

# To study the various causes of chronic irritation of eyes in 1000 cases in Pandit Deen Dayal Upadhyaya Hospital, Jaipur

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## Abstract

**Background:** Chronic irritation of eyes is a distressing situation for both the patient and doctor. It is caused by a group of conditions and diseases. **Aim:** This study was done to find out the various causes of chronic irritation of eyes among patients attending eye OPD, Pandit Deen Dayal Upadhyay Hospital attached to SMS Medical College and Hospital, Jaipur and to find out the association between Meibomitis and Blepharitis with dry eye. **Material and Method:** The duration of study is 6 months. It is prospective type of study comprised 1000 patients who were suffering from chronically irritated eye presented to the Eye OPD, Pandit Deen Dayal Upadhyay Hospital attached to SMS Medical College and Hospital, Jaipur after applying exclusion criteria. **Results:** In the case series, out of 1000 cases 536 (53.6%) were males and 464 (46.4%) were females. The male to female ratio was 1:15. It was observed that in IVth and Vth decade, there was female dominance who were affected by chronically irritant eyes. There was male dominance in between 10 years to 40 years and it can be explained by the fact that in this age group is more exposed to computer and outdoor environment. We found out that maximum number of patients belong to II half of age group (72%). In our study 534 (53.4%) patient belong to rural background and 466 (46.6%) belong to urban background. The most common occupational group affected was agricultural workers group (29.2%) followed by manual labourers (26.5%) and then by office workers 184 (18.4%). In our study we find out the most common cause of chronic eye irritation was Allergic conjunctivitis 278 (27.8%), followed by Meibomitis 236 (23.6%), Dry eye 210 (21%), Blepharitis 90 (9%), Chalazion 12 (1.2%), Pterygium 50 (5%), VKC 42 (4.2%), Prolonged use of topical drugs 23 (2.3%) and prolonged computer work 59 (5.9%). We also observed that Meibomitis and Blepharitis were associated dry eye in 31.77% and 41.1% patients respectively. **Conclusion:** Highest prevalence 63.9% of chronic irritation of eyes seen in age group (40-69 years). There was no age group debarred from this disease. We find out allergic conjunctivitis 278 (27.8%) is the most common cause followed by Meibomitis 236 (23.6%) and it is associated with dry eye.

**Keyword:** Chronic irritation of eyes, dry eye, meibomitis, blepharitis and allergic conjunctivitis.

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## INTRODUCTION

Chronic irritation of eyes is an distressing situation for the patient. It is caused by a group of conditions and diseases but most often it is nonspecific in nature. Irritation connotes an inflammatory effect unrelated to cellular

immunity or sensitization. An eosinophilic response, the hallmark of an allergic reaction is usually absent in irritant reaction. Any qualitative or quantitative abnormality of tear film leads to chronic irritation of eyes. Precorneal tear film forms a stable continuous covering over exposed portion of globe. Blinking spreads the tearfilm, resurfaces area of dryness, adds fresh component of tear. The tear film composed of mucin secreted from conjunctival goblet cells and epithelium, aqueous tears secreted by lacrimal glands and lipids secreted by Meibomian glands. Tear film abnormality is very important aetiological factor for chronic irritation of eyes. Aciner secretory cells of main lacrimal gland and by accessory lacrimal gland produces aqueous layer. It contributes most of the volume of tear film. Mucin is produced by conjunctival goblet cells spreads directly over the hydrophobic surface of epithelium. Meibomian

