye 'was conducted in the outpatient department of ophthalmology at Regional Hospital Warangal.

Study

The study was conducted on 300 patients who presented with symptoms suggestive of dry eye. It was a 2 year cross sectional study done from September 2014 to August 2016.

Inclusion criteria

Patients equal to and above 20 years presenting with following ocular symptoms and signs.

Symptoms: (The below symptoms aggravate in conditions of dry and windy atmosphere and low humidity.)

1. Burning sensation
2. Sandy gritty feeling
3. Foreign body reaction
4. Photophobia
5. Crusting of the eyelids

Signs

1. Posterior blepharitis and meibomian gland dysfunction
2. Conjunctival congestion
3. Mild keratinization
4. Tear film abnormalities
- Mucous debris
- Thin marginal meniscus
- Froth in the tear film or along the eyelid margin in meibomian gland dysfunction

5. Corneal signs;
- Punctuate epithelial erosions that stain with fluorescein
- Filaments consisting of mucous strands lined with epithelium attached to one end of the corneal surface and stain well with rose Bengal.
- Mucous plaques consisting of semi-transparent, white to grey slightly elevated lesions of various sizes.
- Complications like peripheral superficial corneal neovascularization, melting perforation and bacterial keratitis.

Exclusion criteria

Patients less than 20 years with H/O

- Increased mucoid discharge and watery secretion suggestive of vernal keratoconjunctivitis
- Alkali burns
- Trachoma
- Acute ocular infections
- Ocular surgery within last 6 months
- Impaired eyelid function like in Bell's palsy, nocturnal lagophthalmos, ectropion etc.
- Contact lens wearers.

Procedure

Patients were selected according to the inclusion criteria, for this study. An OSDI questionnaire was asked to all participants of the study to assess the symptoms of dry eye and co-relate them with signs. Probable risk factors such as gender, age, place of residence (whether patient belongs to a rural or an urban area), occupation, history of smoking, drugs, arthritis, refractive error with or without spectacle use and other systemic co-morbidities such as diabetes, hypertension were documented.

A complete slit-lamp examination of the lid margins, tear meniscus, conjunctiva, cornea and tear film was done.

Diagnostic tests for dry eye (tear break up time, schirmer's tests, rose Bengal staining and fluorescein corneal staining) were done. Participants were labelled as having dry eye if at least two of four diagnostic tests were positive for the purpose of increasing the detection rate of dry eye and hence arrive at an accurate prevalence.

The appropriate statistical tests such as chi-square test and Fischer's Exact test were used to calculate p value for significance.

Results

Table 1: Demographic data of the patients

Total number of patients	**N=300**	
Age group (>20 years)	Frequency(percentage)	
20-29	49 (16.3)	
30-39	78 (26.0)	
40-49	64 (21.3)	
50-59	43 (14.3)	
60 & Above	66 (22.0)	
	Mean age—44.8±15.6 years	
Sex		
Male	138 (46%)	
Female	162 (54%)	
	M:F= 0.85: 1	
Occupation		
Farmer	70 (23.3)	
House Wife	84 (28.0)	
Labourer	35 (11.7)	
Office Work	65 (21.7)	
Retired	19 (6.3)	
Student	25 (8.3)	
Indoor	2 (0.7)	
Place		
Rural	132 (44%)	
Urban	168 (56%)	
Risk factors in the study population		
Medical co-morbidity		
Diabetes Mellitus	53 (17.7)	
Hypertension	26 (8.7)	
Thyroid disease	8 (2.7)	
Dry Mouth Rheumatoid Arthritis	12 (4.0) 4 (1.3)	
Other risk factors Refractive error Smoking	185 (61.7) 59 (19.7)	
	RE	**LE**
Schirmer's test positive	74 (24.7%)	62 (20.7%)
Rose Bengal positive	110(36.7%)	107(35.7%)
Fluorescein staining positive	119 (39.7%)	118(39.3%)
Tear film breakup time positive	134 (44.7%)	133(44.3%)
Dry eye present (2 or more tests positive)	140 (46.7%)	
Dry eye absent	160 (53.3%)	

The total number of patients examined in the study was 300. The age group was between 20 to 85 years, with the mean age of the patients being 44.8 ±15.6 years. Of the total number of 300 patients, 138 were males and 162 were females with female to male ratio 1.17: 1. Among the entire group, 140 patients were diagnosed to have dry eye if two or more tests were positive. Among the study population, history of spectacle use or refractive error was found in 61.7% of the patients, while history of smoking was prevalent in 24.7% of the patients. Diabetes mellitus was found to be most common co-morbidity which was seen in 17.7% of the study population.

