

Original research**COMPARATIVE STUDY OF DEMOGRAPHIC PROFILE OF OCULAR MORBIDITY IN SCHOOL CHILDREN IN GHAZIABAD, INDIA****Gupta PK¹, Singh BP²**

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Abstract

Background: Blindness is one of the significant social problems in India. Children in the school-going age group (6-16 years) represent 25% of the population in the developing countries. 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. **Aim:** To find out the prevalence of ocular morbidity in school children and common morbid conditions present amongst them. **Material and Methods:** It was a cross sectional study, conducted in urban field practice area of a Medical College in Ghaziabad. **Result:** Out of total 1157 students only 7.35% were having some ocular complaint while 92.65% were normal. Students of municipal school had more complains (7.90%) as compared to students of Private English medium (6.61%) school. Watering from eyes was the commonest ocular complaint in children. The prevalence of ocular morbidity in students was 11.58%, was more in Municipal Corporation School (7.35%) while in Private English medium school was 4.24%. **Conclusion:** In present study prevalence of ocular morbidity in students were found 11.58%. Amongst the total students prevalence of refractory error was 6.22% followed by Vitamin A deficiency (2.77%), conjunctivitis (1.47%) and sty (1.12%).

Key Words: Ocular morbidity, Socio demographic profile, School children, Ghaziabad**Introduction**

Blindness is one of the significant social problems in India.¹ In India total child population in 2010 was 345 million and number of blind children was 2,80,000. The prevalence of blindness declined to 1.4% than previous data after vision 2020.² Childhood eye morbidity is defined as “Any eye disease or condition that requires ophthalmic care and treatment which if untreated can often progress to serious and sight-threatening disease”.³ The pattern of ocular diseases varies in different part of the

world and is influenced by racial, geographic, socioeconomic and cultural factors.⁴ Next to Egypt, India has the highest incidence of blindness in the world, particularly in younger age group and for prevention of blindness school is the best centre for implementing comprehensive eye health care.⁵ The rate of infection and complication are influenced by a number of socio-economic and socio-cultural factors and season.^{6,7} 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. Children in the school-going age group (6-16 years) represent 25% of the population in the developing countries. They offer significantly representative material for these studies as they fall best in the preventable blindness age group, 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. Schools are also one of the best centres for effectively implementing the comprehensive eye healthcare programme.⁸ 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. In the light of above facts and with very little data available on ocular morbidity in children especially in Maharashtra the present study was conducted to find out the prevalence of ocular morbidity in school children and common morbid conditions present amongst them. Early detection of ocular morbidity will thus prevent future progression of disease.

Material And Methods:

It was a cross sectional study. The present study was planned to know the prevalence of Vitamin A deficiency in school children in Ghaziabad city, and their correlation with socio demographic profile if any. The study was conducted in urban field practice area of a Medical College in Ghaziabad. The UHTC caters about 60,000 population. The study was done in one of the municipal school and one of the private English medium school randomly chosen. There are 4 municipal schools and 5 private schools in the Urban Health Training Centre field practice area.

One municipal school and one private school were selected randomly by lottery method.

Study population

School children of age 6-16 years of selected urban schools in the field practice area.

Inclusion criteria

All the Children in the age group of 6-16 years in the selected schools of urban field practice area.

Exclusion criteria Those who are not willing to participate and absentees on the day of examination

The Sample size was calculated by taking the prevalence of ocular morbidity in school children in 6-16 years age group i.e.31.6%⁴

Using this prevalence for finding out sample size following method is used.

Formula⁸ $n = 4PQ/L^2$ is used

$P = 31.6\%$ $Q = 100 - 31.6 = 68.4$

$L =$ allowable error 10% of $P = 3.16$

$$\begin{aligned} \text{Sample size} &= 4PQ/L^2 \\ &= 4 \times 31.6 \times 68.4 / (3.16)^2 \\ &= 865.82 = 866 \end{aligned}$$

The sample size calculated was 866 but 1157 were covered in this study.

