Hospital based study of prevalence of dry eye in post-menopausal women

Rahul Agarwal[1,*], Priti Singh[2], Tanya Rajpal[3], Rashmi Kumar[4], Sapna Raghuwanshi[5], Vinita Ramnani[6]

[1,2]Associate Professor, [3]Intern, [4,6]Assistant Professor, [5]Senior Resident
Dept. of Ophthalmology, J.K Hospital & L.N Medical College, Bhopal, MP

***Corresponding Author**
E-mail: rahuleye@rediffmail.com

Abstract

Background & Objectives: Dry eye, an ocular surface disorder occurring due to deficiency of tear film is common amongst post- menopausal women. Various previous studies have shown some form of meibomian gland dysfunction in post-menopausal women having dry eyes. Further research is needed to understand prevalence of dry eyes in this group of patients, its severity and associated risk factors.

Methods: Cross-sectional study was carried out on 300 post-menopausal women for diagnoses of dry eye based on schirmer's test Grading of dry eye was done according to drew's classification. Detailed history was taken from the patient on a predesigned format & relevant ocular examination was done.

Result: 96 of the 300 post-menopausal women visiting our hospital, who were included in our study, were found to have dry eyes that is 32% prevalence. Age adjusted prevalence was more for older women. Symptoms of dry eye commonly seen in these women were of dryness, crusting, redness, grittiness & burning. Of the 32 % women having dry eyes, 21% had mild, 8% moderate and 3% severe dry eyes.

Interpretation: Dry eye & its symptoms may be left unnoticed for years in post-menopausal women. Dry eye is a highly undiagnosed disorder in these women and therefore regular eye checkup of all such women should be done. Higher age group post-menopausal women are more susceptible to it.

Key words: Dry eye, Menopause, Ocular, S test, Schirmer's test, Tear film

Access this article online	
Quick Response Code:	**Website:** www.innovativepublication.com
	DOI: 10.5958/2395-1451.2016.00014.7

Introduction

Dry eye is the most frequent disorder in ophthalmology practice. The dry eye per se is not a disease entity, but a symptom complex occurring as a sequelae to deficiency or abnormalities of the tear film[1]. 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.[2]

Until lately, the condition was thought to be merely due to aqueous tear insufficiency. Today, it is understood that KCS is a multifactorial disorder due to inflammation of the ocular surface and lacrimal gland, neurotrophic deficiency and meibomian gland dysfunction. This change in paradigm has led to the development of new and more effective medications.

Its prevalence is common among post-menopausal women. According to one study eye is a locus of action of female sexual hormones[3]. Another study proposed the reduction of naturally occurring estrogen as a possible reason for the occurrence of dry eye in post-menopausal women[4].

According to a study presented at the American Academy of Optometry, a large proportion of post-menopausal women were found to have dry eye that was predominantly related to meibomian gland dysfunction. Out of the 939 post-menopausal women average age 65 years, 11.1% were classified as normal while 63% were identified as having dry eye and the rest didn't fall in any of these categories. Over 90% of women showed some form of meibomian gland dysfunction, making it the major contributor to dry eye.[5]

Further research is needed to better understand dry eye and its impact on public health and quality of life. There are new diagnostic techniques and potential treatment options, but there is a lack of information regarding the magnitude of the problem. "The existing estimates for the prevalence of dry eye does not reflect the current understanding," said Dr. Jones-Jordan.[5]

Dry eye symptoms may be a manifestation of a systemic disease, therefore timely detection may lead to recognition of a life–threatening condition. Additionally, patients with dry eye are prone to potentially blinding infections, such as bacterial keratitis[6] and also at an increased risk of complications following common procedures such as laser refractive surgery.

Objectives

1. To assess the prevalence of dry eye in post-menopausal females.
2. To assess the severity of dry eyes with relation to the age of post-menopausal females.
3. To study the associated risk factors in post-menopausal females with relation to dry eye.
4. To assess the prevalence of various types of dry eye in post-menopausal females.