Table 2: Distribution of study population according to OSDI score

OSDI	Frequency	Percent
1-33	51	17.0
34-66	214	71.3
67 – 100	35	11.7
Total	300	100.0
Mean & SD	52.3 ± 15.6	

The Ocular Surface Disease Index (OSDI) questionnaire was asked to the patients of the study population before subjecting them to ocular examination or tests. Of the entire study group, 71.3 % responded with symptoms of moderate dry eye, while 11.7 % responded with symptoms of severe dry eye.

Table 3: Dry eye in relation to age distribution

Age	Dry EYE		Total
	Present	Absent	
20-29	10	39	49
30-39	45	33	78
40-49	16	48	64
50-59	25	18	43
60 & Above	44	22	66
Total	140	160	300

The entire study population was divided decade wise into sub-groups and the relationship of age with dry eye prevalence was studied. The youngest patient was 20 years old and oldest was 85 years old. Mean age was 44.8 ± 16.8. Higher prevalence rates were seen among patients who were 50 years and above (49.3%) and patients from 30-39 years (35%) in those doing outdoor jobs showing the probable role occupational risk factors as well as environmental risk factors such as tropical climate, wind and air pollution.

Table 4: Dry eye in relation to sex distribution

Sex	Dry Eye		Total
	Present	Absent	
Male	49	89	138
Female	91	71	162
Total	140(100%)	160	300

Table 5: Age and sex distribution of dry eye

Age group (years)	Males	Females	Total
20-29	4	6	10
30-39	18	27	45
40-49	7	9	16
50-59	6	19	25
60 and above	14	30	44
	49	91	140

Among the 140 dry eye patients, 91 (65%) patients were females and 49 (35%) patients were males showing prevalence significantly more among females. Male to female ratio was 0.54:1. Among the males the highest percentage of dry eye was seen in the age group 30-39 years (36.7%) followed by age group 60 years and above (28.6%). Among females, highest percentage of dry eye was seen in patients aged 60 years and above (33%) followed by those in age group 30-39 years (29.7%). The overall prevalence in females aged above 40 years was high up to 60.4%.

Table 6: Dry eye in relation to occupation

Occupation	Dry Eye		Total	P Value
	Present (%)	Absent		
Farmer	50(35.7)	20	70	P<0.000
Office Work	31(22.1)	34	34	NS
House Wife*	24(17.1)	60	60	P<0.000
Labourer	20(14.3)	15	15	NS
Retired	7(5)	12	12	NS
Student	7(5)	18	18	NS
Indoor	1(0.71)	1	1	NS
Total	140(100%)	160	300	

Among the various occupation groups, farmers, labourers and those doing outdoor jobs have the overall percentage of dry eye which is around 50%. It was followed by people working in offices (22.1%) like banks, table work and those who used computers regularly. Household workers comprised of 17.1% of dry eye. It was statistically significant (p<0.00) for farmers and household workers (which mainly consisted of females>40years). Patients doing indoor jobs like office work, household work had lesser prevalence of dry eye than outdoor job holders.

Table 7: Dry eye in relation to urban/ rural area.

Place	Dry Eye		Total
	Present	Absent	
Rural	61(46.2%)	71	132
Urban	79 (56.4%)	89	168
Total	140 (100%)	160	300
Chi Square Test, P= 0.889, NS			

There was higher dry eye percentage in urban residents which is 56.4% than in rural residents, (but statistically not significant).

Table 8: Dry eye in relation to other systemic co-morbidities

Medical comorbidity	Present	P value
DM	41	<0.000
Hypertension	14	0.443
dry mouth	10	0.636
Thyroid disease	5	<0.05
Rheumatoid arthritis	4	NS

Among the study population, patients having diabetes mellitus had higher prevalence of dry eye (29.3%) and it was significantly more common in diabetic patients than in non- diabetic patients. Among the study group, 10 patients had both dry eye and dry mouth while 2 patients had only dry mouth. This data was used to study the number of people presenting with both dry eye and dry mouth. Among the dry eye patients 4 patients (2.9%) had rheumatoid arthritis.

Table 9: Dry eye in relation to refractive error/ spectacle use and smoking.

