Section A-Research paper
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Dry eye disease symptoms in menopausal and postmenopausal women

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Abstract*:*
Introduction: The cause of dry eye syndrome is a persistent deficiency in lubrication and moisture on the surface of the eye. Burning, itchy, tired, and red eyes, as well as gritty and dry eye sensations and a feeling of a foreign body, are all signs of dry eye syndrome. According to studies, post-menopausal women are more likely than men their age to experience dry eyes. The aim and objectives of the study were to find out how common dry eye syndrome is among post-menopausal women at a tertiary care hospital and to analyze the sociodemographic characteristics that may be associated with the condition.
Methodology: The cross-sectional study was carried out at the tertiary care hospital in Udaipur. 100 Post- menopausal women were enrolled for the study. The Schirmer's test was employed to see dry eyes are present or not.
Results: In the study's participants, the average age at which menopause began was 45.6 ± 31.8 years. A 39.5% prevalence of dry eye condition was discovered. The most prevalent type of ocular dryness among research participants was mild (20.5%). Age was significantly correlated with a higher prevalence of dry eyes.
Conclusions: Although not a life-threatening condition, dry eye syndrome impairs quality of life and causes ocular discomfort. Neglect may even result in blindness.

Key words: *Dry eyes syndrome, Schirmer's test, menopausal women,*

Introduction:
Dry eye is characterised as a tear film problem brought on by inadequate or excessive tear production, which harms the interpalpebral ocular surface connected with irritation in the eyes. [(1)] It is not a distinct disease but rather a cluster of symptoms brought on by a tear film deficiency or other abnormality. [(2)] The condition known as dry eye disease (DED), which affects the tears and ocular surface, causes symptoms such as eye pain, blurred vision, and unstable tear films, as well as the possibility of ocular surface damage. [(3)] An inner mucous layer, a middle watery layer, and an exterior oily lipid layer make up the tear film. Meibomian glands secrete the lipid layer of the tear film, lacrimal glands the watery layer, and conjunctival goblet cells the mucous layer. Hormonal and neural regulatory systems control the secretion of the tear film.[(4)] Postmenopausal women are more likely to experience dry eye syndrome. This is explained by the modifications in equilibrium of sex hormones. All three of the tear film's layers are produced and maintained in large part by oestrogens and androgens. Along with the drop in hormone levels, alterations in feedback processes and shifts in receptor responsiveness interact to modify the homeostasis of the ocular surface, which causes Dry eye disease in post-menopausal women.[(5)] Having dry eyes makes it difficult to read newspapers, drive, watch television, or perform close work. Additionally, it affects psychological health and social interaction. [(6)]

Dry eye symptoms like tears, burning, grittiness (a sand-like sensation in the eyes), pain, and vision abnormalities may significantly interfere with a person's everyday activities and should not be

disregarded. The eventual diagnosis and treatment of this ailment will be assisted by screening for it. If neglected, dry eyes raise the risk of bacterial and viral eye infections. In severe circumstances, infections can result in corneal ulcers, corneal scarring, staphylomas, and lifelong blindness. The current study was done to quantify the burden of dry eyes among post-menopausal women taking into account all of these consequences.

Methodology

The cross sectional study was started after institutional ethics committee approval and also Participants informed consent was taken. 100 people served as a convenient sample size for the study. Post-menopausal women were the study's population.

Inclusion Criteria- All females who reached menopause naturally (defined as the cessation of menstruation for at least a year).

Exclusion criteria- The study excluded postmenopausal women who already have dry eye illness from other reasons, such as Sjogren syndrome, as well as people who wear contact lenses and women who are unwilling to participate in the study.

A topical anaesthetic medication called Paracain (proparacaine hydrochloride) drops, special standardised filter paper, and a pre-designed, pre-tested, semi-structured questionnaire. Data gathering after applying inclusion and exclusion criteria, all the post-menopausal women were first asked about their sociodemographic characteristics before undergoing Schirmer's test. A screening test for dry eyes was done by Schirmer's test. Inside each eye's lower lid, two standardised filter paper strips were inserted. The individuals were instructed to close their eyes for five minutes, after which the paper was taken away. The moisture content of the filter strips was instantly noted. Five minutes before the test, anaesthetic Paracain (proparacaine hydrochloride) drops were given to the subjects in order to measure just the basal secretion of tears. The insertion of a foreign body (Schirmer's strip) into the eye prevented reflex tearing as a result.

