PREVALENCE OF OCULAR MORBIDITIES AMONG SCHOOL CHILDREN IN A RURAL BLOCK OF CACHAR, ASSAM

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ABSTRACT

BACKGROUND

School-age children constitute a particularly vulnerable group, where ocular morbidity including uncorrected refractive error may have a dramatic impact on learning capability and educational potential. Present study was conducted with the objective of estimating the prevalence of ocular morbidity among school children in rural area.

MATERIALS AND METHODS

A cross-sectional study was conducted among school going children studying from 1st to 10th standard in the age group 6-15 years in rural area. The ocular examination of school children was done at the respective schools. All the data obtained was entered in excel workbook and analysed. Chi square test was used to observe the association of the ocular morbidities with respect to age, sex, education of father, occupation, class, and nutritional status.

RESULTS

Prevalence of ocular morbidities was found to be 20.19%. Refractive errors and allergic conjunctivitis were the most common ocular disorders. The prevalence of ocular morbidity showed significant association with education of father ($\chi2$ = 9.497, p = 0.050), education of mother ($\chi2$ = 13.063, p = 0.005), family type ($\chi2$ = 4.270, p = 0.03), while no significant association was found between ocular morbidity and sex of the school children ($\chi2$ = 0.352, p = 0.553), occupation of father ($\chi2$ = 3.372, p = 0.498) and religion ($\chi2$ = 0.168, p = 0.682) of the school children. Nutritional status of children was significantly associated with the occurrence of ocular morbidity ($\chi2$ = 3.763, p = 0.052).

CONCLUSION

High prevalence of uncorrected refractive error among school children in rural area was observed. Periodic screening of school children and utilisation of corrective spectacles is very essential to improve the quality of eye-sight.

KEYWORDS

Ocular Morbidity, Prevalence, School Children, Rural.

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BACKGROUND

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, holding the books closer to their eyes, squeezing the eyes and even avoiding work requiring visual concentration. This warrants early detection and treatment to prevent permanent disability.[1-4] Children in the school-going age group (6 - 15 years) represent 25% of the population in the developing countries. They fall best in the preventable blindness age group, and are a controlled population i.e., they belong to a certain age group and are easily accessible and schools are the best forum for imparting health education to the children.[1-5]

Many ocular diseases have their origin in childhood and the morbidity may go unnoticed and adversely affect the child's performance in school and may also cause severe ocular disability in the later part of life. Effective methods of vision screening in school children are useful in detecting correctable causes of decreased vision, especially refractive errors and in minimising long-term visual disability.[2]

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.[3]

Information on epidemiology of ophthalmologic problems is available from various countries across the world including several parts of India. But studies among school children in this part of Assam is lacking, hence the present study has been undertaken with the following objectives.

Aims and Objectives

- To study the prevalence of ocular morbidities among school going children in a rural area of South Assam.
- To assess the different factors contributing to ocular morbidities.

MATERIALS AND METHODS

A cross-sectional study was conducted among school going children studying from 1st to 10th standard in the age group 6-15 years in field practice area of the Department of Community Medicine of tertiary care teaching hospital in South Assam during the period from June to November 2016.

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Sample size was calculated by using formula 4pq/L2. Kalikivayi et al[6] observed prevalence of ocular morbidity from Southern India as 43.5%. Considering p = 43.5, q = 56.5 and allowable error (L) = 15 % of p, required sample size was 230 for the present study. For the purpose of study, 3 government schools were selected conveniently from total of 43 Middle/Upper primary Schools namely Gossaipur Nehru MV School, Rangpur Senior Basic School and Ram Kumar ME School respectively in a rural block of South Assam (total enrolment - 904 students). The primary, high and higher secondary school were not included under study. All children in 3 selected schools were enumerated class wise (Class 1 to class 10) and included in the sampling frame. The purpose of study was informed to the parents of students and informed consent was obtained with the assistance of school heads. 230 students were recruited out of which 208 (90%) were present on day of visit and included in the study. The data collection instrument was a pretested structured questionnaire. The present research study was undertaken after due approval from the ethical committee of Silchar Medical College, Assam.