Other risk factors		Dry Eye	
		Present (n=140)	Absent (n=160)
Spectacle use /refractive error	present	98	87
	Absent	42	73
Smoking	Present	35	24
	Absent	105	136

Among the study population 70% of the dry eye patients had refractive error or history of spectacle use. Dry eye prevalence was seen to be significantly more among the smokers than non- smokers.

Table 10: OSDI scores and their correlation with dry eye

OSDI	Dry Eye		P Value (Chi Square Test)
	Present (n=140)	Absent (n=160)	
1-33	28	23	0.262
34-66	99	115	
67 - 100	13	22	

The eyes of the patients showing positive symptoms were analysed using the OSDI scores and symptoms were compared with signs to look for correlation between the two.

Table 11(a): Signs of dry eye

Conjunctiva	Dry eye present	
	RE	LE
Congestion, Pterygium	5	7
Concretions	0	0
Congestion	72	70
Nasal Pterygium	4	6
Pinguecula	2	0
Xerosis	3	3
Normal	54	54

Table 11(b): Signs of dry eye

Cornea	Dry Eye - Both eyes
	Present (n=140)
Clear	119
Dry	21
Opacity	0
Total	140
P Value (Chi Square Test)	P<0.000

Table 12: Results of Schirmer's test

Schirmer	Dry Eye - Right Eye		Dry Eye - Left Eye	
	Present (n=140)	Absent (n=160)	Present (n=140)	Absent (n=160)
Positive	71	3	60	2
Negative	69	157	80	158
P Value (Chi Square Test)	P<0.000		P<0.000	

Schirmer's test	RE	LE
Sensitivity	50.7%	42.8%
Specificity	98.1%	98.8%
PPV	95.94%	96.78%
NPV	69.5%	66.4%

Schirmer's test showed sensitivity of 50.70%, high specificity of 98.45%, positive predictive value of 96.36% and negative predictive value of 67.95%.

Table 13: Distribution of patients according to Schirmer's test

Schirmer Test	Dry Eye - Right Eye		Dry Eye - Left Eye	
	Present (n=140)	Absent (n=160)	Present (n=140)	Absent (n=160)
0-5	4	0	5	0
6-10	67	3	55	2
> 10	69	157	80	158
P Value (Chi Square Test)	P<0.000		P<0.000	

Table 14: Results of TBUT

TBUT	Dry Eye - Right Eye		Dry Eye - Left Eye	
	Present (n=140)	Absent (n=160)	Present (n=140)	Absent (n=160)
Positive	134	13	133	13
Negative	6	147	7	147
P Value (Chi Square Test)	P<0.000		P<0.000	

TBUT	RE	LE
Sensitivity	95.7%	95%
Specificity	91.9%	91.9%
PPV	91.2%	91.1%
NPV	96.1%	95.5%

Tear film breakup time (TBUT) showed higher sensitivity, specificity, positive and negative predictive values. It was found to be positive (<10seconds) in 133 patients both eyes. It was found to have a sensitivity of 95.35%, specificity of 91.90%, positive predictive value of 91.15% and negative predictive value of 95.80%.

Rose Bengal test showed sensitivity of 74%, specificity of 96.9%, Positive predictive value 95.40% and negative predictive value of 80.95%. The characteristic staining of the interpalpebral area and mucous plaques was noted in cases that tested positive.

Fluorescein staining showed sensitivity and specificity of 74.25% and 90.90% respectively. The positive predictive value and negative predictive value was found to be 87.8% and 80.2 % respectively.

Table 17: Treatment in patients diagnosed with dry eye

Drugs	Dry eyes treated (%)
Tear Substitutes(TS) eye drops/ eye ointment	140(100)
Tab. doxycycline	62(44.2)
Cyclosporine eye drops	1(0.71)

All the dry eye patients were treated with artificial tear substitutes in the form of eye drops or eye ointment four to 6 times a day, for 6 weeks depending on severity. Patients with meibomian gland disease were also treated with Tab. Doxycycline 100mg twice daily for 1 week followed by once daily for one week. Only one patient was treated with cyclosporine eye drops four times a day for 6 weeks along with artificial tears.

Out of 140 dry eye patients, 120 reported for the 1st follow up at 3rd week and only 100 reported for 2nd follow up at 6th week. Table shows rise in the number of patients in OSDI score 1-33 that is mildly symptomatic cases (33.3 % during 3rd week follow up and 58% during 6th week).There was a fall in OSDI scores among patients who were moderate to severely symptomatic.