Materials and Methods

Materials: This study was carried out in J K hospital with post-menopausal women as the target group. It was a cross sectional study. Total 300 post-menopausal women were taken in the study.

All the women were tested for the dry eye disease.

Method: The diagnosis was established based on Schirmer's test.

Grading of dry eyes was done according to DREWS classification.

Inclusion criteria:

1. All women who have reached menopause.

Exclusion criteria:

1. H/o ocular trauma.
2. H/o ocular surgeries.
3. Patients of any ocular surface disorders.
4. Patients on long term ocular topical medication.
5. Any systemic disease associated with generalized dryness.

History Taking: A detailed history about the symptoms was elicited from the patient and was written down on a predesigned format.

1. **Ocular symptoms:**
   a. Redness of eye
   b. Foreign body sensation
   c. Burning sensation
   d. Crusting on lashes
   e. Feeling of dryness in eyes
2. **History of present Illness:** The history of present illness was enquired in detail about the mode of onset of symptoms with duration.
3. **Past History:** A past history of general and ocular illness was noted to know whether the patient was chronologically ill and/ or suffered from any eye disease of significance.

Examination

Ocular Examination: Ocular examination was conducted under the following headings with torch:

1. Lids
   - Swelling over lids
   - Condition of the skin of the lids
2. Conjuctiva
   - Pre-xerosis
   - Xerosis
   - Bitot's spots
   - Conjuntival/ ciliary congestion
   - Discharge in the conjunctival sac
   - Pigmentation
3. Cornea
   - Transparency
   - Xerosis
   - Ulcer
   - Vascularization
   - Perforation
4. Sclera
   - Any discoloration
   - Nodule
5. Anterior chamber – Depth
   - Contents
6. Iris
   - Colour
   - Pattern
   - Adhesion
   - Prolapse
7. Pupil
   - Size
   - Shape
   - Margin
   - Reaction to light (direct and consensual)
8. Lens
   - Transparency

Statistical Formula Used

Prevalence-

Definition: **Point prevalence** of a disease is defined as the number of all current cases (old and new) of a disease at one point of time, in relation to a defined population.

The "Point" in a point prevalence may for all practical purposes consist of a day, several days, or even a few weeks, depending on the time it takes to examine the population sample.

Number of all current cases (old and new) of a specified disease existing at a given point in time

----------x 100

Estimated population at the same point in time

Results

Results were made out of total 300 post-menopausal women after proper history taking and performing schirmer's test.

Table 1: Prevalence of dry eye

Women with dry eye	Total	Prevalence
96	300	32

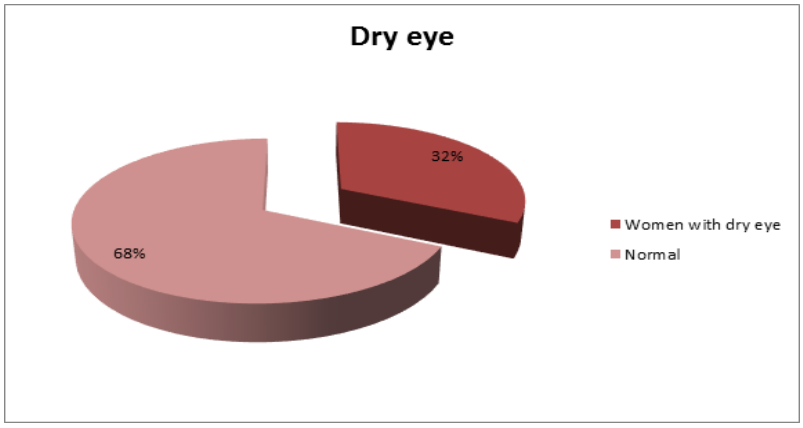

Fig. 1

Table 2: Prevalence of various grades of dry eye

S. No.	Dry eye staging	Number	Prevalence
1.	No dry eye	204	68
2.	Mild dry eye	63	21
3.	Moderate dry eye	24	8
4.	Severe dry eye	9	3

