

A STUDY TO EVALUATE THE PREVALENCE OF OCULAR MORBIDITY OF SCHOOL GOING CHILDREN (6-16 YEARS) IN DURGAPUR, WEST BENGAL

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ABSTRACT

BACKGROUND

School eye screening children is useful in detecting correctable causes of defective vision, especially refractive errors (myopia) and minimizing long-term visual disability. Ocular disorders such as refractive errors, allergic conjunctivitis, vitamin A deficiency and blepharitis are common entities in school going children in rural and urban population of Bardhaman district (WB). Our school eye health survey was implemented with the aim of prevention of blindness by early detection and treatment of eye health problems. Prevalence of refractive error (myopia) rises from ages 6-16 years. Children do not complain of defective vision and may not even be aware of their problem. They adjust to the poor eyesight by sitting near the blackboard in school, holding the books closer to their eyes, squeezing the eyes frequently. This warrants early detection and treatment to prevent permanent impairment.

MATERIALS AND METHODS

In our study, four government schools and four private schools were selected randomly with proportionate representation from each category of schools. The study was conducted among the school going children in 6-16 years age group of Durgapur, Bardhaman district of West Bengal state from July 2016 to January 2018. Total 3534 students were examined from rural and urban schools of the district. The study was carried out through oral questionnaire using pre-designed and pretested Performa followed by ocular examination with the help of torch light, binocular loop and direct ophthalmoscope.

RESULTS

Overall prevalence of ocular morbidity was found to be 28.2%, among them refractive errors were 47.1%, allergic conjunctivitis 30.3% and vitamin A deficiency 9.9% constituted the major causes of ocular morbidity.

CONCLUSION

It has been concluded that ocular morbidities are common in school going children in Bardhaman district. The prevalence of refractive error (myopia) was more in government schools and allergic conjunctivitis was more in private schools. Identifying and treating these children along with health education and awareness about hygienic eye care will reduce the visual morbidity.

KEYWORDS

Ocular Morbidity, School Children, Refractive Errors, Allergic Conjunctivitis.

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BACKGROUND

Eyes are the most beautiful organ in human beings. The eye is the window to see this beautiful world. Blindness is one of the most significant social problems in India. Much ocular morbidities arises in childhood and if undetected may result in severe ocular disabilities. It affects directly in development, educational performances, social and employment opportunities.

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According to World Health Organization (WHO) statistics, 39 million people are blind worldwide and more than 90% of them live in developing countries.¹ India has an estimated 320, 000 blind children, more than any other country in the world.²

The prevalence ranges from 0.3/1000 children in developed countries to 1.5/1000 children in very poor communities.³

Prevalence of blindness in children is estimated to be around 1.25/1000 in rural population and 0.53/1000 in urban population in age group of 5-15 years.^{4,5}

Children between 6-16 years of age group represent 25% of the population in the developing Countries.⁶ School children in the age group of 10-16 years fall well in the preventable blindness group because they belong to a certain age group who are easily accessible, and schools are



the best platform for imparting health education to the children.

Globally refractive error is one of the most common causes of visual impairment and second leading cause of treatable blindness.⁷ 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.⁸

A national survey on blindness 2001-02 showed that 7% of children aged 10-14 years have problems with their eye sight.⁹

Blindness is defined as visual acuity is less than 3/60 or a corresponding visual field loss to less than 10 degree, in the better eye with the best possible correction.¹⁰

Let no child miss the beauty, pleasure and opportunities that this world has for them.

Objective of the Study

To screen ocular morbidities of school going children of 6-16 years age group.

MATERIALS AND METHODS

In our study four government schools and four private schools were selected randomly with proportionate representation from each category of schools. All the children from 6-16 years were examined from the respective schools. All the students who were absent on the day of study were excluded. Those who were having systemic comorbidities excluded in this study. Consent was taken from the principal of the school before undertaking the study. This study was carried out from July 2016 to January 2018.

Each eye was examined for any lesion in lids, conjunctiva and cornea. Visual acuity was measured at 6 meter by ophthalmic technician using Snellen’s chart (placed on a wall). Care was taken to provide sufficient light on the chart. Near vision was tested with the help of Jaeger’s chart keeping the distance of 25-30 cm from the eyes of the subjects. Improvement with pin hole was recorded if any. Refractive error was diagnosed when a visual acuity worse than 6/9 improved on pin hole test.

Children with visual acuity of 6/9 to 6/18, 6/24 to 6/60 and less than 6/60 in the better eye were categorized as having mild, moderate and severe visual impairment respectively.¹¹ All children presenting with visual acuity less than 6/9 in either eye or any ocular pathology were subjected to detailed examination with the help of slit lamp biomicroscopy and dilated fundus evaluation.

