

**PREVALENCE OF DRY EYE IN PREMENOPAUSAL AND POSTMENOPAUSAL WOMEN: A HOSPITAL BASED COMPARATIVE STUDY.**

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**Abstract**

**Objectives:** This present study was to evaluate the prevalence and severity of dry eye with respect to age in premenopausal and postmenopausal women.

**Methods:** Visual acuity was assessed on Snellen's chart and anterior segment evaluation was done with slit lamp biomicroscope. Ocular surface Disease Index (OSDI) questionnaire was completed and grading done. Dry eye evaluation was done with Schirmer I, by placing a special filter paper in the lower fornix and Tear film Break-Up time was done by an impregnated fluorescein strip moistened with saline which was instilled into the lower fornix.

**Results:** 64(32%), 42(21%) and 35(17.5%) women were belonged in age group of 61-70 years, > 70 years and 51-60 years respectively. dry eye was seen in 6(6%) premenopausal and 47(47%) in postmenopausal women. Higher prevalence of dry eye 29(45.31%) was seen in age 61-70 years. 11(26.19%) prevalence was seen in age > 70 years. Premenopausal women had mainly 6(100%) mild grade of dry eye. Postmenopausal women had 22(46.81%), 14(29.79%) and 11(23.40%) mild, moderate and severe grade of dry eye respectively.

**Conclusions:** Dry eye was commonly seen in older age postmenopausal women. Premenopausal women had mainly mild grade of dry eye. Postmenopausal women had commonly mild to moderate grade of dry eye. Hence, Early detection of dry eye is important to arrest the progression of dry eye as well as to prevent the complications that can reduce corneal transparency and reduce vision. Environmental and behavioural modifications such as taking breaks while reading, keeping the computer monitors at eye level, use of UV protective glasses and humidification of the environment can be tried.

**Key words:** Dry eye, premenopausal, postmenopausal, age group

**Introduction**

Dry eye is one of the most commonly overlooked sign of menopause. It is defined as "a disorder of the tear film due to tear deficiency or excessive tear evaporation, which causes damage to the inter-palpebral ocular surface and is associated with symptoms of ocular discomfort [1]. It refers to a heterogenous group of conditions all characterized by inadequate lubrication of ocular surface. Although it may sound like a minor annoyance, dry eye is a potentially serious and chronic condition. It may severely limit a person's activity, and in extreme cases, cause blindness [2].

This disease is a common cause for visits to ophthalmologists and primary care physicians alike.

Different studies have found a relatively wide range of prevalence estimates, ranging from 7% to 33% [3].

The tear film is formed by an outermost oily lipid layer, middle watery layer and inner mucous layer. The lipid layer is secreted by Meibomian glands, lacrimal glands secrete watery layer and goblet cells of conjunctiva secrete mucous layer of tear film. The tear film secretion is regulated by hormonal and neuronal regulatory systems [4]. Objectives of this present study was to evaluate the prevalence of dry eye in with respect to age group in premenopausal and postmenopausal women.

**MATERIALS & METHODS**

This present study was conducted in Department of Ophthalmology, SKMCH, Muzaffarpur, Bihar, with

collaboration of the Department of Ophthalmology, PMCH, Patna, Bihar, India during a period from November 2018 to March 2019. All the subjects were signed an informed consent.

A total of 200 women were enrolled in this study. It was divided into two groups premenopausal and postmenopausal. Each group was included 100 women.

All the patient data was recorded in a predesigned proforma, including the detailed history. The inclusion criteria were postmenopausal women who had completely achieved natural menopause of at least one year and premenopausal women with regular monthly menstrual cycles. Patients with systemic disorders known to cause dry eyes such as Rheumatoid Arthritis, Diabetes Mellitus, Thyroid Disease, AIDS, Graft Versus Host Disease, patients on medications known to cause dry eyes like anticholinergic medications, Non-steroidal Anti Inflammatory Drugs, Beta-blocker and radiation therapy, patients with known ocular surface diseases like Herpes Simplex Keratitis and Herpes Zoster Ophthalmicus, topical eye drop users and patients who had recent ocular surgery within 3 months and contact lens wearer were excluded.

