

# Prevalence of ocular morbidities among children's attending ophthalmology OPD in tertiary care hospital, Chennai, Tamil Nadu, India

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## Abstract

**Introduction:** Ocular morbidities among pediatric age group play a major role in their education in addition to occurrence of blindness in our community. Even in India, preventable and treatable causes like cataract, refractive error still contribute to more than 80% preventable blindness. **Material and Methods:** The current research paper is a cross-sectional study, conducted in Saveetha medical college and hospital. The data pooled for the study was conducted from January 2019 to March 2019 for a period of 3 months. All children below the age of 15 years attending ophthalmology outpatient department were included in the study. Ethical clearance and informed verbal consent was obtained and detailed ophthalmic examination was done. **Results:** 271 patients were included in the study, 122 were males and 149 were females. All the patients were divided into three broad age groups, 0-5 years, 6-10 years and 11-15 years. In the current study overall refractive error (54.6%) was the most widespread ocular morbidity. Allergic conjunctivitis (19.1%), foreign body (8.1%), Chalazion (4%), viral conjunctivitis (2.6%) and squint (2.2%) are other common morbidities. **Conclusion:** The present research paper suggests refractive error, allergic conjunctivitis, foreign body in eye and chalazion are the important ocular morbidities seen in children. Nearly all of them are treatable or preventable. The occurrence of refractive error is high among children and is the main cause of amblyopia.

**Keywords:** Ocular morbidities, Children, Refractive error

## Introduction and Review of literature

Ocular morbidities among pediatric age group play a major role in their education in addition to occurrence of blindness in our community. Ocular morbidity in children affects learning capacity, adjustment in school, and personality [1, 2]. Overall, 39 million people are blind worldwide, out of which 1.4 million are children (less than 14 years of age). In a survey on children  $\leq 15$  years of age, the rate of childhood blindness was 0.17%, of which 33.3% was due to treatable refractive errors while 66.6% was secondary to other preventable causes [3]. Even in India, preventable and treatable causes like cataract, refractive error still contribute to more than 80% preventable blindness [4, 5]. About 30% of blind population of India lose their eyesight before the age of 20 years and many of them are under 5 when they become blind [2, 6].

The above data from the review of literature clearly indicates the importance of this study. From this study many of the ocular morbidities can be diagnosed and prevented early without any complications. Thus the level of blindness among children can be reduced. There are many similar studies been done in north India but not much of studies have been done in Southern part of India. So the study is conducted to determine the prevalence of ocular morbidities among children and to evaluate the pattern of ocular morbidities among children.

## Methods

**Type of study:** cross-sectional study, conducted in OPD-OPHTHALMOLOGY, Saveetha Medical College and Hospital. **Duration** - The data pooled for the study was conducted from January 2019 to March 2019 for a period of 3 months.

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**Sample size:** No specific sample size. All patients under inclusion criteria attending OPD in above mentioned duration.

Inclusion criteria were all the children below the age of 15 years.

Exclusion criteria were all individual above age of 15.

A total of 271 children were included in the study. A special book was maintained to collect the data from the patients. All the patients were examined by ophthalmologists and refraction was done by Optometrists. Ethical clearance and informed verbal consent was obtained and detailed ophthalmic examination was done.

## Results

There were a total number of 271 patients including 122 males and 149 females. All the patients were divided into three broad groups, that is, 0-5, 6-10 and 11-15 years. Out of total study population the proportions of males (45.01%) and females (54.99%) was 1:1.221. The higher proportions of children were from the older age group of 11-15 years (55.51%) and minimum number was from under-five age group (15.49%). Majority of the children were males (55.86%) in the 11- 15 years age group while in other age groups, the majority were females. Refractive error (54.6%), allergic conjunctivitis (19.1%), foreign body in eye (8.1%) and chalazion (4%) are the common ocular morbidities seen among the children attending ophthalmology OPD. The other ocular morbidities seen among children are viral conjunctivitis (2.6%), squint (2.2%), dacryocystitis (1.5%), iris coloboma (1.1%), dermolipoma (1.1%), hordeolum externum(1.1%) , laceration of upper eyelid(0.4), gaze palsy(0.4), bitot spot(0.4), pterygium(0.4), ptosis(0.4), corneal ulcer(0.4), subconjunctival hemorrhage(0.4), RTA blow out fracture(0.4), hordeolum Internum(0.7) and cataract(0.4). (Table 1) (Table 2).