Before conduction of study, training in Ophthalmology Department was undertaken to diagnose the Vitamin A in children till inter-observer error is minimized. It was of 15 days duration.

A pilot study was conducted in the same municipal school which is selected for study (50 students) and a questionnaire was finalized in order to collect information from the students and from parents.

The list of municipal and private school in field practice area of UHTC was obtained. There were 4 municipal and 5 private (English medium) schools. One municipal

school and one private school were selected randomly by lottery method. Two different types of school were chosen to get different socio economic class of students. Permission of school authority was obtained .School authority was explained about nature of study. An informed consent from school authority was obtained. The information was collected in a predesigned and pretested proforma.

All the students in the age group of 6 to 16 years present on the days of examination in that school were examined. Snellen's chart in English/ Hindi was used on the basis of the student's preference. The students who could not read the Snellen's were assessed

with the E charts. The cut off level of visual acuity to denote failure was fixed at less than 6/6 in either eye. Pinhole vision testing was done to differentiate refractive error from posterior chamber pathology (The visual acuity improves with pinhole if there is refractive error but it remains the same in posterior chamber pathology). Bitot's spot was noted clinically. Height, Weight was measured. BMI was determined, the student's age and gender were used to select the appropriate growth chart. After collection and editing of data, classification and tabulation was done under appropriate heading so as to obtain the summary values for further statistical treatment.

Results

Table 1

S.N.	variables	Number (n=1157)	Percentage (%)	P value
Distribution of students according to the ocular morbidity				
1	Present	134	11.58	
2	Absent	1023	88.42	
Distribution of students according to ocular complaints				
1	Yes	85	7.35	
2	No	1072	92.65	
Distribution of students according to types of ocular complaints.				
1	Watering from eye	62	72.94	$\chi^2=9.25$, df =1, p value=.00235
2	Pain in eye	23	27.06	
Distribution of students according to the type of ocular morbidity				
1	Refractive Error	72	53.73	$\chi^2= 28.842$, df= 3, p value= 0.00000242
2	Vitamin A deficiency	32	23.88	
3	Conjunctivitis	17	12.69	
4	Stye			
Age wise distribution of students with ocular morbidity				
1	6-8	28	20.9	$\chi^2= 10.09$, df=3, p value= 0.0178
2	9-11	44	32.84	
3	12-14	33	24.63	
4	15-16	29	21.64	
Gender wise distribution of students with ocular morbidity				
1	Male	72	53.73	$\chi^2= 1.16$, df=1, p value= 0.2808
2	Female	62	46.27	
Religion wise distribution of students with ocular morbidity				
1	Hindu	127	94.78	$\chi^2=0.01$, df =1, p value=0.9
2	Muslim	7	5.22	

Table-2

Distribution of students with ocular morbidity according to Type of family				
1	Nuclear family	60	44.78	$\chi^2=5.57$, df =2, p value=0.062
2	Joint family	73	54.48	
3	Three generation Family	1	0.75	
Distribution of students with ocular morbidity according to Socio economic condition				
1	Class I	5	3.73	$\chi^2=26.511$, df =4, p value=0.000024, Montecarlo p value=0.001
2	Class II	100	74.63	
3	Class III	21	15.67	
4	Class IV	6	4.48	
5	Class V	2	1.49	
Distribution of students according to the type of ocular morbidity				
1	Refractive Error	72	53.73	$\chi^2= 28.842$, df= 3, p value= 0.00000242
2	Vitamin A deficiency	32	23.88	
3	Conjunctivitis	17	12.69	
4	Stye	13	9.70	
Distribution of students with ocular morbidity according to literacy status of father				
	Illiterate	13	9.7	$\chi^2=14.91$, df =4, p value=0.0049
	Primary	45	37.31	
	Secondary	11	12.69	
	Higher Secondary	53	29.1	
	Graduate or more	12	11.2	
Distribution of students with ocular morbidity according to literacy of status of mother.				
	Illiterate	13	9.70	$\chi^2=85.9$, df =4, p value= 0.00001
	Primary	45	33.58	
	Secondary	11	8.21	
	Higher Secondary	53	39.55	
	Graduate or more	12	8.96	
Diet wise distribution of students with ocular morbidity				
	Vegetarian	24	17.91	$\chi^2=7.7$, df =1, p value= 0.0055, Odds ratio=1.97
	Mixed	110	82.09	
Distribution of students with ocular morbidity according to Nutritional status.				
	Under weight	56	41.79	$\chi^2=3.17$, df =3, p value= 0.3668
	Normal	23	17.16	
	Over weight	54	40.3	
	Obese	1	0.75	

