

An epidemiological study on corneal opacities in the age group of 10-70 years at a tertiary care center in Telangana

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Abstract

Context: A prospective epidemiological study on corneal opacities in the age group of 10-70 years with objectives as to study the distribution of corneal opacities according to age, gender, education, occupation, residence (urban/rural), laterality of the eye, socio-economic status and also to assess various modifiable epidemiological factors and find preventive measures.

Methods: This is an observational prospective study conducted on patients presenting with corneal opacities to the outpatient Department of Cornea and Trauma in Sarojini Devi Eye Hospital for a duration of 18 months from November 2018 to March 2020. Patients with corneal opacities in the age group of 10-70 years were included. Congenital causes of corneal opacities, patients with corneal opacities below 10 years and above 70 years, patients with nystagmus, patients with pterygium were excluded. All the patients were explained about the study and detailed history of the patient and detailed evaluation was done, the data was collected in terms of Cause, Age and Gender distribution, Literacy, Rural/Urban, Occupation, Socio-economic status, Laterality and statistical analysis was done.

Conclusion: Keratitis was the commonest cause of corneal opacity found in our study followed by trauma.

Keywords: Corneal opacities, keratitis, trauma

Introduction

According to World Health Organization, Corneal diseases are among the major causes of vision loss and blindness in the world today, after cataract and glaucoma ^[1]. In India, it is estimated that there are approximately 6.8 million people who have vision less than 6/60 in at least one eye due to corneal diseases, of these, about a million have bilateral involvement ^[2-3]. It is expected that the number of individuals with unilateral corneal blindness in India will increase to 10.6 million by 2020 ^[3]. Estimated 3-4 million persons are blind due to corneal opacity in India ^[4, 5]. Prompt treatment for corneal trauma and infections and health promotion strategies can be effective in combating corneal blindness.

Materials and Methods

An observational prospective study conducted on patients presenting with corneal opacities to the Outpatient Department of Cornea and Trauma in Sarojini Devi Eye Hospital for a duration of 18 months from November 2018 to March 2020. Patients with corneal opacities in the age group of 10-70 years were included. Congenital causes of corneal opacities, patients with corneal opacities below 10 years and above 70 years, patients with nystagmus, patients with pterygium were excluded. All the patients were explained about the study and detailed history of the patient and detailed clinical evaluation was done, the data was collected in terms of cause, age and gender distribution, literacy, Rural/Urban, Occupation, socio-economic status and statistical analysis was done.

Results

Table 1: Age and Gender Distribution

Age	Total	Percentage	Male	Female
10-20 years	67	13.4%	47	20
21-30 years	96	19.2%	57	39
31-40 years	62	12.4%	37	25
41-50 years	89	17.8%	54	35
51-60 years	108	21.6%	70	38
61-70 years	78	15.6%	54	24

As seen from Table 1 that, a total of 500 patients were examined in the age group of 10-70 years. They were further sub-divided into 6 groups with arrange of 10 years.

Table 2: Gender Distribution

Gender	Number	Percentage
Male	319	63.8%
Female	181	36.2%

As observed from Table 2 that out of 500 patients, 319 were males accounting to 63.8% and 181 were females accounting to 36.2%.

Table 3: Urban/Rural Residence

Residence	Number	Percentage
Rural	293	58.6%
Urban	207	41.4%

It was seen from Table 3 that total 293 patients (58.6%) were from rural area and 207 patients (41.4%) patients were residents of urban areas. The incidence of corneal opacities was observed more in the rural population.

Table 4: Literacy Status

Literacy	Frequency	Percentage
Graduate	52	10.4
Higher Secondary	53	10.6
Illiterate	253	50.6
Middle School	24	4.8
Post-Graduate	2	0.4

Primary School	34	6.8
Secondary School	82	16.4
Total	500	100.0

It was seen from Table 4 that incidence of corneal opacities was more commonly observed in illiterates. 50.6% of the patients examined were illiterates which is not significant in our study.

