

## Original Research Article

# Prevalence of ocular morbidities among paediatric patients attending Ophthalmology OPD in MKCG Medical College Hospital, Berhampur, Odisha, India

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**Received:** 15 January 2018

**Accepted:** 12 February 2018

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## ABSTRACT

**Background:** Ocular morbidities in children can have a serious impact on development, education and quality of life in children hence require prompt attention. This study was conducted with an objective to determine the pattern of ocular morbidity in children less than 15 years of age presenting in the Outpatient Department (OPD) of MKCG Medical College, Berhampur.

**Methods:** A hospital based cross-sectional study was carried out from August 2016 to January 2017 among 282 children. Data was collected by using a semi structured questionnaire after taking informed consent and analyzed.

**Results:** Majority were in the age group of 10-14 years (55.3%). The common presenting symptoms were blurred vision (29.1%) and headache (7.8%). The common ocular morbidities reported were refractive error (34%), ocular infection (13.5%), ocular trauma (9.9%), allergic conjunctivitis (9.2%). Refractive error was more prevalent in children of aged 11-14 years and ocular trauma in 5-9 years compared to children of the other age group.

**Conclusions:** Majority of ocular morbidities are preventable and treatable. So early attention through eye screening and intervention programme at the community level is recommended.

**Keywords:** Ocular morbidity, Paediatric, Refractive errors

## INTRODUCTION

Childhood ocular morbidity can have a serious impact on development, education and quality of life in children. Blindness in children accounts for one-third of the economic cost of blindness although it represents <4% of the overall magnitude. Childhood blindness is the second largest cause of blind-person years, following cataract. Globally, approximately 70 million blind person years are caused by childhood blindness.<sup>1</sup> Vision-2020 aims to reduce global prevalence of childhood blindness from 0.75/1,000 to 0.4/1,000 children by 2020.<sup>2</sup>

India has an estimated 320,000 blind children, more than any other country in the world.<sup>3</sup> Estimated national prevalence of childhood blindness/low vision is 0.80/1000 in India.<sup>3</sup> Considering the fact that 30% of India's blind lose their sight before the age of 20 years, the importance of early detection and treatment of ocular morbidity and visual impairment in young children is obvious.<sup>4</sup> Data related to the causes and prevalence of ocular morbidity in children is essential for planning and

evaluation of preventive and curative services in a given region.

Very few hospital-based studies are available on childhood ocular morbidity in the eastern region of India. With this background, the present study was designed to estimate the prevalence of various ophthalmic morbidities in children presenting in the Outpatient Department of MKCG Medical College, Berhampur MKCG medical college hospital.

## METHODS

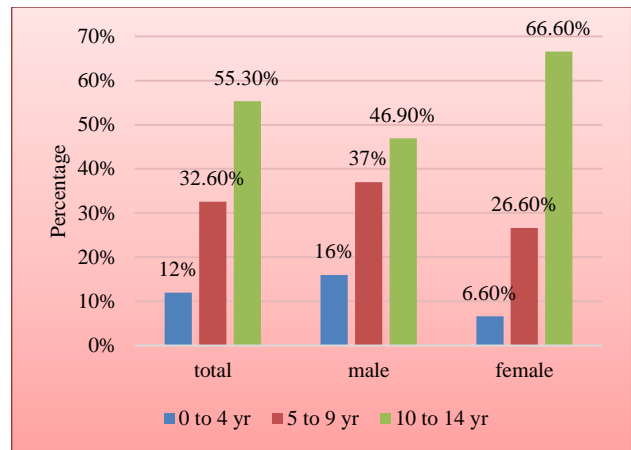
A hospital based cross-sectional study was conducted in the Outpatient Department (OPD) of Ophthalmology, MKCG Medical College and Hospital, Berhampur, Odisha from August 2016 to January 2017. All the patients aged up to 14 years attending Ophthalmology OPD on alternate working days during the study period were included in the study by convenient sampling method. Those who were uncooperative and came for follow up visit were excluded from study. A total of 282 children formed the study population.