Pathological values range from 5 mm to >15 mm, with 10 mm being suspicious of dry eye and 5 mm being pathological. Patients were considered to have dry eye illness if their reading was less than 15 mm.

Using Microsoft Excel, the data were recorded and analysed. Calculated descriptive statistics were used. Where necessary, statistical tests of significance were used.

Results

This study included 100 post-menopausal women, and the mean age at menopause onset was 45.63 ± 1.8 years. The average age of the study population was 51.66 ± 5.8 years. The majority (48%) of the study's participants were between the ages of 46 and 50. In the study population, 23.3% of participants were between the ages of 56 and 60, and 11.5% were between the ages of 51 and 55. Nearly 9% of the study's participants were between the ages of 41 and 45, and 8.5% were over 60. (Table 1)

Table 1 Distribution of post-menopausal participants according to age

Age (In years)	No. of participants	% of participants
41-45 years	9	9%
46-50 years	48	48 %
51-55 years	12	12 %
56-60 years	23	23 %
>60 years	8	8%
Total	100	100

The overall prevalence of normal eyes was found to be 52 %. Around 32% had mild dryness in their eyes, 13% had moderate dryness and 3% of them had severe dryness. (Table 2)

Dry eyes symptoms were 22% in participants with more than 50 years, 17 % participants were of age less than 50 years. (Table 3)

Table 2: Distribution of participants on the basis of Schirmer's test readings

Schirmer test results	Interpretations	Number	Percent (%)
>15 mm	Normal	52	52
9-14 mm	Mild dryness	32	32
8-5mm	Moderate dryness	13	13
<5mm	Severe dryness	3	3
Total		100	100

Table 3: Correlation of Age and Dry eye Disease

Age (years)	Dry Eyes Diseases		Total
	Present	Absent	(%)
>50	22 (22%)	21 (21%)	43 (43)
<50	17 (17%)	40 (40%)	57 (57)
Total	39 (39%)	61 (61%)	100 (100)

Only 22% of the study participants were from rural areas, with the majority of them (78%) hailing from Udaipur city, an urban location 75% of the participants in this study identified as Hindu, 24% as Muslim, and 1% as Christian. In this study, it was shown that only 14% of postmenopausal women were illiterate and that 34% had completed elementary school; 16% had completed middle school; and 36% had completed secondary school. The majority of post-menopausal women (63%) were housewives, followed by 19% of farmers, 4.5% of workers earning a daily pay, and 13.5% of semi-skilled to skilled workers (cleaners, tailors, etc.). (Table 4)

Table 4 Showing different demographic variable in study population

Parameters	Variables	Percentage (%) of Participants	Percentage (%) of Dry Eye		
			Mild	Moderate	Severe
Rural / Urban	Rural Urban	22% 78%	8 % 59%	10 % 16 %	4 % 3 %
Religion	Hindu Muslim Christian	75% 24 % 1%	62% 12% 0.5 %	13% 10% 0.3 %	5% 2% 0.2 %
Literacy level	Illiterate Primary schooling Secondary schooling College graduate	14% 34 % 16 % 36 %	6% 22 % 8% 24%	4% 10 % 6% 11 %	4 % 4 % 2 % 1 %
Socio economic status	Upper lower Lower intermediate Lower	83% 7 % 10 %	58 % 3% 5 %	15% 2 % 3 %	7 % 2 % 2 %
Occupation	House wives Employed	32 % 68 %	14 % 42 %	8 % 22 %	8 % 4 %
Symptoms present	▪ Eye Itching ▪ Eye wearing ▪ Burning ▪ Ocular discomfort ▪ Visual abnormalities ▪ Foreign body sensation ▪ Impairment in daily activities of reading	72% 23 % 18% 14% 13% 7% 13%	43 % 8 % 7 % 4 % 5 % 2 % 9 %	20 % 8 % 6 % 4 % 3 % 3 % 2 %	9 % 7 % 5% 6 % 5 % 2 % 2 %