Table 5: Socio-economic Status

Socio-economic status	Number
Upper	43
Upper middle	42
Lower middle	217
Upper lower	194
Lower	4

As seen from Table 5 that the corneal opacities were predominantly seen in patients belonging to lower socio-economic strata with 43.4% in lower middle group and 38.8% in upper lower group.

Table 6: Occupation

Occupation	Frequency	Percentage
Agricultural worker	126	25.2
Black smith	2	0.4
Carpenter	8	1.6
Clerk	2	0.4
Delivery boy	2	0.4
Driver	18	3.6
Electrician	3	0.6
Fruit Vendor	3	0.6
Gold smith	1	0.2
House wife	67	13.4
Labourer	73	14.6
Librarian	1	0.2
Lorry Driver	1	0.2
Office	58	11.6
Painter	6	1.2
Priest	1	0.2
Railway lineman	1	0.2
Sales man	5	1.0
Shop keeper	13	2.6
Software engineer	4	0.8
Street vendor	4	0.8
Student	76	15.2
Teacher	8	1.6
Vegetable seller	1	0.2
Watchman	4	0.8
Welder	12	2.4
Total	500	100.0

It was seen from Table 6 that in our study, 25.2% of the patients were agricultural workers, 14.6% of the patients were non-agricultural labourers, 15.2% were students and 13.4% of them were housewives.

Table 7: Etiology of Corneal Opacities

	No. of Eyes	Percentage
Chemical injury	26	4.85
Degeneration	70	13.05
Dry eye	10	1.86
Dystrophy	18	3.35
Ectasia	14	2.61
Fall of foreign body	7	1.30
Hydrops	1	0.18
Keratitis	177	33.02
Kerato-conjunctivitis	2	0.37
Lagophthalmos	10	1.86
Oilspill	1	0.18
Surgery	31	5.78
Thermal injury	2	0.37
Trauma	167	31.15

It was seen from Table 7 that Keratitis is the most common cause of corneal opacity.

Table 8: Etiology in Chronological Order and Involvement of One Eye or Both the Eyes

	No. of Eyes	BE	RE	LE
Keratitis	177	8	99	70
Trauma	167	--	86	81
Degenerations	70	12	30	28
Surgery	31	---	21	10
Chemical injury	26	6	9	11
Dystrophies	32	32	---	---
Lagophthalmos	10	---	6	4
Dry eyes	10	8	1	1
Thermal injuries	2	--	1	1
Others	11	6	2	3

As seen from Table 8 that the Keratitis is the most common cause of corneal opacity followed by trauma.

Table 9: Age-wise Distribution of Causes of Corneal Opacities

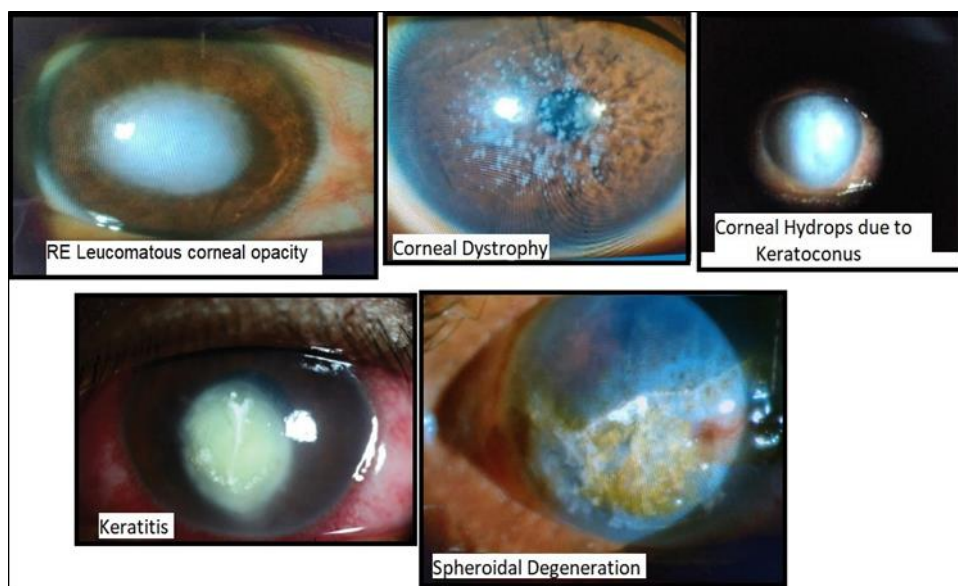
	11-20 years	21-30 years	31-40 years	41-50 years	51-60 years	61-70 years
Chemical injury	2	3	6	5	2	5
Degeneration	--	2	8	12	25	17
Dry eyes	--	3	--	1	2	--
Dystrophy	--	3	1	1	2	2
Ectasia	2	5	--	--	--	--
Keratitis	11	39	26	34	37	26
Lagophthalmos	--	2	--	4	2	2
Trauma	48	38	18	23	24	16
Surgery	--	--	2	9	11	9
Others	4	1	1	1	3	1

