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Prevalence of dry eye disease among post-menopausal women in Tertiary care hospital of rural area of Panipat

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ABSTRACT

Aim: The objective of this study was to assess the prevalence of dry eye disease among post-menopausal women and to know the trend of dry eye disease with increasing age and profession of women.**Materials and Methods:** 150 post-menopausal women were included in the study and they were subjected to Schirmer's test and TBUT test. The study was conducted for a period of 6 months from May 2022 to October 2022.**Results:** Out of 150 post-menopausal women it was found that 83(55.3%) showed signs of dry eye disease and maximum women belong to >60 years age group. It was seen that in Schirmer's test 45.7% (38) have shown mild signs, 32.5% (27) have shown moderate signs and 21.6% (18) have shown severe signs of dry eye disease. It was also seen that working women (72%) had more chances of dry eye disease than homemaker (28%).**Conclusion:** Dry eye disease is very common amongst post-menopausal women and it is observed that with increasing age chances of dry eye disease increases and it is more common in working women than homemaker. Early diagnosis and treatment can prevent severe forms and complications.This is an Open Access (OA) journal, and articles are distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License](https://creativecommons.org/licenses/by-nc-sa/4.0/), which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.For reprints contact: reprint@ipinnovative.com

1. Introduction

Dry eye is one of the most well-known complaints with which people present in ophthalmology OPD. The dry eye per se is not a disease entity, but a complex of symptoms which occur as a result of deficiency or abnormalities of the tear film.^{1,2} Dry eye disease (DED) is a disorder of tear film can be due to decreased production or increased evaporation of tears.^{3,4}

DED as described by Dry Eye Workshop is a multifactorial disease affecting the tears and ocular surface which produce symptoms of discomfort, visual disturbance and instability of tear film leading to damage of ocular surface and is accompanied by raised osmolarity of tear film along with inflammation of ocular surface.⁵ The prevalence

ranges from 7%-33%.^{6,7}

Oestrogen hormone plays a very crucial role in the maintaining normal ocular surface integrity. Decreased oestrogen hormone levels in post-menopausal women results in inflammation of lacrimal gland.⁷ It also cause sebaceous gland changes.⁸

Androgens target development, differentiation and lipid production of sebaceous glands throughout body.^{1,9-11} They have effect on production and functioning of tears.¹² The meibomian glands are androgen target organs.¹³ As, the lipid production by meibomian glands is hampered in post-menopausal women so the tear film formed is unstable and this leads to evaporative dry eye. Hormone replacement therapy also has a key role in improving the quality of life among post-menopausal women and can be used in severe cases.¹⁴

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DED affects the interpalpebral ocular surface.^{5,15} The symptoms include impairment in driving, reading newspaper, watching television and doing near work. It has a huge impact on social life and psychological functioning.¹⁶ The other symptoms are itching, burning sensation discomfort while keeping eyes open for long, eye ache and visual disturbances which may cause a hindrance in the day-to-day activities of an individual and thus can't be ignored.¹⁷

DED diagnosis is mostly subjective but many tests can be performed like Tear film breakup time (TBUT), Schirmer test, Rose Bengal staining, fluorescein staining and lissamine green staining.¹⁸ The objective of this study was to assess the prevalence of dry eye disease among post-menopausal women and to know the trend of dry eye disease with increasing age and profession of women.

2. Materials and Methods

Study done was a cross-sectional study conducted on post-menopausal women who attended Ophthalmology OPD of NC Medical College and Hospital, Israna. The study was conducted for a period of 6 months from May 2022 to October 2022. 150 post-menopausal women were taken for the study who attended OPD in department of ophthalmology at NC Medical College and Hospital, Israna.

2.1. Inclusion criteria

All Women above 45 years who have attained menopause at least 1 year ago.

2.2. Exclusion criteria

- 1. Patients with previous ocular trauma
- 2. Patients with previous ocular surgery
- 3. Patients with other ocular surface disorders
- 4. Patients who were on long term topical medications
- 5. Patients on any medication which can predispose to dry eye
- 6. Patients wearing contact lens
- 7. Patients with any type of systemic disease known to cause dry eye.

A detailed history of dry eye symptoms was taken from all the post-menopausal women above the age of 45 years. And they were asked to fill ocular surface disease index (OSDI) questionnaire. It was used to quickly assess symptoms of ocular irritation caused in DED and how these symptoms affect functioning of patient's day-to-day activities. It contains 12-item questionnaire which assesses dry eye symptoms and the side effects they had on vision-related functions in patient's life.

This questionnaire had 3 subscales: first includes ocular symptoms, second includes vision-related function, and third one is environmental triggers. Patients were asked to

fill the questionnaire and rate their responses on a scale of 0 to 4 with 0 corresponding to "none of the time" and 4 corresponding to "all of the time." Then a final score was calculated which ranges from 0-100 with scores 0-12 representing normal, 13-22 representing mild DED, 23-32 representing moderate DED, and greater than 33 representing severe DED.

After this they underwent anterior segment examination under slit lamp and the tests for evaluation of dry eye like Tear film breakup time and Schirmer's test were performed.

TBUT was determined after instillation of fluorescein 2% moistened with saline applied to the inferior fornix. The patient was asked to blink many times and was examined under broad beam using the cobalt blue filter. The interval between the last blink and the appearance of first randomly distributed dry spot is noted. Time less than 10 seconds is thought to be positive.