Fluorescein staining was positive in 65% patient's right eye and 72% left eyes during 1st follow up at 3rd week and 58%

right eyes and 66% left eyes during second follow up at 6th week.

Discussion

Prevalence of dry eye:

Among the total sample of 300 patients, 140 patients were found to have evidence of dry eye either in one or both the eyes, based on the positive results of at least two out of four objective tests. The prevalence of dry eye in this study was found to be 46.67%.

The Salisbury Eye Study [18] showed a prevalence of 14.6% based on patients reporting symptoms.

In the study conducted by Sahai *et al*. [27] dry eye was present in 18.45 of the subjects studied. In a population based study in Indonesia, conducted by Lee AJ *et al*. the prevalence of dry eye was 27.5% [19].

Magdum *et al*. [20] conducted a study where out of 250 patients, 147 (58.80%) of cases showed signs and symptoms of dry eye.

An update from the international DEWS stated that the global prevalence of dry eye is about 17% while several other studies show a higher prevalence of approximately 30% in people of Asian descent [21]. This may reflect the effect of tropical study population.

This study showed dry eye prevalence to be 46.57% which falls in this range.

Association of dry eye with age

The total study sample was divided into 5 subgroups based on their age. The percentage of dry eye was higher in persons aged more than 50 years (49.3%). This corresponds to Moss *et al*. [22] study which showed an association between older age and an increase in dry eye symptoms.

In our study the prevalence of dry eye in patients >40years was 49.13%. Similar findings were seen by Shah *et al*. where the dry eye prevalence among patients above 40years was 54.3% [23].

High percentage of dry eye was also seen among the age group 30-39 years that was 35% showing the probable role of environmental risk factors such as tropical climate, wind and air pollution as well as occupational risk factors in those doing outdoor jobs. Sahai *et al*. [27], had similar findings where dry eye prevalence was maximum in those above 70 years of age (36.1%) followed by the age group 31-40 years (20%).

Sex-wise distribution of dry eye

In this study there was higher prevalence of dry eye in women compared to men, which corresponded to the findings of other studies.

Sahai *et al*. [27] showed that dry eye prevalence in women was 22.8% compared to 14.9% in men.

In this hospital based study, among the 140 dry eye patients, 91 (65%) patients were females and 49 (35%) patients were males showing prevalence significantly more among females. Male to female ratio was 0.54:1. The increased prevalence in females may also be due to the higher number of females with dry eye symptoms seeking advice for ocular problems.

Dry eye in relation to occupation

Among the various occupation groups, farmers, labourers and those doing outdoor jobs had the highest percentage of dry eye which was around 50%. Patients doing indoor jobs like office work, household work had lesser prevalence of dry eye. Thus dry eye was significantly more among outdoor job holders. Among the 140 dry eye patients 35.7% were farmers, 14.3% were labourers and 22.1 % patients did office work like computer work, bank work, tailoring, etc.

Khurana [24] *et al*. too reported an increased risk of dry eye among farmers and labourers (32% and 28% respectively of the dry eye patients) probably due to excessive exposure to adverse environment.

Dry eye in relation to urban / rural area

In this study, among the dry eye patients 56.4% were urban residents which were comparatively more than rural patients. There was no statistical difference in the prevalence of dry eye between urban and rural patients. This may be due to various risk factors present both in rural and urban area like air pollution, sun exposure and other occupational risk factors among office workers, factory workers and farmers.

Sengupta *et al*. [25] did a study to estimate the prevalence of dry eye in a rural and urban population from West Bengal and analyse the role of air pollution in dry eye. The study showed a dry eye prevalence of 40% in the rural group and 55% in the urban group.

Dry eye in relation to other systemic co-morbidities

Among the study group, 10 patients had both dry eye and dry mouth while 2 patients had only dry mouth. This data was used to study the number of people

Dry eye was significantly seen to be more in diabetic patients than non- diabetic patients. 29.3% of dry eye patients had diabetes mellitus.

This is consistent with a study conducted by Manaviat *et al*. in Iran where 54.3% of the type 2 diabetic patients suffered from dry eye [26].

Dry eye in relation to refractive error/ spectacle use and smoking.

There was a significant correlation between the presence of refractive errors and dry eye (p value<0.05). These findings are consistent with other studies such as done by Sahai *et al*. [27] which showed that dry eye was higher in those with corrected and uncorrected refractive errors compared to emmetropes.