Ethical clearance was obtained from institutional ethics committee of the college before conducting the study. Informed verbal consent was taken from guardian of the study participants. A predesigned, pretested semi structured questionnaire was used for data collection. Data on socio demographic profile was collected from the parents or guardian. All the patients were examined by ophthalmologists and the information regarding main presenting features, visual acuity and provisional diagnosis was recorded from the prescription. The collected data were analysed by appropriate statistical methods by using SPSS version 16 software. Chi-square test ( $\chi^2$ ) was applied to test the association and  $p < 0.05$  was considered as significant.

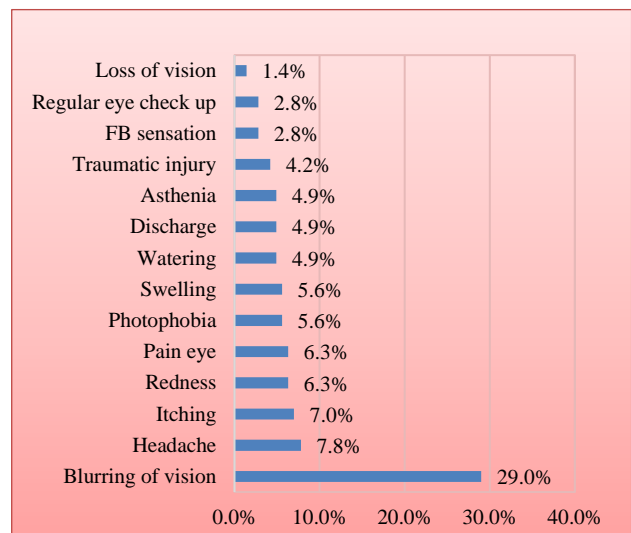
## RESULTS

Out of total study population the proportions of males (57%) and females (43%) was 1.3:1.

The higher proportion of children were from the older age group of 10-14 years (55.3%) and minimum number were from under four age group (12%). Majority of the children were females (66.6%) in the 10- 14 years age group while in other age groups, the majority were males. (Figure 1).



**Figure 1: Distribution of children at different age group.**



**Figure 2: Main presenting complaints.**

The common ocular symptoms were blurred vision (29.1%) and headache (7.8%). Other reported symptoms were itching (7%), redness (6.3%), discharge and watering (4.9%) while 2.8% came for regular eye check up (Figure 2).

Regarding visual acuity, majority (53.9%) of children had VA  $>6/18$ , 24.1% had visual impairment (VA  $\leq 6/18$  to 6/60) while 2.8% children were found to have severe reduction of vision (VA  $<6/60$  to 3/60) (Table 1).

**Table 1: Visual impairment (VA  $<6/18$  in better eye) distribution by age (n = 282).**

Age group (years)	Visual acuity in better eye				Total no. (%)
	$>6/18$	$<6/18$ to 6/60	$<6/60$ to 3/60	Indeterminable	
0 to 4	0	0	0	34	34 (12.1)
4 to 9	50	26	4	12	46 (32.6)
10 to 14	102	42	4	8	78 (55.3)
Total	152 (53.9%)	68 (24.1%)	8 (2.8%)	54 (19.1%)	282 (100)

Refractive error was found to be the most common ocular morbidity (34%) followed by ocular infection (13.5%), ocular trauma and foreign body (9.9%), allergic conjunctivitis (9.2%), Chalazion (4.3%) and Vitamin A

deficiency disorder was also seen in 2.8% of children. Other rare conditions were also seen like pseudoaphakia, retinoblastoma, squint, retinal detachment, staphyloma, glaucoma, optic atrophy in 12% case (Table 2).