Pupil were dilated with Tropicamide plus eye drop for patients with visual acuity less than 6/9 in either eye. Retinoscopy was done by a Refractionist with the help of streak retinoscope. Dilated fundus examination was done by ophthalmologist. Patients who had refractive error not improving with pin hole were called for post mydriatic test by giving 1% Atropine eye ointment. Drugs were dispensed to the needy patients and glasses were prescribed to children with refractive error. Children having severe visual impairment not improving with glasses were called at tertiary hospital IQ City medical college, Durgapur for further evaluation. All the information was collected, compiled and

analyzed by applying suitable tests. The Statistical Software (SPSS) was used for the analysis of data and Microsoft word and Excel have been used.

RESULTS

A total of 3534 children from 8 different schools (1756 in government and 1778 in private schools) were examined. Boys (51.5%) and girls (48.5%) had almost equal representation in private schools, while it was 54.9% and 45.1% respectively in government schools (Table 1).

Schools	Boys (%)	Girls (%)	Total (%)
Government Schools			
Taraknath High School	205 (51.9)	190 (48.1)	395 (17.9)
Rampada Primary School	255 (55.7)	203 (44.3)	458 (20.6)
Kalipur High School	230 (54.1)	195 (45.9)	425 (19.1)
Sri Krishnapur Primary School	274 (57.3)	204 (42.7)	478 (21.6)
Total	964 (54.9)	792 (45.1)	1756
Private Schools			
Delhi Public School, Durgapur	252 (52.1)	231 (47.9)	483 (36.7)
DAV Model School, Durgapur	206 (51.0)	198 (49.0)	404 (30.7)
Zoom International School, Durgapur	218 (50.9)	211 (49.1)	429 (32.6)
TegBahadur School, Durgapur	240 (51.9)	222 (48.1)	462 (25.9)
Total	916 (51.5)	862 (48.5)	1778

Table 1. Gender Wise Distribution of Students in Selected Schools

Ocular Morbidity	Government (1756) %	Private (1778) %	Total (3534) %
Refractive Error	268 (15.2)	202 (11.3)	470 (13.2)
Allergic Conjunctivitis	132 (7.5)	171 (9.6)	303 (8.5)
Vit. A Deficiency	62 (3.5)	36 (2.0)	98 (2.7)
Blepharitis	41 (2.3)	24 (1.3)	65 (1.8)
Others	37 (2.1)	25 (1.4)	62 (1.7)
Total	540 (30.7)	458 (25.7)	998 (28.2)

Table 2. Prevalence of Ocular Morbidity in Govt. & Private Schools

Ocular Morbidity	Boys 1880 (%)	Girls 1654 (%)	Total 3534 (%)
Refractive error	249 (13.2)	221 (13.3)	470 (13.2)
Allergic Conjunctivitis	173 (9.2)	130 (7.8)	303 (8.5)
Vit. A deficiency	61 (3.2)	37 (2.2)	98 (2.7)
Blepharitis	34 (1.8)	31 (1.8)	65 (1.8)
Others	28 (1.4)	34 (2.0)	62 (1.7)
Total	545 (28.9)	453 (27.3)	998 (28.2)

Table 3. Gender Wise Distribution of Ocular Morbidity

Number	Government Schools - (1756)			Private Schools - (1778)		
	6-9 (518) (%)	10-13 (590) (%)	14-16 (648) (%)	6-9 (492) (%)	10-13 (604) (%)	14-16 (682) (%)
Refractive error	76 (14.6)	94 (15.9)	98 (15.1)	53 (10.7)	69 (11.4)	80 (11.7)
Allergic Conjunctivitis	62 (11.9)	40 (6.7)	30 (4.6)	81 (16.4)	50 (8.2)	40 (5.8)
Vit.- A deficiency	38 (7.3)	17 (2.8)	07 (1.0)	31 (6.3)	05 (0.8)	00 (0)
Blepharitis	16 (3.0)	13 (2.2)	12 (1.8)	11 (2.2)	08 (1.3)	05 (0.7)
Others	14 (2.7)	12 (2.0)	11 (1.6)	13 (2.6)	10 (1.6)	02 (0.2)
Total	206 (39.7)	176 (29.8)	158 (24.3)	189 (38.4)	142 (23.5)	127 (18.6)