As seen from Table 9 that the keratitis is the most common cause of all age groups followed by trauma.

Table 10: Involvement of Right or Left Eye or Both the Eyes

Eye	Number	Percentage
Both Eyes	36	7.2%
Right Eye	255	51%
Left Eye	209	41.8%

It was seen from Table 10 that out of 536 eyes of 500 patients, Right eye was involved in 51% of cases, left eye in 41.8% of cases and both eyes were involved in 7.2% of cases.

**Fig1:** Different Types of Corneal Opacities

Discussion

The prevalence of corneal blindness varies from region to region with highest in the developing countries. Corneal diseases are a major cause of blindness in the world and still remains fourth common cause of blindness after cataract. Blindness and visual impairments have far reaching implications on the society, as both are tragic situations in social and economic terms, the more so when it is realized that 80% of visual disability is avoidable. Keratitis was the most common cause of corneal opacity in our study (33.02%) and was commonly associated with Agricultural workers, Labourers and Home makers. Trauma was the second most common cause of corneal opacity in our study (31.15%).

It has been reported to be one of the most important causes of unilateral vision loss in developing countries [6]. Males (118, 23.6%) and females (49, 9.8%) had corneal opacity due to trauma. In our study we noticed that in the age group of 11-20 years, trauma was more commonly observed. 48 out of 67 patients, in this age group had trauma. The majority of trauma occurred before 40 years of age in our study. 104 out of 167 patients affected by trauma were below 40 years of age. This is of significance as the number of years that these people live with blindness in one or both eyes can have social and economic consequences. Work place trauma leading to corneal opacities and thereby blindness was also frequently encountered in our study. Degeneration and Dystrophy (16.40%) were next most common causes of corneal opacities followed by post-surgery (5.78%).

The epidemiology of corneal blindness is complicated, irrespective of cause, an eye blinded by corneal opacity hampers visual acuity permanently unless professional surgical treatment is sought. The avoidable causes of corneal blindness include Keratitis, Trauma, Aphakic bullous keratopathy, Pseudophakic bullous keratopathy, Exposure keratopathy, etc. Nearly

80% of the causes in our study were avoidable. The fact that most of the corneal blindness is avoidable and surgical intervention for treating corneal blindness is a difficult option in a developing country, the need for decreasing corneal blindness in the long term with effective health promotion strategies is necessary. Because of the difficulty of treating corneal blindness once it has occurred, public health prevention programmes are the most cost-effective means of decreasing the burden of corneal blindness.

These health programmes should focus on increasing awareness about the risk and consequences of corneal blindness, possible safety and preventive measures to be followed to reduce the risk of corneal blindness, and the benefit of early detection and treatment if the need arises. Health promotion programmes to reduce corneal blindness need to target those who are identified to be at a higher risk of suffering from corneal blindness.

Conclusion

Keratitis was the commonest cause of corneal opacity in our study followed by trauma. Other major etiologies of corneal opacities were post-surgical causes, corneal degenerations, dystrophies and exposure keratopathy. Health promotion strategies have to be developed and implemented to raise awareness about the causes and prevention of corneal blindness. Prevention through health promotion is clearly the preferred long-term option to deal with corneal blindness in India.

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