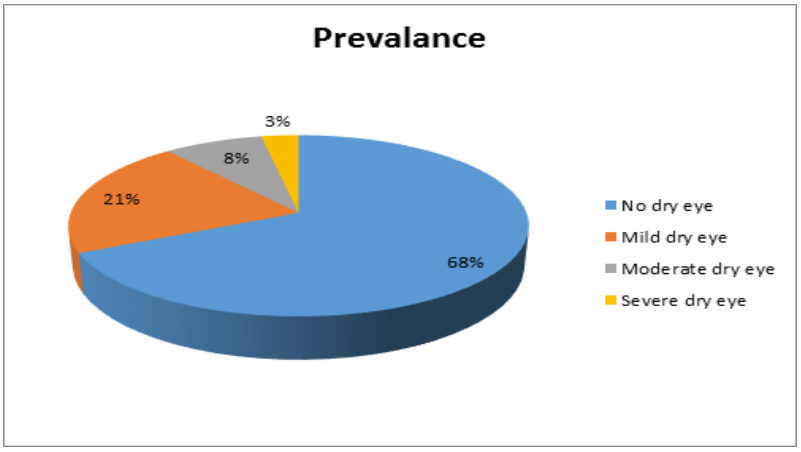

Fig. 2

Table 3: Symptoms of dry eye

S. No.	Symptoms	Never	Rarely	Sometimes	Often	All time
1.	Dryness	68%	18%	10%	2%	0.5%
2.	Grittiness	42%	24%	21%	10%	1%
3.	Redness	43%	29%	12%	11%	1%
4.	Burning	40%	27%	22%	12%	5%
5.	Crusting	63%	23%	8%	6%	0.5%

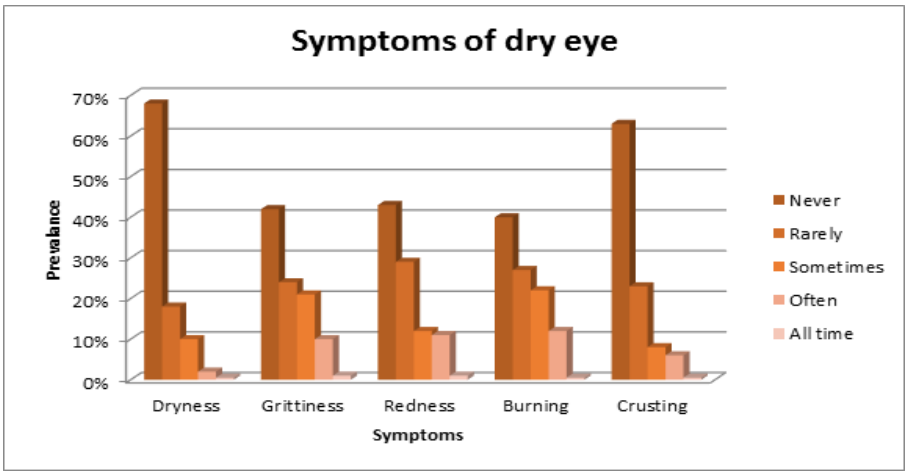

Fig. 3

Table 4: Age adjusted prevalence

Age group(years)	Number	Prevalence
<45	16	5.33%
45-49	17	5.66%
50-54	21	7%
55-59	22	7.33%
60-64	25	8.33%
65-69	29	9.66%
>70	35	11.66%