**Table2: Distribution of ocular morbidity by age (n = 282).**

Morbidities	Age groups (years)			Total no. (%)
	0 to 4, No. (%)	5 to 9, No. (%)	10 to 14, No. (%)	
Refractive error	0	28 (30.4)	68 (30)	96 (34%)
<sup>§</sup> Infection of eye and adnexa	8 (23.5)	14 (15.2)	16 (10.3)	38 (13.5%)
Ocular trauma, foreign body	4 (11.8)	18 (19.0)	6 (3.8)	28 (9.9%)
Allergic conjunctivitis	4 (11.8)	12 (13.0)	10 (6.4)	26 (9.2%)
<sup>#</sup> Congenital eye diseases	8 (23.5)	12 (13.0)	4 (2.6)	24 (8.5%)
Regular eye check up	0	0	14 (9)	14 (5%)
Chalazion	0	4 (4.3)	8 (5.1)	12 (4.3%)
Vitamin A deficiency	4 (11.8)	0	4 (2.6)	8 (2.8%)
<sup>*</sup> Others	6 (17.6)	4 (4.3)	26 (16.7)	36 (12.8%)
Total	34 (100%)	92 (100%)	156 (100%)	282 (100%)

\*others: pseudophakia, retinoblastoma, squint, retinal detachment, staphyloma, glaucoma, optic atrophy; #congenital: cataract, coloboma, microcornea; §infections: infective conjunctivitis, chronic dacryocystitis, keratitis, blepharitis, hordeolum

Comparing different eye morbidities in different age groups of children, the prevalence of refractive error (70.8%) was found to be more in the children aged 11-14 years compared to children of other age groups. This difference was statistically significant.

Similarly, children aged 5-9 years suffered more from ocular trauma, foreign body (64.3%) and congenital eye diseases (50%) compared to other age groups and these differences were statistically significant with  $P < 0.05$  (Table 3).

**Table 3: Comparison of ocular morbidities with different age groups of children.**

Morbidities	Age groups (years) No.			P value
	0 to 4 (%)	5 to 9 (%)	10 to 14 (%)	
Refractive error	0	28 (29.2)	68 (70.8)	<0.000
Infection of eye and adnexa	8 (21.0)	14 (36.8)	16 (42.1)	0.1026
Ocular trauma, foreign body	4 (14.3)	18 (64.3)	6 (21.4)	0.0003
Allergic conjunctivitis	4 (15.3)	12 (46.1)	10 (38.4)	0.1881
Congenital eye diseases	8 (33.3)	12 (50.0)	4 (16.6)	0.0001

The results of other ocular disorders including chalazion, vitamin A deficiency and other rare diseases were not compared individually due to small number of cases.

## DISCUSSION

Ocular morbidity in children affects learning ability, adjustment in school, and personality.<sup>5</sup> 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.<sup>6</sup> Early identification and prompt treatment is needed to avoid the impact of ocular morbidities on child's development, education and quality of life.

In this study proportion of males was more than females which is quite similar to study done by Sethi S et al at Khyber Teaching Hospital, Peshawar where 60.6% were male and 39.1% were female.<sup>7</sup> This may be due to gender bias in health care seeking behaviour in the society.

Out of all children who attended the OPD for consultation, majority (55.3%) were in the age group 10 to 14 years. This finding was similar to the finding of Onakpoya et al.<sup>8</sup> However the study by Chandana Chakraborti et al found higher frequency of consultation in the age group 6-10 years (38.87%).<sup>9</sup> The presence of higher proportion in our study from this older age group could be due to better articulation by older children and detection of their visual problems by their families or teachers.

Blurred vision was found to be the most common presenting complaint in this study. The reason might be that it is the alarming symptom for a child and his family for which reporting for this symptom is more and as this is a common symptom of many ophthalmic disorder it was more prevalent in this study. Other complains were headache, itching, redness, pain in the eye, photophobia

and swelling of eye. However Salma R et al in their study found the main presenting complaint was watering (24.2%) followed by poor distance vision (21.9%), redness (18.9%) and 0.6% complained of night blindness.<sup>10</sup>

More than half of the children had normal vision and about one fourth had visual impairment (VA  $\leq$ 6/18 to 6/60) while 2.8% children were found to have severe reduction of vision. Salma R et al found similar finding i.e. 50.3% of the children had VA  $>$ 6/18 and 1.4% had VA  $<$ 6/60 to 3/60.<sup>10</sup>

