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Original Research Article

A Cross Sectional Study of Socio-Demographic Profile of Ocular Morbidity in 10-16 Years Old School Children in Rural Area of South India

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ABSTRACT

Introduction: The magnitude of the problem of blindness in India can be understood by the fact that of the 12 people who become blind every minute in the World, 4 are from south-east Asia and more than one from India. In a country where children under 15 years of age constitute nearly 40% of the total population, the social and economic impact of childhood blindness can be expected to be massive. The number of life-years to be lived with blindness & the impairment of full mental & social development of the child makes childhood blindness particularly challenging. The most regrettable part of this entire situation is that more than 90% of the blindness is avoidable (preventable or curable).

Materials and methods: The present cross sectional study was conducted among school going adolescents studying from 5th to 10th standard in the age group 10-16 years in rural field practice area of the department of Community Medicine. Sample size was calculated by using formula 4pq/L2

Results: Out of 610 study subjects, 59.18% were boys and 40.82% were girls. The prevalence of ocular morbidity of any type was found to be 22.13 % in the current study. Refractive error is the most common disease in this study. The prevalence of ocular morbidity showed significant association with socio-economic status ($\chi 2=26.13$, $p<0.001$), education of parents, while no significant association was found between ocular morbidity and sex of the school children ($\chi 2=3.11$, $p=0.077$), occupation of parents.

Conclusion: The children in the school going age are perhaps the greatest sufferers as any ocular morbidity and refractive errors in particular directly affects their academic performance and intellectual development. Since majority of the ocular morbidity is either preventable or curable, it is imperative that all efforts be made for prevention and early diagnosis & prompt treatment.

Key words: *Ocular morbidity, school children, rural area*

INTRODUCTION

"Seeing is believing" is a centuries old saying that highlights the importance of sight in human life.The gift of sight however is denied to almost 45 million people globally. [(1)] Although India holds the distinction of being the first country in the world to launch a National Program for Control of Blindness (NPCB) in 1976, yet the number of blind Indians is more than 10 million. The magnitude of the problem in India can be understood by the fact that of

the 12 people who become blind every minute in the World, 4 are from south-east Asia and more than one from India. In a country where children under 15 years of age constitute nearly 40% of the total population, the social and economic impact of childhood blindness can be expected to be massive. The number of life-years to be lived with blindness & the impairment of full mental & social development of the child makes childhood blindness particularly challenging. The most regrettable part of this entire situation is that more than 90% of the blindness is avoidable (preventable or curable).

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. [(2)] Information on epidemiology of ophthalmologic problems is available from various countries across the world including several parts of India. In India, most of the data are from urban area and very few from rural areas. Hence, present study was conducted with the objective of estimating the prevalence of ocular morbidity among school children in rural area of South India and its association with various socio-demographic factors.

MATERIALS AND METHODS

The present cross sectional study was conducted among school going adolescents studying from 5th to 10th standard in the age group 10-16 years in rural field practice area of the department of Community Medicine. Sample size was calculated by using formula 4pq/L2. Prevalence of ocular morbidity in previous study from rural area of India was 40.65. [(3)] Considering p=40, q=60 and allowable error (L) =10 % of p, required sample size was 600 for the present study. Hence three schools having total 610 children in the above age group were selected for the study. So all 610 school children (361 boys and 249 girls) were examined. Informed consent from the parents of students was obtained with the assistance of school heads through their class teachers. The purpose of study was informed and explained to the children.

After obtaining the details of the socio-demographic profile of the study subject using a pre-designed, pre-tested & semi-structured proforma, a torch-light ophthalmic examination was carried out. The visual acuity was tested by Snellen's chart for far vision keeping it at six meters distance from the subjects, and near vision was tested with the help of Jaeger's chart keeping the distance of 25-30cm from the eyes of the subjects. In cases of poor visual acuity (<6/9), a pinhole vision was taken to differentiate refractive errors from posterior chamber pathology. Visual acuity of 6/9 in any one eye was taken as a sign of visual impairment. An Ishihara's chart was used to assess color blindness. Any difficult cases were referred to the teaching hospital for expert advice & further work-up .The data was entered into & analyzed using the statistical software SPSS version 10.5.

RESULTS

Table 1 gives the socio-demographic characteristics of the study subjects. Out of 610 study subjects, 59.18% were boys and 40.82% were girls. A 37.38% study subjects were from class IV socio-economic status according to the modified Kuppuswamy SE status scale.

The prevalence of ocular morbidity of any type was found to be 22.13 % in the current study. It is clear from the Table 2 that refractive error is the most common disease in this study population (8.36%) followed by conjunctivitis (4.75%),Vit A deficiency (4.26%) and trachoma (2.30%).

Table 1: Socio-demographic profile of school children (n=610)

Variables	Number	Percentage
Sex		
Boys	361	59.18
Girls	249	40.82
Socio-economic status		
Class I	29	4.75
Class II	119	19.51
Class III	158	25.90
Class IV	228	37.38
Class V	76	12.46
Education of mother		
Illiterate	14	2.30
Primary	178	29.18
Secondary	183	30.00
Higher Secondary	141	23.11
Graduate & above	94	15.41
Education of father		
Illiterate	8	1.31
Primary	158	25.90
Secondary	139	22.79
Higher Secondary	149	24.43
Graduate & above	156	25.57
Occupation of parents		
Cultivation/farmers	191	31.31
Landless labourers	173	28.36
Service(private/Govt)	148	24.26
Others	98	16.07

Table 2: Distribution of ocular morbidity amongst school children (n=135)

Ocular morbidity	No(%)
Refractive error	51(8.36%)
Conjunctivitis	29(4.75%)
Vit A deficiency	26(4.26%)
Trachoma	14(2.30)
Squint	4(0.66%)
Injury	5(0.82%)
Chalazion	2(0.33%)
Colour blindness	3(0.49%)
Corneal opacity	1(0.16%)

The prevalence of ocular morbidity showed significant association with socio-economic status ($\chi 2=26.13$, $p<0.001$), education of parents, while no significant association was found between ocular morbidity and sex of the school children ($\chi 2=3.11$, $p=0.077$), occupation of parents (Table 3).