Discussion

Out of total 1157 students only 7.35% students were having some ocular complaint while 92.65% were normal. Students of municipal school had more complains (7.90%) as compared to students of Private English medium (6.61%) school.

When students were asked about types of ocular complaints, 62(72.94%) were having watering from eyes during reading while 23 (27.06%) had pain in eyes, which was found significant. These complaints might be due to refractive error.

In present study prevalence of ocular morbidity in students was 11.58%. The prevalence was more in Municipal Corporation School (7.35%) while in Private English medium school it was 4.24% amongst total students although the difference was not significant.

The prevalence of ocular morbidity amongst municipal corporation school students were 12.92% while in private English medium school it was 9.82%.

Similar finding was observed by a study by Jha K N⁹ in their Baseline Ophthalmic Data of School Children aged 15 years or younger in Leh, Jammu and Kashmir, India where they found that total 10.79 % were identified as having ocular morbidity.

Prakash Prajapati, Jaydeep Oza, et al¹⁰ in their study found that the prevalence of ocular morbidity among school adolescents was reported as 13%.

In another study by Harpal Singh¹¹ in Bhopal Madhyapradesh the prevalence of ocular morbidity was found in 14.5% of students.

Amongst the total students prevalence of refractory error was 6.22% followed by Vitamin A deficiency (2.77%), conjunctivitis (1.47%), and stye (1.12%). Amongst both types, school refractory error was commonest ocular morbidity. When different types of ocular morbidity were concerned refractory error was more in private english medium school while Vitamin A deficiency, Infection (Conjunctivitis and stye) were more in municipal corporation school. In municipal school almost one third (30.59%) of ocular morbidity was due to Vitamin A deficiency.

Out of the total ocular morbidity 134 (100%), (53.73%) constitute the refractive errors as a major cause of ocular morbidity followed by, vitamin A deficiency (23.88 %) and conjunctivitis (12.69 %).

Madhu Gupta, Bhupinder P Gupta et al.⁷ conducted study on ocular morbidity prevalence among school children and observed that Refractive errors (22.0%) constitute the major cause of ocular morbidity followed by squint (2.5%), colour blindness (2.3%), vitamin A deficiency (1.8%), conjunctivitis (0.8%), and stye was found in 0.9%.

Out of the total 1157 students, ocular morbidity was more prevalent in the male children (6.22 %)=72 compared to female children (5.36 %)= 62.

Amongst the students with ocular morbidity males were over numbered (53.73%) than females (46.27%). It was higher in both the schools and in total also. When association was tested between gender and ocular morbidity it was found that there was no association found between gender and ocular morbidity. Prakash Prajapati, Jaydeep Oza, et al.¹⁰ found in their study that out of total students having ocular

morbidity 56.69 % were males and 43.31% were female.

In present study although the percentage of Muslim students were less but proportion wise both Hindu and Muslim have about same ocular morbidity 11.61% (127 out of 1094) and 11.11% (7 out of 63) respectively.

Amongst students with ocular morbidity Hindus were 94.78% and Muslims were 5.22%.

In present study association was not found between ocular morbidity and religion.

Among the total students (1157), 5.18% of students belonged to nuclear family and had ocular morbidity. The corresponding figure for joint family and three generation family were 6.3% and 0.08%.

Similar observation was found by Prakash Prajapati, Jaydeep Oza¹⁰ in their study where they found that 6.55% students who had ocular morbidity belonged to Nuclear family and 6.47 % with Joint family.

