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Research Article

Ocular morbidity screening among school children in Chennai

Meriton Stanly A.[1]*, Meera Alias Devasena[2]

[1]Department of Community medicine, Sri Ramachandra Medical College & Research Institute, Sri Ramachandra University, Porur, Chennai, India
[2]Department of Ophthalmology, Sri Ramachandra Medical College & Research Institute, Sri Ramachandra University, Porur, Chennai, India

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***Correspondence:**
Dr. Meriton stanly,
E-mail: dramstanly@yahoo.co.in

ABSTRACT

Background: Child's vision is most essential for their successful learning. Poor vision in childhood affects performance in school and thereby their future. the A study of pattern of ocular disorders in children is very important because some eye conditions like high Myopia, congenital anomalies invariably lead to Blindness. The aim of the study was to estimate the prevalence of various ocular disorders among school going children in the age group 5-15 years in an urban population.
Methods: This cross sectional study was done among school going children of age 5-15 years. The criterion for classifying as visually impaired was visual acuity less than 6/9 in one or both eyes. The sample size was calculated by the prevalence of refractive errors in school children as 20% with an alpha error of 5% and relative precision 10%. Prevalence of ocular morbidities and 95% confidence intervals were calculated. By applying Chi-square tests, the differences in proportions were considered significant at 5% level.
Results: This cross sectional study was conducted among 1580 children aged 5- 15 years. Among the selected children, 55.1% were males and 44.9% were females. Children with visual impairment due to various ocular morbidity were 22.3% (353). Among them, 19.3% had refractive error; amblyopia in one eye was 0.9%, followed by vitamin A deficiency 0.6% and congenital anomalies 0.1%.
Conclusions: Early detection and treatment of eye health problems in school children is essential for the prevention of blindness.

Keywords: Refractive error, Ocular morbidity, Prevalence

INTRODUCTION

Child's vision is most essential for their successful learning.[1] Visual problems commonly refractive error remains one of the primary causes of visual impairment worldwide.[2] Poor vision in childhood affects performance in school and thereby their future. Of the 1.4 million blind children in the world, 1 million lie in Asia. The prevalence ranges from 0.3/1000 children in developed countries to 1.5/1000 in developing countries.[3] To address the issue of blindness in children, WHO launched Vision 2020 to eliminate avoidable blindness. A study of pattern of ocular disorders in children is very important because some eye conditions like high Myopia, congenital anomalies invariably lead to Blindness. Myopia is the commonest refractive error in school children.[4] Other refractive errors are Hypermetropia and Astigmatism. Squint defines the deviation of eyeball to one side, can be congenital or acquired. Congenital anomalies are corneal opacities, lens opacities, macular pathologies in the retina etc. Vitamin A deficiency is related to childhood malnutrition which in later stages causes corneal blindness. Amblyopia refers to decrease in vision due to laziness of one eye with normal eye

structures. School eye screening programs have been the part of district blindness control society since 1996 which is an important programme for blindness control.

The aim of the study was to estimate the prevalence of various ocular disorders among school going children in the age group 5-15 years in an urban population.

METHODS

This cross sectional study was done among school going children of age 5-15 years from October 2014 to March 2015 in Chennai. Permission from the school principal and consent from the parents were obtained. All the children from class I to class 10 were included in the study. Using Snellen's numbers and alphabets chart, 2 ophthalmic assistants assessed the distance visual acuity of all children at a distance of 6 meters. The criterion for classifying as visually impaired was visual acuity less than 6/9 in one or both eyes. The children identified with eye problems that need cycloplegic refraction and other detailed evaluation were referred to ophthalmology department in our hospital. The sample size was calculated by the prevalence of refractive errors in school children as 20% with an alpha error of 5% and relative precision 10%. The minimum sample size required for the study was found to be 1536, since 1580 children were in class 1 to 10, all the children were included for the study. Data entry and analysis were done using SPSS 15.0 software. Prevalence of ocular morbidities and 95% confidence intervals were calculated. By applying Chi-square tests, the differences in proportions were considered significant at 5% level.

Tools and Examination: The materials taken with the team were Snellen visual charts, torch lights, retinoscopes, trial set, trial frame with occluders, direct ophthalmoscopes.