**Table-1: Ocular morbidity distribution with respect to age.**

Disease	0-5 years	6-10 Years	11-15 Years	Total
Refractive error	13 (30.9)	40(47.6)	95(65.5)	148(54.6)
Laceration of upper eyelid	1(2.4)			1(0.4)
Gaze palsy			1(0.7)	1(0.4)
Foreign body in eye	3(7.1)	11(13.0)	8(5.5)	22(8.1)
Bitot spot	1(2.4)			1(0.4)
Chalazion	2(4.8)	3(3.6)	6(4.1)	11(4.0)
Pterygium			1(0.7)	1(0.4)
Ptosis			1(0.7)	1(0.4)
Allergic conjunctivitis	13(30.9)	20(23.8)	19(13.1)	52(19.1)
Corneal ulcer	1(2.4)			1(0.4)
Viral conjunctivitis	2(4.8)		5(3.4)	7(2.6)
Squint	2(4.8)	3(3.6)	1(0.7)	6(2.2)
Subconjunctival hemorrhage			1(0.7)	1(0.4)
RTA blow out fracture		1(1.2)	1(0.7)	2(0.7)
Iris coloboma		2(2.4)	1(0.7)	3(1.1)
Dermolipoma		2(2.4)	1(0.7)	3(1.1)
Hordeolum.Internum		1(1.2)	1(0.7)	2(0.7)
Cataract		1(1.2)		1(0.4)
Hordeolum Externum			3(2.1)	3(1.1)
Dacryocystitis	4(9.5)			4(1.5)
<b>Total</b>	<b>42(100)</b>	<b>84(100)</b>	<b>145(100)</b>	<b>271(100)</b>

**Table-2: Ocular morbidity distribution with respect to sex.**

Disease	Male	Female	Total
Refractive error	69(56.5)	79(53.0)	148(54.6)
Laceration of upper eyelid	1(0.8)		1(0.4)
<b>Gaze palsy</b>		<b>1(0.7)</b>	<b>1(0.4)</b>
Foreign body in eye	9(7.3)	13(8.7)	22(8.1)
Bitot spot	1(0.8)		1(0.4)
Chalazion	6(4.9)	5(3.3)	11(4.0)
<b>Pterygium</b>		<b>1(0.7)</b>	<b>1(0.4)</b>
Ptosis	1(0.8)		1(0.4)
Allergic conjunctivitis	22(18.0)	30(20.1)	52(19.1)
<b>Corneal ulcer</b>		<b>1(0.7)</b>	<b>1(0.4)</b>
Viral conjunctivitis	2(1.7)	5(3.3)	7(2.6)
Squint	2(1.7)	4(2.7)	6(2.2)
Subconjunctival hemorrhage	1(0.8)		1(0.4)
RTA blow out fracture	1(0.8)	1(0.7)	2(0.7)
Iris coloboma	2(1.7)	1(0.7)	3(1.1)
Dermolipoma	2(1.7)	1(0.7)	3(1.1)
Hordeolum interum	2(1.7)		2(0.7)
<b>Cataract</b>		<b>1(0.7)</b>	<b>1(0.4)</b>
Hordeolum Externum	1(0.8)	2(1.3)	3(1.1)
Dacryocystitis		4(2.7)	4(1.5)
<b>Total</b>	<b>122(100)</b>	<b>149(100)</b>	<b>271(100)</b>

Table 1,2 represents ocular morbidities with age and sex wise distribution respectively. Table3 represents correlation of refractive error and amblyopia. Table 4 represents age and sex wise distribution of disease conditions.

**Table-3: Proportion of refractive error and amblyopia.**

Refractive error	Total no of patients with refractive error	Amblyopia
Myopic	70	2
Hypermetropia	45	2
Astigmatism	33	5

**Table-4: Age and sex distribution of disease conditions.**

Disease condition	0-5 Years	6-10 Years	11-15 Years	Males	Females	Total	P – value (Age)	P – value (Sex)
Refractive error	13	40	95	69	79	148	0.000	0.654
Foreign body	3	11	8	9	13	22	0.125	0.660
Allergic conjunctivitis	13	20	19	22	30	52	0.015	0.620

In the above tables it can be observed that P-Values <0.05 are taken as having significant association between the respective variables.

## Discussion

In the current research study, the ratio of females to males was greater than that in study done by Sahoo JR [2] et al and Biswas J et al[7], where 57% were male and 43% were female and 58.26% males 41.74% females respectively. Out of all children attending OPD

consultation, the majority (55.5%) were between the ages of 11 and 15 years. This was similar to the findings of Sahoo JR [2] et al and Biswas J et al [7]. Refractive errors also known as ametropia is a state of refraction where parallel rays of light from infinity are focused

either in front or behind the retina. It is seen that maximum number of children had refractive error (55%) in the present study, showing a higher prevalence of refractive error than in the studies done by Sahoo JR et al (34%) and Biswas J et al (23.67%) [2, 7]. However, the Kariapatti Pediatric Eye Evaluation Project, Delhi based study by Chaturvedi and Aggarwal, and a study by Kumar et al showed even lower prevalence of refractive error, being 0.55%, 7.4%, and 5.4%, respectively [8, 9, 10, 11, 12]. Refractive error was the major grievance of the age group 11-15 years and it is seen more regularly in males than in females in the present study. Refractive error is statistically significant.