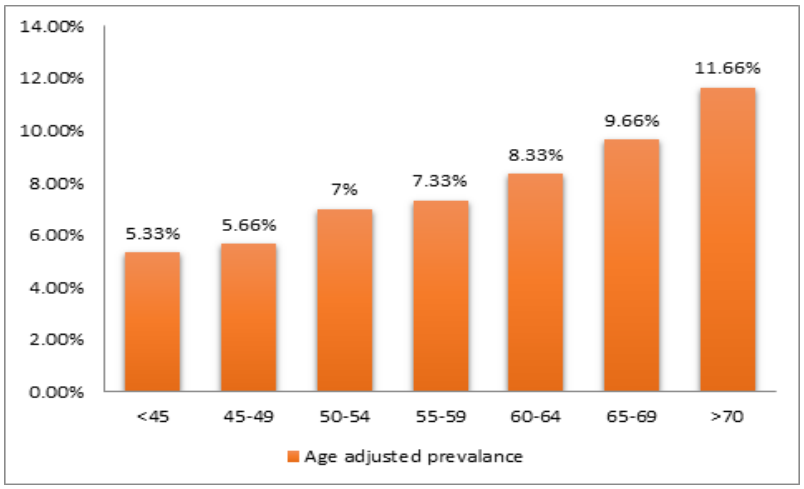

Fig. 4

Discussion

The aim of our study was to find out the prevalence of dry eye in post-menopausal women visiting the hospital. To our surprise 96 out 300 (32%) of women had dry eye [Table 1 and fig. 1].

In our study we have also found that the prevalence of mild dry eye was maximum (21%) and that of severe dry eye was least (3%). [Table 2 and fig. 2]. Table 3 and fig. 3 showed the association of various symptoms with dry eyes in post-menopausal women. Also we

have found that the prevalence of dryness increased with increase in age group. [Table 4 and fig. 4].

Some studies conducted for the prevalence of dry eye have shown following results:

In one study**,** the prevalence of dry eye to be 14.4% in 3,722 subjects aged 48 to 91 years and noted that the prevalence of the condition doubled after the age of 59.[7]

In another study of dry eye syndrome among US women showed that the prevalence of DES increased with age, from 5.7% among women < 50 years old to 9.8% among women aged ≥ 75 years old. The age-adjusted prevalence of DES was 7.8%, or 3.23 million women aged ≥ 50 in the US.[8]

In a study of prevalence of dry eye among an elderly Chinese population in Taiwan, Women were more likely to report frequent symptoms of dry eye (odds ratio, 1.49; 95% confidence interval, 1.19–1.87). Among those who were symptomatic, 78.9% (362/459) had a low tear film breakup time (≤10 seconds), 62.5% (287/459) had a low Schirmer test result (≤5 mm), and 61.7% (283/459) had abnormal anatomic features of the meibomian glands. Furthermore, 85.4% (392/459) were symptomatic and had either a low Schirmer score or an abnormal meibomian gland assessment.[9]

Use of HRT was significantly related to the prevalence of dry eye syndrome. Considering the prevalence of either clinically diagnosed dry eye syndrome or severe symptoms, women who never used HRT had the lowest prevalence (5.9%). Women who used estrogen alone had the highest prevalence (9.1%), and women who used a combination of estrogen plus progesterone/progestin had a prevalence that was intermediate between never users and users of estrogen alone (6.7%).[10]

The mean corneal thickness value was significantly decreased in postmenopausal women with dry eye (P < 0.001 at each corneal location). The central cornea had the thinnest mean values in dry eyes and normal eyes (533.10±4.74μm and 547.63±15.11μm, respectively), whereas superonasal cornea had thicker mean values in both groups (632.43±6.11μm and 648.78±14.98μm in dry eye and normal eyes, respectively).[11]

In another dry eye epidemiology study, 13,517 subjects attending optometry clinics in Canada, aged 10-80yrs. Cross-sectional(clinic based) study was conducted. Prevalence was noted to be 28.7%.[12]

In Melbourne visual impairment project: 926 subjects in Australia, 40-97 years old,cross sectional study, prevalence was recorded to be 7.4%.[13] In another study on 3703 subjects from Beaver Dam, prevalence of dry eye was found to be 14.4% in a population based study.[14]

And overall prevalence of dry eye was found to be consistent with other studies of dry eye in post-menopausal age group.

Our study further brought out to notice the hidden disease in a significant number of individuals who were unaware of the problem.

Conclusion

The following conclusions were formed from this study:

1. Dry eye is a hidden disorder, which can be left undiagnosed for years.
2. Symptoms of dry eye may be left unnoticed for years.
3. It affects significant number of female population in the post-menopausal age group.
4. Every women should have a regular eye checkup after menopause so that causes of visual impairment could be excluded.