**Procedures:** Visual acuity was assessed on Snellen's chart and anterior segment evaluation was done with slit lamp biomicroscope. Ocular surface Disease Index (OSDI) questionnaire was completed and grading done. Dry eye evaluation was done with Schirmer I, by placing a special filter paper in the lower fornix and Tear film Break-Up time was done by an impregnated fluorescein strip moistened with saline which was instilled into the lower fornix. The TBUT of less than 10 seconds was considered significant. Corneal and conjunctival staining was done using impregnated fluorescein and Rose Bengal strips which were gently applied to the lower conjunctival fornix after instillation of topical anaesthesia and uniform distribution of the stain was obtained by asking the patient to blink several times. The staining pattern was assessed using the National Eye Institute (NEI) grading system.

#### STATISTICAL ANALYSIS

Data was analysed by using simple statistical methods with the help of MS-Office software. All data was tabulated and percentages were calculated.

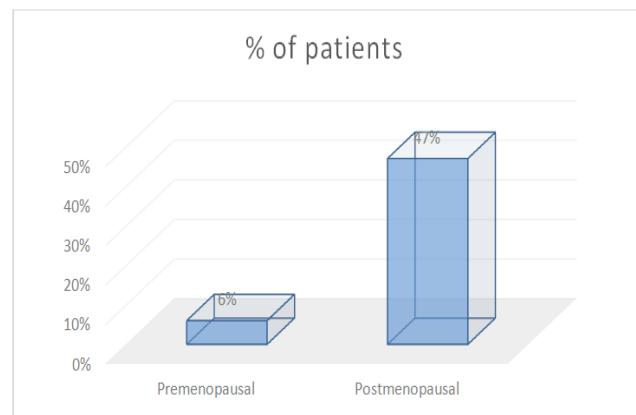
#### OBSERVATIONS

In this present study, a total of 200 women were included in this study. Out of 200 women, 100 women were in each group premenopausal and postmenopausal. Age group of women had 20 years to >70 years. Most of the women 64(32%) were in age group of 61-70 years. 42(21%) women were in age > 70 years. 35(17.5%) were in age group of 51-60 years. 28(14%) women were in age group of 41-50

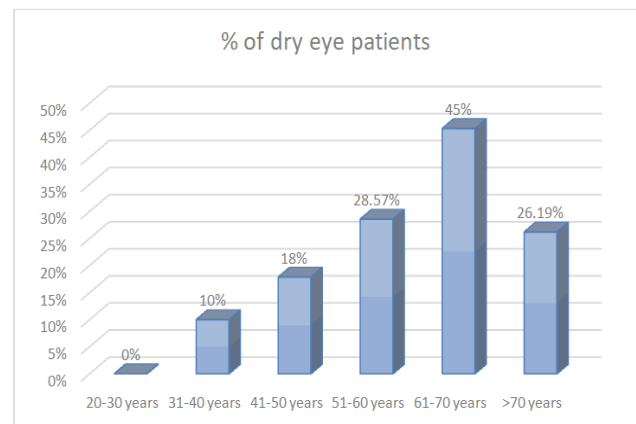
years. 20(10%) were in age group of 31-40 years. And 11(5.5%) women were in age group of 20-30 years.

**Table 1:** Age group of patients

Age group (Years)	No. of patients	% of patients
20-30	11	5.5%
31-40	20	10%
41-50	28	14%
51-60	35	17.5%
61-70	64	32%
>70 years	42	21%
Total	200	100%



**Figure 1:** Comparisons of number of women with dry eye in premenopausal and postmenopausal women. In this present study, dry eye was seen in 6(6%) premenopausal and 47(47%) in postmenopausal women.



**Figure 2:** No. of dry eye with respect to age group.

In this present study, higher prevalence of dry eye 29(45.31%) was seen in age group of 61-70 years. 11(26.19%) prevalence was seen in age group > 70 years. 6(28.57%) prevalence was seen in age group of 51-60 years. 5(17.86%) prevalence was seen in age group of 41-50 years. And 2(10%) prevalence was seen in age group of 31-40 years.