Table 4. Age Wise Ocular Morbidity in Govt. & Private Schools

Overall prevalence of ocular morbidity among school children of age 6-16 years was found to be 28.2% (n=998). Among the children having ocular morbidity, refractive errors (47.1%) constituted the major cause of ocular morbidity followed by allergic conjunctivitis (30.3%), Vitamin A deficiency (9.9%), Blepharitis (6.5%) and others (6.2%). Others means non-specific ocular problem like mild conjunctival congestion and watering sometimes. The ocular morbidity among government schools (30.7%) and private schools (25.7%) was observed (Table 2). Subnormal vision (without glass) was found in 470 (13.2%) children. Both boys and girls had almost similar visual impairment. Out of 1880 boys, 249 (13.2%) and girls, 221 (13.3%) from 1654 had subnormal vision. Out of 470 children with subnormal vision, 280 children (59.5%) were not aware of their visual problem and 138 (29.3%) children were using spectacles and remaining 52 children did not wear spectacles. When reasons were asked for not using spectacles, 67.3% were not aware of their condition, 23.1% did not like wearing spectacles due to cosmetic appearance and 9.6% children gave multiple answers like their parents did not allow them to wear, wearing spectacles increases the number.

The allergic conjunctivitis was second most common ocular problem noted higher in private schools (9.6%) as compared to government schools (7.5%). It was more in boys (9.2%) as compared to girls (7.8%), (Table 3). The reason was found to be due to many industrialization and factories in Durgapur which produces smoke and make climate dusty. Boys getting more exposure for allergic reaction while playing outside.

Vitamin A deficiency and Blepharitis were more in government schools because of low socioeconomic status and lack of awareness.

DISCUSSION

Vision is very important to people of all ages, it is more so in children as it has a key role in their mental, physical, and psychological development. Childhood eye disorders can contribute to the burden of blindness in a society. Children and adolescents comprise a major proportion of Indian population and are important as they are the future of country's development. The majority of the causes for ocular morbidity are preventable or treatable and if it is not detected and prevented in time it may lead to a permanent disability. In this study the overall prevalence of ocular morbidity was found to be 28.2% comparable to the one reported by Rajesh Kumar et al (24.6%) from Delhi,¹² Jayanth D and Malathi (27.65%) from rural Maharashtra,¹³ Madhu Gupta and others (31.6%) from Shimla.¹⁴ The prevalence was higher in other study reported by Ankita P et al (45.5%) from Gujarat,¹⁵ Chaturvedi et al (more than 40%) from rural Delhi,¹⁶ Kalikivayi et al (43.5%) at Hyderabad,¹⁷ but a lower prevalence was reported by Prajapati P et al¹⁸ (13%) among adolescents of Gandhinagar district, Amol Bansal et al¹⁹ (13.32%) from Kolar district, South India and 15.6% by Wedner SH et al²⁰ in rural Tanzania. The prevalence of ocular morbidity varies in different places due to different factors prevailing at different places.

Marginal difference in the prevalence of ocular diseases among boys (28.9%) and girls (27.3%) in the present study however, Khurana et al²¹ reported higher prevalence in girls (73.5%) as compared to boys (49.4%) in Haryana and lower but marginal difference among boys (13.5%) and girls (13.1%) was reported by Amol Bansal et al.

The commonest cause of ocular morbidity in the present study was refractive errors with a prevalence of 13.2% is comparable to results of study in Koral, south India (11.9%),

however higher prevalence of refractive errors has been observed in Maharashtra (36.62%).

The prevalence of allergic conjunctivitis in our study was found to be 8.5%, representing 303 out of 3534 students. However it was 15-20% reported by N Rosario, Delhi. Internationally, Kumah et al²² and Abah et al²³ found the prevalence of allergic conjunctivitis to be 12.1% and 7.3% respectively.

The prevalence of allergic conjunctivitis in this study was more in private schools 9.6% as compared to government schools 7.5% as it can be explained by due to many industrialization and factories located in the city which produces smoke and gives rise to allergic reactions.

The prevalence of Vitamin A deficiency and Blepharitis in this study was found to be 2.7% and 1.8% respectively. However, Vitamin A deficiency up to an extent of 5.4%-9% in the 4 to 16 years age group has been reported in other studies. This can be explained by lower socioeconomic conditions associated with unhealthy dietary pattern and unhygienic status of children in those studies. Our low prevalence can also be explained by availability of better health services now a days and facilitating early detection and treatment. Prevalence of Vitamin A deficiency and Blepharitis decreased with age in the present study, which is comparable to the study by Desai et al.

High prevalence of Vitamin A deficiency and Blepharitis in children studying in government schools as compared to private schools as observed in this study could be because many of the students in government schools belong to lower socioeconomic status and are more likely to have poor personal hygiene.