It was seen that maximum number of children had refractive error (34%) in the present study. This result was comparable with Gupta et al, who also found refractive error (22%) was the most common disorder.<sup>11</sup> Das et al in Kolkata and Desai et al in Jodhpur also reported a similar prevalence of 25.11% and 20.8% respectively. But the Kariapatti pediatric eye evaluation project, Delhi-based study by Chaturvedi and Aggarwal, and study by Kumar et al showed a lower prevalence than present study, which was 0.55%, 7.4%, and 5.4%, respectively.<sup>12-16</sup>

Infection of eye and adenexa was also a common problem among the study population. The cause might be due to their more exposure in school and lack of awareness about personal hygiene. Biswas J et al found ocular infections as third common cause (15.13%) of ocular morbidity in their study.<sup>17</sup>

Prevalence of ocular trauma and foreign body was 9.9% in the present study. Biswas J, et al found ocular trauma was responsible for 12.74% of childhood. Globally, the frequency of ocular trauma in children is also high and the major cause includes unsupervised play and use of dangerous objects.<sup>18</sup>

Allergic conjunctivitis constituted 9.2% in the present study. High prevalence (3-17.5%) of allergic conjunctivitis has been reported by various other studies.<sup>8,19,20</sup> Though allergic conjunctivitis rarely leads to blindness, but it remains a leading cause of school absenteeism due to its discomfort, chronicity, and recurrence.<sup>21</sup>

Chalazion was found in 4.3% in the present study. But lower prevalence was found in study by Singh et al (0.27%) and Desai et al (0.25%) in their Jodhpur-based study.<sup>22,13</sup>

Vitamin A deficiency was seen among 2.8% of children in spite of continuation of prophylaxis programme since so many years. Similar finding was observed in study by Singh et al that vitamin A deficiency in the form of conjunctival xerosis and bitot's spots was seen in 2.09% children.<sup>22</sup> Gupta et al (1.8%), Kumar et al (4.1%) and Desai et al (5.39%) also reported Vitamin A deficiency in children.<sup>11,13,26</sup> But Prajapati et al and Chaturvedi and

Aggarwal reported a higher prevalence of 30% and 10.6%, respectively.<sup>23,15</sup>

Comparison of the diseases individually with different age groups revealed that morbidities like refractive error was more in the children aged 11-14 years and ocular trauma, foreign body, congenital eye diseases were more common in 5-9 year age group children. Similar finding was obtained in study conducted by Singh et al.<sup>22</sup>

## CONCLUSION

This study revealed that refractive errors, infections of eye, ocular trauma and allergic conjunctivitis are important causes of childhood ocular morbidities. The majority of the causes are either treatable or preventable. Ongoing school eye screening program should be strengthened to reduce the prevalence of visual impairment due to refractive errors. Health education activities in schools as well as communities should be intensified. Early detection and management will reduce the disease progression and can prevent visual disability. Good referral services must be developed to link between all levels of eye care to ensure quality eye care services.

## ACKNOWLEDGEMENTS

Authors are grateful to the study participants who cooperated for the interviews and data collection. Authors are also thankful to the nursing staffs of the OPD who provided them counselling service after data collection.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the institutional ethics committee*

## REFERENCES

1. World Health Organization. Preventing blindness in children: report of a WHO/IAPB scientific meeting, Hyderabad, India, 13-17 April 1999. In Preventing blindness in children: report of a WHO/IAPB scientific meeting, Hyderabad, India, 13-17 April 1999. 2000. Available at [http://apps.who.int/iris/bitstream/10665/66663/1/WHO\\_PBL\\_00.77.pdf](http://apps.who.int/iris/bitstream/10665/66663/1/WHO_PBL_00.77.pdf)
2. Improving paediatric eye care in the developing world. *Eur Ophthalmic Rev.* 2009;2(1):7.
3. Jose R. Present status of the national programme for control of blindness in India. *J Community Eye Heal J Indian.* 2008;21:103-4.
4. Bhalariao SA, Tandon M, Singh S, Dwivedi S, Kumar SRJ. Visual impairment and blindness among the students of blind schools in Allahabad and its vicinity: a causal assessment. *Indian J Ophthalmol.* 2015;63(3):254.
5. Pratap VB, Lal HB. Pattern of paediatric ocular problems in North India. *Ind J Ophthalmol.* 1989;37(4):171-2.