gland produces lipid layer of tear film which retards evaporation. Various causes of chronic irritation of eyes are dry eye. Meibomitis, blepharitis, chalazion, pterygium, allergic conjunctivitis, vernal keratoconjunctivitis, prolonged computer work etc. Dry eye is the commonest complaint presenting to ophthalmologist. It is a type of ocular surface disease resulting from any condition that decrease tear secretion or increase tear film evaporation results in loss of water from tear film. Meibomian gland dysfunction is characterized by inflammation of meibomian gland and other ocular structures including ciliary portion of eyelid, conjunctiva and cornea. In this condition, there is stenosis or closure of meibomian gland orifice. The blockage of orifice leads to retention of oil within meibomian gland and meibomian gland becomes dilated. This oil mixes with the tear film and makes it abnormal. Typically patients with meibomian gland disease or mucin deficiency demonstrates a tear break up time of less than 10 seconds. Patients with meibomitis complaint of burning of eyes or chronic sandy gritty irritation, typically symptoms are worse on awakening in the morning. Blepharitis is inflammation of eyelids. In anterior blepharitis, lid margins are frequently colonised by bacteria such as staphylococcus (aureus and coagulase negative), corynebacterium and propionibacterium. Posterior blepharitis is characterised by inflammatory and obstructive meibomian gland dysfunction. Due to this the composition and quality of lipid in the meibomian gland undergo significant changes. The frequency of dry eye is as high as 56% in Blepharitis, 48% in obstructive meibomian gland dysfunction and 79% with seborrhoeic meibomian gland dysfunction. The commonest form of allergic conjunctivitis is seasonal allergic conjunctivitis. VKC is the severe form of chronic allergic conjunctivitis. The disease is bilateral and more common in males and adolescent. It is self limiting and by puberty it resolves. Pterygium is a triangular fibrovascular subepithelial in growth of tissue of bulbar conjunctiva over limbus to the cornea. This is more common in countries near the equator, in hot and sunny climate in farmers and in persons who have outdoor activity and do not wear sunglasses. It is twice common in males. A chalazion is a granulomatous growth that develops around a sebaceous gland in the lids as a foreign body reaction to sebum released into surrounding tissue.

## MATERIAL AND METHOD

This study was conducted on 1000 patients attending eye OPD of Pandit Deen Dayal Upadhyay Hospital, attached to SMS Hospital, Jaipur.

### Study Design

It is a prospective study done on 1000 cases of chronically irritated eye after applying the exclusion criteria of the study. The study was done between August 2015 to February 2016.

### Inclusion Criteria

Dry eye, meibomitis, blepharitis, chalazion, pterygium, allergic conjunctivitis, VKC, patients on prolonged topical drugs and prolonged computer work.

### Exclusion Criteria

Infected eye, Injury, Foreign body, Entropion, Recent surgery, Subconjunctival hemorrhage, Trichiasis and Dystichiasis, Uveitis, Glaucoma, Primary Corneal pathology, acute or chronic dacryocystitis, Extremes of ages, uncooperative patients.

## OBSERVATION

We selected 1000 patients presenting with chronically irritated eye from the Department of Ophthalmology, Pandit Deen Dayal Upadhyay Hospital, attached to SMS Medical College and Hospital in Jaipur. Table 1 shows that out of 1000 patients with chronically irritated eye, male patients were 536 (53.6%) and female patients were 464 (46.4%). The male: female ratio was 1.15. Highest number of patients were affected in IV decade (25.7%) followed by V decade (23.7%). Maximum burden of chronically irritated eye was in between 40 to 69 years with 639 (63.9%). 100 patients (10%) were in between 20 to 29 year of age and 85 (8.5%) in between 30-39 years of age. 79 (7.9%) patients were above 69 years of age group. Patients less than 5 years of age were not included in the study. Out of 1000 patients included in the study 292 were agricultural worker (29.2%), 265 were manual labourer (26.5%), 184 were office worker (18.4%), 112 were students (11.2%). 100 were house wives (10%) and 47 were factory worker (4.7%).

**Table 1: Age ad Sex distribution**

Sr. No.	Age group	Male	Female	Total (%)
1	5 – 9	16	20	36 (3.6%)
2	10 – 19	40	21	61 (6.1%)
3	20 – 29	64	36	100 (10.0%)
4	30 – 39	57	28	85 (8.5%)
5	40 – 49	120	137	257 (25.7)
6	50 – 59	102	135	237 (23.7)
7	60 – 69	67	78	145 (14.5%)
8	> 69	70	9	79 (7.9%)
	<b>Total</b>	<b>536</b>	<b>464</b>	<b>1000 (100%)</b>

Out of 1000 patients included in our study 534 (53.4%) belonged to rural population and 466 (46.6%) belonged to urban population. Rural population were more in all age groups except in 20-29 years and 30-39 years where urban population predominates rural population. Among the patient presenting for this study, allergic conjunctivitis is the most common cause of chronically

irritation of eyes with 278 (27.8%) followed by meibomitis 236 (23.6%), dry eye 210 (21%), blepharitis 90 (9%), chalazion 12 (1.2%), pterygium 50 (5%), VKC 42 (4.2%), prolonged use of topical drug 23 (2.3%) and prolonged computer work 59 (5.9%).