CONCLUSION

Refractive errors (13.2%) and allergic conjunctivitis (8.5%) are the most common ocular disorders identified. Both these conditions can be easily identified by regular eye screening programmes and promptly treated. The importance of wearing spectacles and effects of not using them should be explained to the children. Screening of school children for ocular problems should be done at regular intervals and it should be one of the prime components of the school health program.

REFERENCES

- [1] WHO. Visual impairment and blindness worldwide. 2012. Available at <http://www.who.int/mediacentre/factsheets/fs282/en>.
- [2] Gilbert C, Rahi J, Quinn G. Visual impairment and blindness in children. In: Johnson GJ, Minassian DC, Weale RA, et al, eds. *Epidemiology of eye disease*. 2nd edn UK: Arnold Publishers 2003
- [3] WHO. Disease control and prevention of visual impairment. In: Waddell A, Heseltine E, eds. *Vision 2020. Global initiative for the elimination of avoidable blindness. Action plan 2006-2011*. Geneva, Switzerland: WHO Press 2007:9-39.
- [4] Dandona R, Dandona L, Srinivas M. Refractive error in children in a rural population in India. *Invest Ophthalmol Vis Sci* 2002;43(3):615-622.
- [5] Murthy GV, Gupta SK, Ellwein LB, et al. Refractive errors in children in an urban population in New Delhi. *Invest Ophthalmol Vis Sci* 2002;43(3):623-631.
- [6] World Health Organization. Preventing blindness in children: report of a WHO/IAPB scientific meeting, Hyderabad, India, 13-17 April 1999. Geneva: World Health Organization 2000.
- [7] Dandona R, Dandona L. Refractive error blindness. *Bull World Health Organ* 2001;79:237-243.
- [8] 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.
- [9] Government of India. Annual Report, Ministry of health and family welfare. New Delhi, 2004.
- [10] World Health Organisation. Global initiative for the elimination of avoidable blindness. WHO/ PBL/97.61. Geneva: WHO 1997. www.who.int/vision/2020_report.
- [11] World Health Organisation. International Statistical Classification of Diseases and Related Health Problems. 10th revision. Version 2003. Chapter VII. H54. Blindness and low vision. Available at: <http://www.who.int/classifications/icd/en/>
- [12] Kumar R, Dabas P, Mehra M. Ocular morbidity amongst primary school children in Delhi. *Health and Population- Perspectives and Issues* 2007;30(3):222-229.
- [13] Deshpande Jayant D, Malathi K. Prevalence of ocular morbidities among school children in rural area of north Maharashtra in India. *National Journal of Community Medicine* 2011;2(2):249-254.
- [14] Gupta M, Gupta BP, Cauhan A, et al. Ocular morbidity prevalence among school children in Shimla, Himachal, North India. *Indian J Ophthalmol* 2009;57(2):133-138.
- [15] Parmar A, Kartha G, Baria M. A study on the prevalence of ocular morbidities amongst school children (10-16 years) of Surendranager district. *Int J Res Med* 2013;3(3):90-94.
- [16] Chaturvedi S, Aggarwal OP. Pattern and distribution of ocular morbidity in primary school children of rural Delhi. *Asia Pac J Public Health* 1999;11(1):30-33.
- [17] Kalikivayi V, Naduvilath TJ, Bansal AK, et al. Visual impairment in school children in Southern India. *Indian J Ophthalmol* 1997;45(2):129-134.
- [18] Prajapati P, Oza J, Prajapati J, et al. Prevalence of ocular morbidity among school adolescents of Gandhinagar District, Gujarat. *Online Journal of Health and Allied Sciences* 2010;9(4):5.
- [19] Bansal A, Krishnappa K, Datti NP, et al. Ocular morbidity in school going children of Kolar district, South India. *J Clin Biomed Sci* 2012;2(4):175-184.

- [20] Wedner SH, Ross DA, Balira R, et al. Prevalence of eye diseases in primary school children in a rural area of Tanzania. *Br J Ophthalmol* 2000;84(11):1291-1297.
- [21] Khurana AK, Sikka KL, Parmar IP, et al. Ocular morbidity among school children in Rohtak city. *Indian J Public Health* 1984;28(4):217-220.
- [22] Kumah DB. Management of refractive errors and low vision among basic school children in Atwima district. *J Ghana Sci Assoc* 2009;9(2):1-8.
- [23] Abah ER, Oladigbolu KK, Samaila E, et al. Ocular disorders in children in Zaria children's school. *Niger J Clin Pract* 2011;14(4):473-476.