Table 3: Association of ocular morbidity with various socio-demographic factors

Variables	Ocular morbidity Yes	No	Total (n=610)	$\chi 2$ value	p value
Sex					
Boys	71(11.64%)	290(47.54%)	361(59.18%)	3.11	0.07 **NS**
Girls	64(10.49%)	185(30.33%)	249(40.82%)		
Socio-economic class					
Class I	14(2.30%)	15(2.46%)	29(4.75%)	26.13	P< 0.05 **S**
Class II	19(3.11%)	100(16.39%)	119(19.51%)		
Class III	21(3.44%)	137(22.46%)	158(25.90%)		
Class IV	57(9.34%)	171(28.03%)	228(37.38%)		
Class V	24(3.93%)	52(8.52%)	76(12.46%)		
Education of mother					
Illiterate	8(1.31%)	6(0.98%)	14(2.30%)	19.11	P< 0.05 **S**
Primary	27(4.43%)	151(24.75%)	178(29.18%)		
Secondary	38(6.30%)	145(23.77%)	183(30.00%)		
Higher secondary	41(6.72%)	100(16.39%)	141(23.11%)		
Graduate & above	21(3.44%)	73(11.97%)	94(15.41%)		
Education of father					
lliterate	5(0.82%)	3(0.49%)	8(1.31%)	40.51	P<0.0001 **S**
Primary	34(5.57%)	124(20.33%)	158(25.90%)		
Secondary	51(8.36%)	88(14.43%)	139(22.79%)		
Higher secondary	31(5.08%)	118(19.34%)	149(24.43%)		
Graduate & above	14(2.30%)	142(23.28%)	156(25.57%)		
Occupation of parents					
Cultivation/farmers	32(5.25%)	159(26.07%)	191(31.31%)	6.77	0.07 **NS**
Landless labourers	44(7.21%)	129(21.15%)	173(28.36%)		
Service	31(5.08%)	117(19.18%)	148(24.26%)		
Others	28(4.59%)	70(12.95%)	98(16.07%)		

DISCUSSION

India holds the distinction of being the first country in the world to recognize blindness / visual impairment as a public health problem and launch a national program for control of blindness yet the total number of blind Indians is more than 10 million. The social & economic impact of blindness / visual impairment & ocular morbidity is phenomenal for India where

30% of the blind lose their sight before they reach the age of 20 years. Children and adolescents comprise a major proportion of Indian population and are important as they are the future of country's development. 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. An ungainly aspect in the natural history of blinding diseases is that people generally tend to ignore their symptoms until it is too late. Childhood eye disorders can contribute to the burden of blindness in a society.

A total of 610 subjects in the age group 10-16 years were included in the present study. Since the study area is rural, it is understandable that 50.49% of the subjects came from class III & IV socio-economic status families.

135 subjects had some ocular morbidity in the current study thereby giving the prevalence as 22.13% for all ocular morbidity combined. Kumar R et al [(4)] found similar prevalence (22.7%)2 in primary school children of Delhi aging between 5-14 years. Similar high prevalence results have been given in earlier studies by Rao et al. (26.5%) in urban school children, [(5)] Mehrotra & Maheshwari (23% in 5-14 years children in urban Kanpur). [(6)] Chaturvedi et al [(7)] reported a prevalence of 13.79% among primary school children of Delhi . The commonest cause of ocular morbidity in the present study was refractive errors with a prevalence of 8.36%. Refractive error is one of the most common causes of visual impairment around the world and the second leading cause of treatable blindness. [(8)] Similar prevalence of refractive errors has been observed among children of 12-17 years in Ahmadabad city. [(9)] In another study from South India, higher (32%) prevalence rate of refractive errors among school children of age 3-18 years as compared to the present study was observed. [(10)] Out of 51 children with refractive errors, 21(41.18%) children were using spectacles, the rest were not aware of the presence of the problem. Barriers to the use of corrective spectacles include: parental awareness of the vision problem, attitudes regarding the need for spectacles, spectacle cost, cosmetic appearance, and concerns that wearing glasses may cause progression of refractive error. In the present study, prevalence of conjunctivitis was 4.75%. This was similar to study by Kumar R et al who observed 4.6% prevalence in urban and rural school children (5-14 yrs) of Delhi. [(4)] Higher prevalence of conjunctivitis has been reported in other part of India. [(11)] 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.

Table 3 illustrates a significant decreasing prevalence of ocular diseases as one climbs up the socio-economic ladder. This may be due to better economic stability of medium and higher class which ultimately leads to improved nutrition and hygiene of the adolescents. There was significant association found between parents` education and development of ocular morbidity. Similar to present study, Dandona et al found a significant association between father's education and prevalence of refractive error. [(12)]

CONCLUSION

Eye diseases continue to be an important public health problem in India even more than 50 years of a national program being in place. The children in the school going age are perhaps the greatest sufferers as any ocular morbidity and refractive errors in particular directly affects their academic performance and intellectual development. Since majority of the ocular morbidity is either preventable or curable, it

is imperative that all efforts be made for prevention and early diagnosis & prompt treatment. Periodic screening of school children is very essential to improve the quality of eye-sight.

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