The prevalence of ocular morbidity was more in joint family students (14.04%) as compared to other families i.e. nuclear (9.58%) and three generation family (9.1%).

The association was not found to be significant between type of family of student and ocular morbidity. Amongst all students (1157) maximum students (8.64%) belonged to class II Socio-economic status and had ocular morbidity. The corresponding figures for class III, IV, I, V were 1.81%, 0.52%, 0.45% and 0.17% respectively. When socio-economic status wise prevalence was calculated, maximum i.e.100% was found in

class V followed by class IV (23.08%), class III(15.56%), class II(11.36%),and least in class I(4.39%) indicating that as socio-economic status decreases, ocular morbidity increases..

Prakash Prajapati, Jaydeep Oza et al.¹⁰ in Gandhinagar District, Gujarat found that class I, II, III had 7.79% students with ocular morbidity and 5.22 % students belonged to class IV and V who had ocular morbidity.

Ocular morbidity with respect to literacy status of father revealed that out of 134 students having ocular morbidity 9.70 % students' father were illiterate, 37.31 % were educated up to Primary, 9.24 % were up to secondary, 29.10 % up to higher secondary, 11.2 % up to Graduate & more.

Prakash Prajapati, Jaydeep Oza et al. Gandhinagar District, Gujarat¹⁰ found that ocular morbidity was present in 16.6% of students whose father were illiterate, 16.6% with primary educated, 24.2% secondary, 21.0% were higher secondary and 21.7% students father were graduate and more.

In a study by Deshpande Jayant D, Malathi K in rural area of north Maharashtra¹² found that ocular morbidity was present in 1.44 % of students whose father were illiterate, 6.91%, with Primary educated, 8.84% Secondary, 6.10% were higher secondary and 4.34% students father were graduate and more.

The prevalence of ocular morbidity was more in children whose father were illiterate (19.70%) i.e. 13 out of 66 as compare to literate father 11.09% i.e. 121 out of 1091.

An association was found between literacy status of father and ocular morbidity. Because of illiteracy there is

ignorance and leading to poverty, poor health including ocular morbidity also.

Ocular morbidity with respect to education of mother revealed that out of 134 students having ocular morbidity 9.70 % students' mother were illiterate 33.58% were educated up to Primary, 8.21% were up to secondary 39.55 % up to Higher secondary, 8.96 % up to Graduate & more.

Prakash Prajapati, Jaydeep Oza et al.¹⁰ found that in subjects with ocular morbidity, 19.7% of students mother were illiterate, 21% were primary educated, 23.6% secondary, and 19.1% were higher secondary and 16.6% students mother were graduate and more.

The prevalence of ocular morbidity was more in children whose mother were illiterate (21.31%) i.e. 13 out of 61 as compare to literate mother (11.04%) i.e. 121 out of 1096.

Of the total 134 students with ocular morbidity 17.91% were vegetarian while 82.09% were consuming mixed diet. In municipal school 19.80% vegetarian students were having ocular morbidity the corresponding figure for mixed diet was 11.67%. While in Private school where 16% vegetarian students were having ocular morbidity the corresponding figure for mixed diet was 9.49 %.

A significant association was found between types of diet and ocular morbidity in school children. Out of the total subjects with ocular morbidity 41.79 % students were underweight, followed by overweight 40.3%, normal weight 17.16 % and obese 0.75%. Amongst total of 1157 students 4.85% students with ocular morbidity were underweight 4.66% were overweight, 0.08% obese and 1.98% normal weight.

But in study by Prakash Prajapati, Jaydeep Oza¹⁰ found that 1.99% students were underweight had ocular morbidity while 3.32 % ocular morbidity were in over weight and 0.58 % in students belonged to obese while 6.96% in normal students .

No association was found between nutritional status and ocular morbidity.

Conclusion

In present study prevalence of ocular morbidity in students were found 11.58%. Amongst the total students prevalence of refractory error was 6.22% followed by Vitamin A deficiency (2.77%), conjunctivitis (1.47%), and sty (1.12%).

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