**Table 2:** Comparison between grading of dry eye in premenopausal and postmenopausal women.

Grading of dry eye	Premenopausal	% of premenopausal	Postmenopausal	% of postmenopausal
Mild	6	100%	22	46.81%
Moderate	0	0	14	29.79%
Severe	0	0	11	23.40%
Total	6	100%	47	100%

In this present study, all dry eye premenopausal women 6(100%) had mild grade. While in postmenopausal women, 22(46.81%) women had mild grading of dry eye. 14(29.79%) postmenopausal women had moderate grade of dry eye. And 11(23.40%) postmenopausal women had severe grade of dry eye.

## DISCUSSIONS

Dry eye disease (DED) is a disease of the tears and ocular surface and leads to symptoms of ocular discomfort, visual disturbance and tear film instability with potential damage to ocular surface [5].

The symptoms of dry eye are eye dryness, discomfort, sensitivity to light, itching, burning, tearing, grittiness, discomfort, fatigue and visual disturbances [6]. Dry eyes if left untreated can increase the risk of bacterial and viral infection of eye. It has been consistently found that dry eye increases with age and disproportionately affects women especially after menopause. Studies have shown that estrogen receptor mRNA are present in the lacrimal gland, meibomian gland, lids, palpebral and bulbar conjunctiva, cornea and anterior ocular surface. Therefore, reduction in naturally occurring estrogen after menopause may increase the chances of developing dry eye in post menopausal women. Estrogen deficiency may lead to sebaceous gland alteration, so further destabilization of the tear film due to meibomian gland dysfunction. Low androgen levels in old age are most consistently associated with dry eye. With age there is increase in meibomian gland dropout, particularly above the age of 50 years, which increases the chances of meibomian gland dysfunction [7].

In this present study, 200 women with age 20 years to >70 years were enrolled. Out of 200 women, 100 women were premenopausal and 100 women were postmenopausal. Most of the women 64(32%) were in age group of 61-70 years. And 42(21%) women were in age > 70 years. Older age women had greater prevalence of dry eye. 6(6%) Prevalence of dry eye was seen in premenopausal women. And 47(47%) dry eye was seen in postmenopausal women.

Postmenopausal women have higher incidence of DED. Large-scale epidemiological studies done in the United States have shown that the rate of DED in women over 50

years old is nearly double that in men over 50, at 7% and 4%, respectively [8].

In this present study, higher prevalence of dry eye 29(45.31%) was seen in age group of 61-70 years. 11(26.19%) prevalence was seen in age group > 70 years. 6(28.57%) prevalence was seen in age group of 51-60 years.

All the dry eye premenopausal women 6(100%) had mild grade. While in postmenopausal women 22(46.81%) had mild grading of dry eye. 14(29.79%) postmenopausal women had moderate grade and 11(23.40%) postmenopausal women had severe grade of dry eye.

The prevalence of dry eye in general population varies from 10.8% to 57.1% [9] according to previous studies. Women are 1.5 times more prone to dry eye than men, most cases seen after menopause [10]. Studies indicated that old age and female sex are established risk factors of Dry eye disease [11].

Prevalence of dry eye in post-menopausal women in the study of Pujari MR. et al. They were found to be 60%. Other risk factors are air pollution, low humidity, high temperature, sunlight exposure [12]. Patients with outdoor occupation were found to have a higher prevalence of about 63.3%.

Patients with a clinical diagnosis of mild dry eyes may benefit from behavioural and environmental modification which causes preservation of existing tears by reducing evaporation, such as learning to take breaks while reading, lowering the computer monitors to decrease lid aperture, use of protective glasses with side pieces in outdoor setting and humidification of the environment [13].

## CONCLUSIONS

This present study concluded that the dry eye was commonly seen in older age postmenopausal women. Premenopausal women had mainly mild grade of dry eye. Postmenopausal women had commonly mild to moderate grade of dry eye. Hence, Early detection of dry eye is important to arrest the progression of dry eye as well as to prevent the complications that can reduce corneal transparency and reduce vision. Environmental and behavioural modifications such as taking breaks while reading, keeping the computer monitors at eye level, use of UV protective glasses and humidification of the environment can be tried.

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