6. Danish Assistance to the National Programme for Control of Blindness. New Delhi, India: Vision screening in school children. Training module 1. 1997;17:6-10.
7. Sethi S, Sethi MJ, Iqbal R, Khan T. Pattern of common eye diseases in children attending outpatient eye department, Khyber Teaching hospital, Peshawar. *J Med Sci*. 2008;16(2):99-101.
8. Onakpoya OH, Adeoye AO. Childhood eye diseases in southwestern Nigeria: a tertiary hospital study. *Clin*. 2009;64(10):947-51.
9. Chakraborti C, Mondal M, Choudhury KP, Das J, Datt J. Clinical profile of paediatric ocular morbidity in a tertiary eye care centre in West Bengal. 2011;1-4.
10. Salma KCR, Hari T, Malla BA. Clinical profile of pediatric ocular morbidity in a tertiary eye care centre in western region of Nepal. *Ann Pediatr Child Health*. 2015;3(5):1070.
11. Gupta M, Gupta BP, Chauhan A, Bhardwaj A. Ocular morbidity prevalence among school children in Shimla, Himachal, North India. *Indian J Ophthalmol*. 2009;57:133-8.
12. Das A, Dutta H, Bhaduri G, De Sarkar A, Sarkar K, Bannerjee M. A study on refractive errors among school children in Kolkata. *J Indian Med Assoc*. 2007;105:169-72.
13. Desai S, Desai R, Desai NC, Lohiya S, Bhargava G, Kumar K. School eye health appraisal. *Indian J Ophthalmol*. 1989;37:173-5.
14. Nirmalan PK, Vijayalakshmi P, Sheeladevi S, Kothari MB, Sundaresan K, Rahmathullah L. The Kariapatti pediatric eye evaluation project: Baseline ophthalmic data of children aged 15 years or younger in Southern India. *Am J Ophthalmol*. 2003;136:703-9.
15. Chaturvedi S, Aggarwal OP. Pattern and distribution of ocular morbidity in primary school children of rural Delhi. *Asia Pac J Public Health*. 1999;11:30-3.
16. Kumar R, Dabas P, Mehra M, Ingle GK, Saha R, Kamlesh. Ocular morbidity amongst primary school children in Delhi. *Health Popul Perspect Issues*. 2007;30:222-9.
17. Biswas J, Saha I, Das D, Bandyopadhyay S, Ray B, Biswas G. Ocular morbidity among children at a tertiary eye care hospital in Kolkata, West Bengal. *Indian J Public Health*. 2012;56:293-6.
18. Rapoport I, Romem M, Kinek M, Koval R, Teller J, Belkin M, et al. Eye injuries in children in Israel: a nationwide collaborative study. *Arch Ophthalmol*. 1990;108:376-9.
19. Pratab VB, Lal HB. Pattern of pediatric ocular problem in North India. *Indian J Ophthalmol*. 1989;37:171-2.
20. Khurana AK, Sikka KL, Parmar IP, Aggarwal SK. Ocular morbidity among school children in Rohtak city. *Indian J Public Health* 1984;28:217-20.
21. Hall A, Shillo B. Vernal Keratoconjunctivitis. *Community Eye Health*. 2005;53:76-8.
22. Singh V, Malik KP, Malik VK, Jain K. Prevalence of ocular morbidity in school going children in West Uttar Pradesh. *Indian J Ophthalmol*. 2017;65:500-8.
23. Prajapati P, Oza J, Prajapati J, Kedia G, Chudasama RK. Prevalence of ocular morbidity among school adolescents of Gandhinagar district, Gujarat. *Online J Health Allied Sci*. 2010;9:5.

**Cite this article as:** Sahoo JR, Jena D, Karmee N, Tripathy NM, Sahu PP. Prevalence of ocular morbidities among paediatric patients attending Ophthalmology OPD in MKCG Medical College Hospital, Berhampur, Odisha, India. *Int J Adv Med* 2018;5:409-13.