Detailed history, including family history, about the current problems and past problem was recorded. Beside the socioeconomic and demographic factors, height and weight of the child was noted. Height was measured to the nearest 0.5 cm using a portable stadiometer. Weight was measured using an electronic weighing balance, to the nearest 0.1 kg. WHO Anthro Plus software was used for nutritional assessment using the WHO Reference 2007 for 5-19 years to monitor the growth of school-age children and adolescents. Modified Prasad`s classification was used to calculate socioeconomic class.[7]

Examinations were performed in the respective school compounds by an experienced ophthalmologist. Examination data was recorded using the RESC Eye Examination Form.[8] The visual acuity was tested by Snellen's chart for far vision and near vision was tested with the help of Jaeger's chart. Examination of the eyelid margins and cilia, bulbar and tarsal conjunctivae, the cornea and anterior segment was done using a pen-torch and a 2x magnifying loupe. Latent squint was diagnosed by cover-uncover test. For fundus and posterior segment pathology ophthalmoscope was used to elicit any. Ishihara's isochromatic chart was used to identify colour blindness. Refraction is performed in a semi dark room by using retinoscope with the examiner at a distance of 0.75 meters and a +1.50 dioptre lens in the trial frame. The additional spherical, cylindrical power and axis necessary to neutralise the shadow movement is noted. Those requiring cycloplegic dilation was taken to medical college hospital.

Statistical Analysis

All the data obtained, entered into Microsoft Excel and analysed. Data are expressed as means ± SDs for continuous variables and as frequencies and percentages for categorical variables. Contingency Chi square test was used to observe the association of the ocular morbidities with respect to age, sex, education of father, occupation, class, and nutritional status, p-value <0.05 was considered significant.

RESULT

The age of the subjects ranged from 6 years to 15 years with mean age 11.4 ± 2.1 years. The total number of school children were 208 (76 boys and 132 girls) from grade 1 to 10th.

Ocular morbidities were observed in a total of 42 (20.19%) students. Uncorrected refractive errors constituted the most important and commonest cause of subnormal vision with a prevalence of 14.12%. Out of 30 children with refractive errors, only few (2, 6.6%) children were using spectacles. Allergic conjunctivitis was found as second common problem in 3 (7.14%) children. Vitamin A deficiency was seen in 2 (4.76%) students. Blepharitis was observed in 1 (2.38%) child. Dacryocystitis (2.38%), Trichiasis, Squint (4.76%), eye injury (2.38%) were also observed in few school children. The Table 1 shows all the morbidities.

Morbidity	Number	Percent
Blepharitis	1	2.38
Dacryocystitis	1	2.38
Vitamin A deficiency	2	4.76
Trichiasis	1	2.38
Corneal opacity	1	2.38
Squint	2	4.76
Eye injury, subconjunctival haemorrhage	1	2.38
Refractive error	30	71.43
Conjunctivitis, allergic conjunctivitis	3	7.14
	42	100.00

Table 1

The prevalence of ocular morbidity showed significant association with education of father ($\chi2$ = 9.497, p = 0.050), education of mother ($\chi2$ = 13.063, p = 0.005), family type ($\chi2$ = 4.270, p = 0.03), while no significant association was found between ocular morbidity and sex of the school children ($\chi2$ = 0.352, p = 0.553), occupation of father ($\chi2$ = 3.372, p = 0.498) and religion ($\chi2$ = 0.168, p = 0.682) of the school children. Nutritional status of children was significantly associated with the occurrence of ocular morbidity ($\chi2$ = 3.763, p = 0.052).