The students are subjected to the following examinations:

1. Distant visual acuity of each eye separately by Snellen's chart at 6m distance

2. Extraocular movement's examination, Hirschberg's test and cover tests using distant and near targets.

3. Anterior segment examination using bright torch light and ophthalmoscopes to rule out media opacities.

All cases of refractive errors, squint, media opacities, suspected posterior segment abnormalities were referred to ophthalmologist for detailed examination and were followed up for a period of 2 months by a weekly visit to the school.

RESULTS

Table 1: Distribution by age and sex.

Age in Years	Males		Females		Total	
	n	%	n	%	n	%
5-7	205	13	170	10.7	375	23.7
8- 10	261	16.5	213	13.5	474	30
11 -13	230	14.6	185	11.7	415	26.3
14-16	174	11	142	9	316	20
Total	870	55.1	710	44.9	1580	100

This cross sectional study was conducted among 1580 children aged 5- 15 years. Among the selected children, 55.1% were males and 44.9% were females. The highest proportion of children was in the age group 8-10 years followed by children in the age group 11-13 years. Details given in Table 1. Children with visual impairment due to various ocular morbidity was 22.3% (353). Among them, 19.3% had refractive error. The prevalence of refractive error in males was 10.6% and 8.7% in females. About 1.4% of children had squint. 0.6% of them were males and 0.8% was females. The other ocular morbidities were amblyopia in one eye was 0.9% followed by vitamin A deficiency 0.6% and congenital anomalies 0.1%.

Table 2: Prevalence of ocular morbidity.

Ocular Morbidity	Males		Females		Total	
	n	%	n	%	n	%
Refractive Error	168	10.6	137	8.7	305	19.3
Squint	10	0.6	12	0.8	22	1.4
Amblyopia	7	0.4	8	0.5	15	0.9
Congenital Anomalies	1	0.06	1	0.06	2	0.12
Vitamin A deficiency	5	0.32	4	0.25	9	0.57
Normal	679	43.0	548	34.7	1227	77.7
Total	870	55.1	710	44.9	1580	100

Prevalence of Ocular Morbidities:

The refractive error was present in 168 males and 137 female children. The prevalence was highest in the age group 11-13 years which was about 6.8%. 5- 7 years age group had the lowest prevalence which was 2.9%. Male children had increased prevalence of refractive error than females in our study but it was not statistically significant ($p > 0.05$). In 11-13 years group 4% were males and 2.8% were females. In 8-10 years group 3.3% were males and 2.5% were females. About 1.3% of male children and 1.6% of female children had refractive error in the age group 5-7 years.

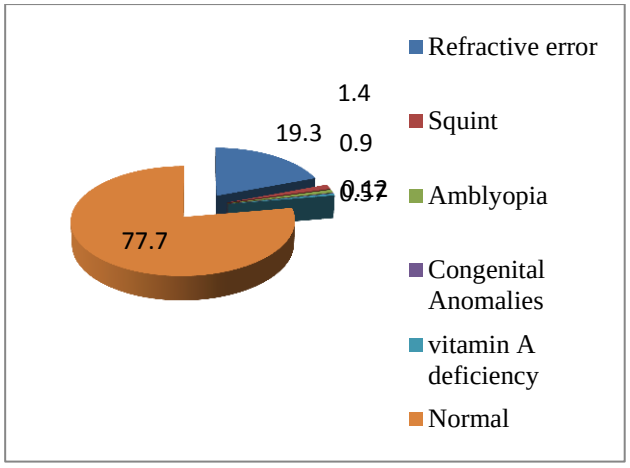

Figure 1: Prevalence of ocular morbidity.