Summary: The present study is aimed at evaluating the prevalence of dry eye among post-menopausal women.

1. To assess the prevalence of dry eye in post-menopausal females.
2. To assess the severity of dry eyes with relation to the age of post-menopausal females.
3. To study the associated risk factors in post-menopausal females with relation to dry eye.
4. To assess the prevalence of various types of dry eye in post-menopausal females.

Our study was conducted in ophthalmology department of our institute for 2 months duration. We included 300 post-menopausal women attending the OPD. Proper history was elicited and schirmer's test was performed. These women were graded according to the DREWS Classification by performing schirmer's test. All of them were examined for any ocular involvement.

1. The prevalence of dry eye in post-menopausal women was found to be 32%
2. The prevalence and severity of the disease increased with increasing age
3. Association with various other conditions increased the risk of developing dry eye disease
4. The prevalence of mild dry eye according to the DREWS Classification was found to be the highest in contrast to lowest prevalence of severe dry eye condition

Conflict of Interest: None

Source of Support: Nil

References

1. SihotaR, Tandon R. Systemic Ophthalmology. In: Sihota R, Tandon R, editors. Parson's Diseases of the Eye, 21st ed. New Delhi: Elsevier; 11.p.463-464.
2. Lemp MA. Report of the National Eye Institute/Industry Workshop on clinical trials in dry eyes. *CLAO J* 1995;21:221-32.
3. Kramer P, Lubkin V, Potter W, Jacos M, Labay G, Silverman P. Cyclic changes in conjunctival smears from menstruating females.*Ophthalmology*1990;97:303-307.
4. Sator MO, Joura EA, Golaszewski T, Gruber D, Frigo P, Metka M, Hommer A, Huber JC. Treartment of

menopausal keratoconjunctivitis sicca with topical oestradiol.*Br J Obstct gynaccol* 1998;105:100-102.
5. Academy of Optometry 2013 Annual Meeting. Abstract #130240. Presented October 24, 2013.
6. Lemp MA, Chacko B. Diagnosis and treatment of tear deficiencies. In: Tasman W, Jaeger E, editors. Duane's Clinical Ophthalmology. Philadelphia: Harper and Row; 1997.
7. Moss SE, Klein R, Klein BE. Prevalence of and risk factors for dry eye syndrome. Arch Ophthalmol. 2000;118:1264–1268. [PubMed]
8. Schaumberg D A, Dana R, Buring J E, and Sullivan D A. Prevalence of Dry Eye Disease among US Men: Estimates from the Physicians' Health Studies. Arch Ophthalmol. 2009 Jun;127(6):763–768.
9. Lin P , Tsai S Y, Cheng C Y , Liu J H, Chou P, Hsu W M. Association between Symptoms and Signs of Dry Eye among an Elderly Chinese Population in Taiwan: The Shihpai Eye Study.Investigative Ophthalmology & Visual Science May 2005, Vol.46, 1593-1598. doi:10.1167/iovs.04-0864.
10. Schaumberg D A, Buring J E , Sullivan D A, Dana M R. Hormone Replacement Therapy and Dry Eye Syndrome. *JAMA.* 2001;286(17):2114-2119. doi:10.1001/jama.286.17.2114.
11. Juan S G, AntonioL P, Luis A, Rahhal, Francisco M S. Reduced Corneal Thickness Values in Postmenopausal Women With Dry Eye. Cornea. January 2005 - Volume 24 - Issue 1 - pp 39-44.
12. Caffery BE et al. The Canadian dry eye epidemiology study. Adv Exp Med Biol. 1998;438:805-6.
13. McCarty CA, Bansal AK, Livingston PM, Stanislavsky YL, Taylor HR. The epidemiology of dry eye in Melbourne, Australia. Ophthalmology. 1998;105:1114–1119. [PubMed]
14. Moss SE, Klein R, Klein BE. Incidence of dry eye in an older population. Arch Ophthalmol. 2004 Mar;122(3):369-73