Variable		Ocular Morbidity				Total (n = 208)		$\chi2$ value	p value
		Yes	%	No	%	No	%		
Sex	Boys	17	8.17	59	28.37	76	36.54	0.352	0.553
	Girls	25	12.02	107	51.44	132	63.46		
Type of family	Nuclear	32	15.38	147	70.67	179	86.06	4.27	0.039
	Joint	10	4.81	19	9.13	29	13.94		
Education of father	Illiterate	20	9.62	42	20.19	62	29.81	9.285	0.026
	Lower Primary	10	4.81	39	18.75	49	23.56		
	Upper primary	6	2.88	43	20.67	49	23.56		
	High School & above	6	2.88	42	20.19	48	23.08		

Education of mother	Illiterate	15	7.21	38	18.27	53	25.48		
	Lower Primary	12	5.77	20	9.62	32	15.38	13.063	0.005
	Upper primary	6	2.88	48	23.08	54	25.96		
	High School & above	9	4.33	60	28.85	69	33.17		
Occupation of father	Cultivators/farmers/ Unskilled	10	4.81	41	19.71	51	24.52	3.372	0.498
	Skilled	14	6.73	44	21.15	58	27.88		
	Service (Private/Government)	2	0.96	8	3.85	10	4.81		
	Driver	6	2.88	44	21.15	50	24.04		
	Business	10	4.81	29	13.94	39	18.75		
Nutritional status	Normal	26	12.50	116	55.77	142	68.27	3.763	0.052
	Malnutrition	20	9.62	46	22.12	66	31.73		
Religion	Hindu	15	7.21	65	31.25	80	38.46	0.168	0.682
	Muslim	27	12.98	101	48.56	128	61.54		

Table 2

DISCUSSION

Schools are one of the best centres for effectively implementing the comprehensive eye healthcare programme. A study of the pattern of ocular diseases in children is very important because while some eye conditions are just causes of ocular morbidity, others invariably lead to blindness. The majority of the causes for ocular morbidity, sub-normal and low vision as well as blindness were either preventable or treatable.

In this study, the prevalence of ocular morbidities was found to be 20.19%. Another study reported a similar prevalence of 26.5 percent among school children in North India.[9] Rajesh Kumar et al reported prevalence of ocular morbidity as 24.6% from Delhi.[10] However, a school based study in rural Delhi reported that more than 40 percent of the children had one or more eye diseases.[11]

In a study from rural area of Tanzania, Africa lower prevalence of 15.6% of ocular morbidity was reported in children aged 7-19 years.[12] The difference may be due to different study areas.

The commonest cause of ocular morbidity in the present study was refractive errors with a prevalence of 14.12%. Similar prevalence of refractive error as 10.12% was reported from rural area of north Maharashtra.[13] Refractive error is one of the most common causes of visual impairment around the world and the second leading cause of treatable blindness.[14]

In the present study (in children of 6 to 15 years), prevalence of conjunctivitis was 7.14%. Lower prevalence has been reported by Kumar R et al (2004) who observed 4.6% prevalence in urban and rural school children (5 - 14 years) of Delhi.[15]

Trivedi et al (2006) observed 5.1% prevalence in children (7 - 15 years) of urban and rural areas of Gujarat.[16] The difference in prevalence in these studies may be due to seasonal variation of conjunctivitis, variation may also occur because of short duration of the illness.

Vitamin A Deficiency, trachoma was not found as a public health problem in the present study.

The father's occupational status, which is an index of socioeconomic status, showed no significant relationship to the occurrence of ocular diseases amongst the students, maybe because almost all families belong to similar socioeconomic status, lower or lower middle.

There was significant association found between parents` education and development of ocular morbidity. Similar to present study, Dandona et al (2002) found a significant association between father's education and prevalence of refractive error.[17]

Among 208 children, 66 (31.73%) children were moderately underweight, a significant association was found between malnourished children and ocular morbidity. Deshpande et al also observed similar results of 28.94% in his study. A significant association was found between malnourished children and ocular morbidity. Ahmed F et al (2006) have reported similar observations in their study among school adolescents.[18]

CONCLUSION

The results of the study strongly suggest that refractive error, and particularly myopia, places a substantial burden on the individual and on society. Myopia can have a potential negative impact on career choice, ocular health, and sometimes self-esteem. 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. For this, school teachers should be oriented and trained in identifying common eye problems among school children so that these children can be referred for prompt treatment. They should also impart awareness regarding ocular hygiene among school children. In this manner, the incidence of preventable causes of blindness among school children will be minimised.

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