To conduct Schirmer's test, Schirmer's strip was inserted in lower lid at the junction of middle and outer third of both eyes and patients were advised to gently close their eyes. After 5 minutes, the filter paper was removed. A positive test occurred when less than 10 mm of the strip was wet after 5 minutes without anaesthesia.

Patients were advised for treatment of DED accordingly.

Table 1: DED distribution in post-menopausal women

Age group	No. of women	No. of women with dry eye	% Of women with dry eye
46-50	48	17	35%
51-55	39	19	49%
56-60	37	24	65%
>60	26	23	88%

Table 1 depicts that out of 150 post-menopausal women 83 (55.3%) were having signs of DED. Out of these 83 the maximum positivity rate of dry eye was in age group of >60 years (88%) followed by 56-60 years (65%), 51-55 years (49%) and the least being in age group 46-50 years (35%). It also states that with increasing age the chances of DED rise.

Table 2: Schirmer test results in post-menopausal women

Schirmer's test	No. of women	% Of women
Normal (>15mm)	67	44.6%
Mild(9-14mm)	38	45.7%
Moderate(5-8mm)	27	32.5%
Severe(<5mm)	18	21.6%

Table 2 shows the severity of dry eye amongst post-menopausal women. It was seen that out of 150 44.6% (67) had normal Schirmer tests results. Out of the 83 which had signs of DED 45.7% had mild results, 32.5% had moderate results and 21.6% had severe results.

TBUT results were also seen. 67 out of 150 had TBUT time>10 sec and 83 had decreased TBUT which was <10

sec.

Table 3: Occupation of women undergoing study

Occupation of women with dry eye	No. of women	% of women
Homemaker	23	28%
Working women	60	72%

Table 3 depicts the occupation of women who underwent study. The maximum cases are in working women 72% and 28% in women who are homemaker.

Table 4: Distribution among professionals

Profession of women with dry eye	No. of women	% Of women
Tailor	3	5.5%
Farmworker	39	64.5%
Professional	18	30%

Table 4 shows distribution of dry eye among various professionals and it shows that the chances of dry eye were maximum in farmworkers 64.5% and also among professionals 30%.

3. Discussion

DED is one of the most common causes with which people present in ophthalmology OPD. Three layers make up the tear film: an outer lipid layer, an aqueous layer, and an inner mucin layer.¹⁹ Menopause has an effect on the ocular surface. Meibomian glands secrete the outer lipid layer.²⁰ Dry eyes are a result of the meibomian gland damage which reduces the amount of tears produced.¹³

In this study the prevalence of dry eye among post-menopausal women was 55.3% (83 out of 150) and maximum positivity rate (88%) belongs to age group >60 years. Sharma P et al in their study found that 70% of post-menopausal women had dry eye disease and maximum (92.5%) belong to age group 61–65 years.¹ The difference in prevalence could be because of difference in temperature and atmosphere in our setting. Studies done in US also shows that prevalence of DED in age above 50 years was double in women in comparison to men.³

There are many questionnaires for the evaluation of DED like McMonnies, Speed and OSDI. In the present study post-menopausal women were firstly asked to fill OSDI questionnaire as DED is a subjective diagnosis and in many cases the test results came out to be negative but patient has symptoms. Sharma P et al. also followed OSDI questionnaire as it is standard questionnaire.¹ Schaumburg D A et al. have also supported the role of OSDI questionnaire for the diagnosis of DED.¹³

They were exposed to TBUT test and Schirmer's test. It was found that maximum post-menopausal women had mild signs (45.7%) followed by moderate signs (32.5%) and minimum had severe signs (21.6%). Chejarla A et al.

also stated that mild DED was common than severe type of DED.⁸ It was seen that severity increases with age.

The present study showed that there is an association of DED with increasing age in post-menopausal women. Many hypothesis states that there is an age-related decrease in the secretion of meibomian glands due to the atrophy of acinar cells.²¹

It is also shown that it was more common amongst working women. The trend among working women was highest among the farmworkers (64.5%) followed by professional (30%) and the least was amongst tailors (5.5%). Sharma P et al. also had similar finding the maximum cases were amongst the farmers (25.3%).¹

Early detection of DED can be done by counselling post-menopausal women coming to gynaecology OPD to regularly follow in Ophthalmology OPD so that the severity of disease could be prevented by diagnosing at right time and also, they can be advised about the measures which can prevent DED.

These measures include use of sunglasses to prevent evaporative DED. Avoiding triggers like smoking which is a known predisposing factor in rural area females act as an irritant of mucoid layer. Professional women were advised to reduce screen time and prevent long shifts as these can produce DED. They were also advised to keep screen below the level of eyes and to do frequent blinking so that tear film can be reformed. They were also made aware about importance of regular eye check-up in post-menopausal women.

4. Conclusion

We found that the prevalence of DED increases with age among post-menopausal women the severity of symptoms and signs also increases with increasing age. The working women had more chances than homemakers and among working women who were farmworkers had maximum chances. The alteration in oestrogen hormone in post-menopausal women leads to impairment in lipid layer of tear film and hence causes dry eye in these women. The cause was also found to be environmental triggers and working routine. The early detection and counselling the patient can benefit.

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None.

6. Conflicts of Interest


Nil.

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