Refractive error can be identified and corrected even as early as 3-4 years old, if regular screening is done before school admission. If uncorrected, refractive error can lead to amblyopia and irreversible cause of blindness. Among the 148 children tested in this study, 70 were Myopic, 45 were hypermetropic and 33 were astigmatic.

Of these 148 children, 2 of the myopic children, 2 of the hypermetropic children and 5 of the astigmatic children already suffered from amblyopia. All 139 children were prescribed spectacles and the other 9 children were given specific care. It is generally believed that blindness due to refractive-error-related amblyopia is not a significant problem. However, recent data from India suggest that this needs to be reconsidered [11, 12].

Allergic conjunctivitis is the inflammation of conjunctiva due to hypersensitivity reaction. Conjunctiva is highly sensitive to allergens. Allergic conjunctivitis is the most common ocular morbidity seen in children after refractive error. A higher prevalence of allergic conjunctivitis has been seen in numerous other studies [1, 13, 14]. Allergic conjunctivitis is seen commonly in the age group 11-15 years and it is seen more regularly in females than in males in the present study.

Though allergic conjunctivitis hardly ever leads to blindness, but it remains a chief cause of school absenteeism [15, 16, 17]. Constant rubbing of eye can lead to astigmatism and is one of the risk factors for development of keratoconus. So early treatment in this condition is mandatory.

Prevalence of foreign bodies in eye was 8.1%, alike the study conducted by Biswas J et al [7]. Foreign body is seen commonly in the age group 6-10 years and it is seen more in females in the present study. It was also noted that the most frequent foreign bodies found are dust

particles and insect wings. Unsupervised playing, especially outdoors, leads to an increase in the risk of presence of foreign body in eye. Thus, parental supervision of children while playing outdoors must be exercised.

Chalazion also known as tarsal or meibomian cyst is a chronic non-suppurative inflammation of the meibomian gland. They should be diagnosed early as it has the potential to turn into a calcification. For children's with recurrent chalazion, one should suspect refractive error and should be screened accordingly.

Chalazion was found to have a prevalence of 4% in present study, which is analogous to the study conducted by Sahoo JR et al in which it has a prevalence of Chalazion of 4.3% [2]. However, lower prevalence's were found in studies by Singh et al (0.27%) and Desai et al (0.25%) in their Jodhpur based study [9, 16]. It is seen commonly in the age group 11-15 years and it is most regularly in males than in females in the present study.

Squint also known as strabismus is misalignment of visual axes of two eyes. Squint is the most common ocular morbidity seen in children of age group 0-5 years and it frequently seen in females than in males in the present study. The prevalence of squint in the present study is 2.2%, however study done by Biswas J et al show low prevalence of squint (0.56%) [7].

Cataract is opacity of lens or its capsule. It is one of an important cause of blindness among children which needs to be diagnosed early. The prevalence of cataract in this study is 0.4%, however higher prevalence has been noted in study done by Biswas J et al (2.2%) [7]. Squint and cataract even though found in less number of children, if not corrected in time can also lead to amblyopia. So proper intervention is needed as soon as diagnosed.

The other ocular morbidities seen less common among children are viral conjunctivitis (2.6%), dacryocystitis (1.5%), Iris coloboma (1.1%), Dermolipoma (1.1%), hordeolum externum (1.1%) (Table 1&2).

The ocular morbidities seen rarely among children according to this study are laceration of upper eyelid (0.4), gaze palsy (0.4), bitot spot (0.4), pterygium (0.4), ptosis (0.4), corneal ulcer (0.4), subconjunctival hemorrhage (0.4), RTA blow out fracture (0.4) and hordeolum Internum (0.7) (Table 1&2).

## Conclusion

The present research paper suggests refractive error, allergic conjunctivitis, foreign body in eye and chalazion are the important ocular morbidities seen in children. Nearly all of them are treatable or preventable.

The occurrence of refractive error is high among children's and is the main cause of amblyopia. So all children's entering the school should be screened and treated accordingly. Best ways to screen children's are at school by conducting regular eye screening programs. Both Government and Private institutes should organize camps for proper screening of children. People should get awareness about the eye care services available in our country. Thus ocular morbidities can be controlled to a greater extent among children.

## What the study adds to the existing knowledge?

The current study was conducted solely among the children in OPD in tertiary care hospital for a period of 3 months, which limits both the number and range of conditions that could be observed. If repeated, the study should include more hospital and possibly schools in the same region so that a larger number of children can be screened, so that a more accurate and comprehensive conclusion may be reached as to the incidence of ocular conditions and associated impediment in children.

The importance of regular screening of children which will ensure early diagnosis and treatment of all the ocular conditions and hence reduce the morbidity to the children themselves and to the society by reducing the incidence of blindness.

## Author's contribution

**Dr. T. T. Annamalai:** Concept, Study Design.

**Dr. V. Panimalar A. Veeramani:** Data analysis, manuscript preparation

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## Original Research Article

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