OSDI scores and their co-relation with dry eye.

It has been proved that there is a poor correlation between subjective symptoms and objective signs of dry eye, thus objective testing is needed in all patients at risk for developing dry eye. The Ocular Surface Disease Index (OSDI) scoring system was used in the study as it can classify the dry eye into mild (1-33), moderate (34-66) and severe (67-100).

Ocular signs on examination

Conjunctival congestion and corneal dryness were the most common signs observed in cases of dry eye. 63.6% of the patients having conjunctival congestion showed evidence of dry eye. The association between conjunctival congestion and dry eye was statistically highly significant (p<0.00). This corresponds to the findings of Srinivas et al. [28] who also found an increase of bulbar hyperaemia in women with dry eye.

Tests performed for detection of dry eye

Four diagnostic tests were performed on all patients. If two

or more tests were positive, the patient was labelled to have dry eye. This criteria was adopted for diagnosis in order to increase the detection rate and hence to arrive at a prevalence. All the four tests showed statistically significant results (p<0.00)

Among all the tests, Tear film breakup time (TBUT) showed higher sensitivity, specificity, positive and negative predictive values. It was found to be positive (<10seconds) in 133 patients both eyes. It was found to have a sensitivity of 95.35%, specificity of 91.90%, positive predictive value of 91.15% and negative predictive value of 95.80%. It is one of the most commonly used tests to rule out dry eye. The TBUT test is an excellent diagnostic test for detecting the mucin and lipid layer deficiency of the tear film.

Schirmer's test showed sensitivity of 50.70%, high specificity of 98.45%, positive predictive value of 96.36% and negative predictive value of 67.95%. The advantage is that this test can be done without the use of slit lamp bio microscope.

Smith J *et al.* showed that the most frequently used diagnostic test to determine tear film abnormality was the tear film breakup time test which was done by 93% of the participants, followed by conjunctival and corneal staining done by 74-85%. Schirmer's test was performed by 41% of the participants, which was more likely because of the irritative nature and time required for this test [29].

In a study done by Rahman *et al.* [30] showed that tear film breakup time test has better diagnostic value compared to Schirmer's test in detecting tear film abnormality in patients with pterygium.

Treatment and follow up

Artificial tear substitutes are the mainstay of treatment for dry eye. The aim of using tear substitutes is to thicken the precorneal tear film at the ocular surface and thereby improve lubrication. It promotes recovery of the epithelial barrier function and helps in maintaining the normal epithelial ultrastructure. They also help in reducing tear osmolarity. Viscosity agents help to increase the duration of action and also to protect the ocular surface epithelium.

Cyclosporine is used in the concentration of 0.1% or 0.05%. Treated eyes have an increase in conjunctiva goblet cell density, so it is used in moderate to severe aqueous deficiency.

Tetracyclines are attributed to have anti- bacterial properties (therefore decreasing the bacteria producing lipases), anti-inflammatory properties (by decreasing WBC chemotaxis and phagocytosis and also decreasing the activity of collagenase, phospholipase, MMP's and decreasing the production of IL-1 and TNF alpha) and anti- angiogenic properties.

Thus in this study, significant improvement was seen in subjective symptoms only showing that dry eye is a chronic disease requiring long term treatment and follow up. Dry eye represents a multifactorial, heterogeneous disorder of the preocular tear film, which results in ocular surface disease. It requires prevention of modifiable risk factors such as occupational risk factors as well environmental risk factors.

Conclusion

- Dry eye, an under-diagnosed ocular disease is a multifactorial, heterogeneous disorder of the preocular tear film resulting in ocular surface disease.
- Age and occupation should be considered as dry eye is more common in elderly age group (>50 years) as well as the occupationally active age group (30-39 years).
- Diabetic patients should be screened for dry eye as dry eye is significantly seen to be more in diabetics.
- While considering the diagnosis of dry eye, gender, presence of refractive error, associated systemic risk factors such as rheumatoid arthritis, habitual smoking should be taken into account as dry eye has positive correlation to the above mentioned factors.
- Thus all symptomatic patients should be evaluated with a suitable questionnaire along with standard tests for dry eye diagnosis and treatment as the disease is chronic and needs long term treatment.
- Reduction in quality of life is inevitable when symptoms of dry eye occur.

Thus early diagnosis and treatment is necessary to provide ocular comfort and satisfaction with a better quality of life.

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Conflict of Interest

None

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