DISCUSSION

In the present study the overall prevalence of ocular morbidities was found to be 22.3%. The 95% confidence interval was 20.3% to 24.4%. The confidence interval is quite narrow and it reflects adequate sample size for the study and the study has good internal validity. This was on the higher side on comparing with a similar study conducted in Kolar district in Karnataka in 2012 in which the prevalence was 13.32%.[5] Among the ocular morbidities, refractive error was the commonest one in our study, similar results were observed in APEDS study in Andhra Pradesh and also in Kolar district in Karnataka.[6] The prevalence of refractive error was found to be 19.3% and the 95% confidence interval was 17.4% to 21.3 % which is similar to studies by Sethi et al, Mahapatro et al and Prajapati et al.[7,8] The prevalence of squint in the present study was 1.4% and it was lower than studies by Bansal et al in Karnataka in 2012 which showed the prevalence as 3.92%. Prevalence of squint Wedner et al in Tanzania was 0.5%.[9] However the prevalence of squint was found to be varied from place to place.

Lower prevalence of Amblyopia (0.9%), Vitamin A deficiency (0.6%) and other congenital anomalies like media opacities, macular pathologies (0.12%) were seen in our study which was similar compared to other studies in India.[4,7,10] Screening of school children is very useful because the uncorrected refractive errors influences on the academic performances of school life and also social life. The long term visual disabilities were minimized by proper eye screening programs.

Table 3: Prevalence of ocular morbidity by age and sex.

Age in Years	Refractive Errors (n)			Other Ocular Morbidities (n)			Normal (n)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
5- 7	21	25	46	6	5	11	178	140	318
8- 10	52	40	92	8	5	13	201	168	369
11- 13	63	45	108	4	13	17	163	127	290
14- 16	32	27	59	5	2	7	137	113	250
Total	168	137	305	23	25	48	679	548	1227

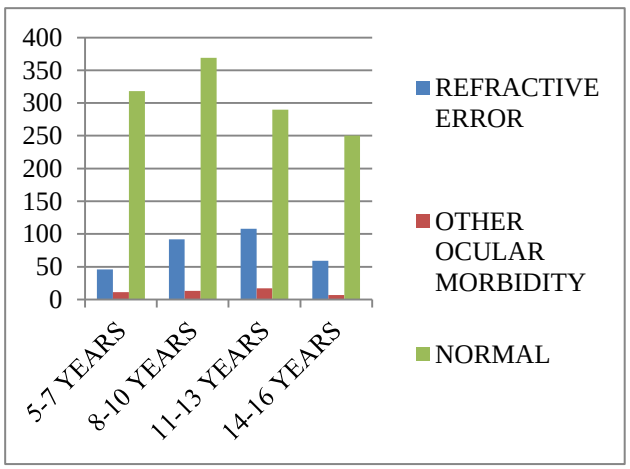

Figure 2: Ocular morbidity distribution of age and sex.

CONCLUSIONS

The prevalence of refractive error is the commonest among various ocular morbidities in school children. Early detection and treatment of eye health problems in school children is essential for the prevention of blindness.

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

REFERENCES

1. Dandona R, Dandona L. Refractive Error Blindness. Bull World Health Organ. 2001;79:237-43

2. Murthy GVS, Gupta SK, Elloveria LB. Refractive Errors in Children in an urban population in Delhi. Invest Ophthalmol Vis Sci. 2002;43:623-31
3. WHO Disease control and prevention of visual impairment. In: Vision 2020 Global initiative for the elimination of avoidable blindness: Action plan 2006-2011.Waddell A, Heseltine E (eds). Geneva, Switzerland, WHO press. 2007:9-39.
4. Gupta M, Gupta BP, Chauhan A, Bharadwaj A. Ocular morbidity prevalence among schoolchildren in Shimla, Himachal, North India. Indian J Ophthalmol. 2009;57(2):133-38.
5. Bansal A, Krishnappa K, Datti NP, Guruprasad BS, Guha J. Ocular morbidity in School going children of Kolar District, South India. J Clin Biomed Sci. 2012;2(4).
6. Sethi S, Kartha G.P. prevalence of Refactive errors in school children (12-17 years) of Ahmedabad city. Indian J Community Med. 2000;25:10-2.
7. Mahapatro S, Das MK, Padhy GK. Prevalence of ocular disorders in school children in rural area surrounding Bhubanesar. J Com med. 2010;6(1):5.
8. 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 Scs. 2010;9(4).
9. Wedner SH, Ross DA, Balira R, Kaji L Foster A. Prevalence of eye diseases in school children in arural area of Tanzania. Br J Ophthalmol. 2000;84:1291-7
10. 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.

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