In the current study, 83.5% of the population had an upper lower socioeconomic position (class IV); 6.5% had a lower intermediate socioeconomic status (class III); and 10% had a lower socioeconomic status (class V) 39.5% of people reported having dry eyes on the whole. Twenty-five percent of study

participants had mild dry eyes, sixteen percent had moderate dry eyes, and two percent had severe dry eyes. About 27% of the study's participants reported having symptoms of dry eye syndrome. Eye itching was the most prevalent sign of dry eye syndrome in the study population (72%), followed by eye weariness (23%), and burning (18%). Women reported ocular discomfort in 14% of cases, visual abnormalities in 13% of cases, and a foreign body sensation in 7% of cases. 13% of women reported that their daily activities, such as reading the newspaper and performing close work, were impacted by dry eye symptoms. (Table 4) Additionally, it was shown that the study group lacked any behaviour related to seeking medical attention for signs of dry eye illness.

Most study participants did not associate these symptoms with menopause. About 46.5% of women already wear glasses to correct their refractive errors. In this study, it was shown that the prevalence of dry eye illness was 52.3% among post-menopausal women over 50 and 29.8% among women under 50. It was determined that the difference of 22.5% was statistically very significant. In this study, it was shown that the prevalence of dry eye illness was 32% among housewives and 68 % among post-menopausal women who were employed. It was determined that the difference was statistically significant.

Discussion

In the current study, 39 % of postmenopausal women had dry eyes. Our findings were similarly related to those of the study conducted by Aditi et al, in which a prevalence of 37% was discovered. [(7)] The results of the current study are comparable to those of a study by Adlakha et al., in which post-menopausal women had a dry eye prevalence of 34.66%. [(8)]

The results of the current study were different from those of a study conducted in Japan, where 73.5% of people reported having dry eyes.[(9)] In a research by Moss et al., dry eye syndrome was revealed to have a very low prevalence (14.4%)[(10)] The average age of the study population was 51.66 5.8 years. The results of the current study contrasted with those of a study by Uchino M et al., in which the study population's mean age was 67.55.7 years.[(9)] This result contrasted with a research by Ablamowicz et al. in which the mean age was 61.29.1 years.[(11)] In this investigation, a strong correlation between dry eye illness and advancing age was discovered. Similar results were discovered in an Australian investigation, where the odds of acquiring dry eyes were 1.04 at a 95% confidence interval of 1.01 to 1.06.[(12)] Increased age was found to be substantially linked with dry eye syndrome in a different study by Adam et al. [(13)] The Pearson correlation factor (r) for the relationship between age and the prevalence of dry eyes was determined to be 0.9714 in a study by Aditi et al. [(7)]

The prevalence of dry eye syndrome symptoms in the current study was 27%, which is comparable to a study done in China where 33.7% of the participants had symptoms.14 Similar results were observed in a research by Uchino M et al, where the patients' most often reported symptoms were ocular fatigue, irritation, dryness, and a feeling of a foreign body.[(9)] A substantial correlation between working women and dry eye disease was discovered in the current investigation. Similar results were observed in a study by Lin et al and also in the study of Schaumberg et al, which revealed a statistically significant odds ratio between socioeconomic level and dry eye disease.[(14,15)]

Conclusion

The prevalence of dry eye illness among research participants was found to be relatively high. The relationship between dry eye illness and advancing age was shown to be significant. In post-menopausal women, changes in sex hormones are causing tear film formation to be impaired, which in turn is producing dry eye illness in this age range. In order to treat the symptoms of dry eye, lubricating eye drops were given to the participants who tested positive for the condition. The research population was made aware of the possible side effects of dry eyes and encouraged not to disregard any signs.

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Declarations
No funding sources are available.
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