**Table 2:** Showing etiology of 1000 cases of chronic irritated eye

Sr. No.	Etiology	No. of cases	Percentage
1	Dry eye	210	21%
2	Blepharitis	90	9%
3	Meibomitis	236	23.6%
4	Chalazion	12	1.2%
5	Pterygium	50	5%
6	Allergic conjunctivitis	278	27.8%
7	VKC	42	4.2%
8	Prolonged use of topical drugs	23	2.3%
9	Prolonged computer work	59	5.9%
	<b>Total</b>	<b>1000</b>	<b>100%</b>

Among the various causes, chronic irritation of eyes, urban population is more affected by dry eye, VKC and prolonged computer work while rural population is more affected by blepharitis, meibomitis, chalazion, pterygium, allergic conjunctivitis and prolonged use of topical drugs. Overall chronic irritation is more common in rural population (534 patients) in comparison to urban population (466 patients).

**Table 3:** Rural and Urban distribution of etiological factor

Sr. No.	Etiology	Rural		Urban	
		No.	%	No.	%
1	Dry eye	94	9.4	116	11.6
2	Blepharitis	53	5.3	37	3.7
3	Meibomitis	140	14	96	9.6
4	Chalazion	7	0.7	5	0.5
5	Pterygium	40	4	10	1.0
6	Allergic conjunctivitis	167	16.7	111	11.1
7	VKC	19	1.9	23	2.3
8	Prolonged use of topical drugs	14	1.4	9	0.9
9	Prolonged computer work	0	0	59	5.9
	<b>Total</b>	<b>534</b>	<b>53.4</b>	<b>466</b>	<b>46.6</b>

Dry eye and blepharitis is more common in females while meibominitis, allergic conjunctivitis and VKC is more common in males.

**Table 4:** Correlation between Maibomitis and Blepharitis with dry eye

Sr. No.	Etiological factor	Total cases	Cases with dry eye	%
1	Blepharitis	90	37	41.1%
2	Meibomitis	236	75	31.77%
3	Chalazion	12	1	8.33%
4	Pterygium	50	30	60%

Dry eye is more commonly associated with pterygium 60%, followed by blepharitis 41.1%, meibomitis 31.77% and in chalazion 8.33%. Dry eye is more common in females, it was 118 out of 210 patients while in males it was present in 92 patients. The male to female ratio was 0.77. Among the patients presented with dry eye, the most common age group was 40-49 year 26.19%, followed by 50-59 years 20%, 60-69 years 15.23%, more than 69 year 10%, 30-39 years 11.9%, 20-29 years 10%, 10-19 years 4.28% and in 5-9 years it was 2.38%. Among the patients presented in our study, blepharitis was present in 90 patients with males involved in 38 cases and in females 52 cases were involved. The most common age group was 10-19 years (27.77%), followed by 20-29 years (24.44%), 30-39 years (16.66%), 40-49 years (12.22%), 5-9 years (11.11%), 50-59 years (4.44%), 60-69 years (2.22%) and more than 69 years (1.11%). Among the 236 meibomitis patients, 128 were males and 108 were females. Most common affected age group was 50-59 years (25%) followed by 40-49 years (20.33%), 60-69 years (14.40%), 30-39 years (11.44%), 20-29 years and > 69 years it was 10-16% each. 10-19 years (6.77%) and in 5-9 years it was 1.69%. Among 1000 patients, pterygium was present in 50 patients with males were 31 and females were 19. It was most commonly affected in 30-39 years with 25%.

## DISCUSSION

Chronic irritation of eyes is broad group caused by group of diseases and conditions and it is extremely distressing situation for both doctor and patients. Dry eye may be presented by this condition only so establishment of etiological factor is essential, Chronic irritation of eyes are mostly nonspecific. Irritation occurs due to inflammatory effect unrelated to sensitization or cellular immunity. Inflammation can occur after first exposure to the substance or by a repeated contact for long period of time. In irritant reaction, eosinophilic response which shows allergic type of reaction is generally absent. Irritation is burning, sandy gritting feeling foreign body sensation or increased awareness of eyes. In the present study we have observed the comparison of etiological agent of chronic irritation of eyes with the study of particular factor. For example, for dry eye we compared it with study by Khurana AK *et al.* (1991)<sup>3</sup> on dry eye. Similarly other study by Mehrotra SK *et al.* (1975)<sup>6</sup> done at SN Medical College, Agra about a prevalence of ocular lesion in rural population. We involved 1000 out patients of chronic irritable eye presented at Pandit Deen Dayal Upadhyay Hospital, attached to SMS Hospital, Jaipur. All patients were examined clinically and biomicroscopically. Several tests were done for diagnosis for dry eye. In our case series, out of 1000 patient, 536 (53.6%) were male

and 464 (46.4%) were female. The male to female ratio was 1.15. It was observed that in 40 to 49 and 50-59 years age group, there was female dominance. This can be explained by that causative factor for chronic irritation of eye are more common in females in these age groups. It was observed by Khurana *et al.* (1991)<sup>3</sup> that for dry eye male to female ratio was 0.82. There was male predominance in age group 10-19 years, 20-29 year and 30 to 39 year in our study and it is explained by the fact that males are more exposed to computer and environment. It has been observed that both the sexes has tendency to develop chronic irritation of eye in the sixth and seventh decade of life probably due to the fact that there are greater chances of developing tear film instability and inadequacy. Milder B (1981)<sup>7</sup> showed that there is decreased quantity of tear production in advancing age. In our study maximum no. of patients (72%) were in 2<sup>nd</sup> half of age group. Khurana *et al.* (1991)<sup>3</sup> reported in his study that the maximum number of patients (47%) were belong to 50-70 year age group. In our study 534 (53.4%) patients belong to rural background and 466 (46.6%) belong to urban background. The lesser difference between two groups can be explained by the fact that our hospital is also a referred centre. In our study commonest occupational group was agricultural worker group (29.2%) followed by manual labourers (26.5%). 184 (18.4%) patients were office worker. This may be because this group of persons are more exposed to dry, sunny, hot and dusty environment. This was also observed by Khurana AK *et al.* (1991)<sup>3</sup> in his study as most common affected were farmers (32%) followed by labourers (28%) office workers were the next common group of patients with 18.4%. This is due to spending of more time in computer which causes computer vision syndrome. During computer operation the blinking rate is decreased. We find out in our study the most common cause of chronic eye irritation was allergic conjunctivitis 278 (27.8%), followed by Meibomitis 236 (23.6%), dry eye 210 (21%), blepharitis 90 (9%), chalazion 12 (1.2%), pterygium 50 (5%), VKC 42 (4.2%), prolonged use of topical drugs 23 (2.3%) and prolonged computer work 59 (5.9%). Bionni *et al.* (1987)<sup>1</sup> find in his study that ocular allergy is affecting in 20% of population which is similar to our observation. In our study for pterygium Male (31) patients were more affected than females<sup>11</sup> with male to female ratio was approximately 3 : 1. Similar observation was found by Bwekley RJ (1988)<sup>2</sup> where male to female proportion was 2 : 1. We observed that blepharites and meibomitis were associated with dry eye. We had seen 90

cases of blepharitis. Among these patients we found 37 patients with dry eye (41.1%). This slightly differs from the study done by Mather WD (1993)<sup>4</sup> in which dry eye was as high as 56% with blepharitis. Among 236 patients with meibomitis, 75 (31.77%) patients were diagnosed having dry eye. McCulley JP and Shine WE<sup>5</sup> also had similar finding in their study by 25% involvement. At the end we can conclude that there are various causes of chronic irritation of eye with different percentage according to their geographical areas.

## SUMMARY AND CONCLUSION

In the present study, 1000 patients of chronic irritation of eye were selected from eye OPD of Pandit Deen Dayal Upadhyay Hospital, attached to SMS Medical College and Hospital in Jaipur. We came to the following conclusion: Highest prevalence (63.9%) of chronic irritation of eye was seen in middle age group (40-69 years) with total patients male to female ratio was 1.15. There was no age group debarred from this group of disease. In our study allergic conjunctivitis is the most common cause 278 (27.8%) followed by meibomitis 236 (23.6%) and these diseases itself are associated with dry eye. With our study we found out that there is need to increase awareness of patients regarding eye health, early diagnosis and treatment by ophthalmologist.

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