Original Article

Prevalence of Different Ocular Conditions in Government School Children of Slum Areas in Bijapur City, Karnataka

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Abstract

Introduction: Ocular problems in children are common, but it is frequently seen in underprivileged young children in the developing countries. It is also well-recognized that the burden of visual impairment has enormous social, economic impact limiting educational potential and quality-of-life in otherwise healthy people. Children unlike adults are unaware of their problems and rarely complain. Screening for these disorders, which are silent in manifestation for which timely intervention is effective, a survey of school children particularly in slum areas is the need of the hour.

Purpose: To study the prevalence of ocular morbidities among Karnataka government school children in slum areas.

Materials and Methods: A total of 600 children of 5-12 years studying in slum schools were included, and detailed ophthalmic examination was done as a part of Indian Council of Medical Research project.

Results: Out of 600 students examined, 312 males (52%) and 288 females (48%), 117 (19.5%) had ocular morbidity. The most common was vitamin A deficiency (10.5%) presented as Bitot's spots (2.33%), xerosis (8.13%), refractive error was (5.33%). Inflammatory conditions (1.83%) presented as conjunctivitis (0.83%), opacities (0.50%), stye (0.33%), blepharitis (0.16%). Congenital anomalies (1%) presented as anophthalmos (0.16%), dermoid (0.33%), ptosis (0.16%), nystagmus (0.16%), heterochromiairidis (0.16%), strabismus (0.83%), esotropia (0.33%), exotropia (0.16%), latent squint (0.16%).

Conclusion: The present information suggests that the vitamin A deficiency is a significant problem among school children in slum areas to be followed by refractive errors. These disorders are easily preventable and treatable. Identifying and treating these underprivileged children is essential. Regular and periodic eye checkup for school children in economically backward classes of the community helps to detect and to take prophylactic measures and reduce the burden of preventable blindness.

Keywords: Ocular morbidity, Slum children, South India

INTRODUCTION

Ocular problems in children are common, but it is frequently seen in underprivileged young children in the developing countries. The main contributing factors - Measles, frequent diarrhea, protein energy malnutrition, developmental and other febrile illnesses are more common in them.

Prevention of blindness is one of the priorities of Vision 2020-Right to Sight. It is estimated that 1.5 million children suffer from severe visual impairment and blindness and of these 1 million live in Asia.[1] It is also well-recognized that the burden of visual impairment has enormous social, economic impact limiting educational potential and quality of life in otherwise healthy people. Since the affected individuals are young, the impact in a number of blind years is tremendous. Fortunately, most of the blindness is preventable or treatable.

Considering the fact that 30% of India's blind lose their eyesight before age of 20 years and 80% of the blindness is avoidable, the importance of early detection and treatment of ocular morbidity and visual impairment is obvious.[2] Eye problems in children are not detected unless looked for. Children, unlike adults, are unaware of their problems and

rarely complain. They adjust to the poor eyesight by sitting near the blackboard, holding the books closer to their eyes, squeezing the eyes, even avoiding work requiring visual concentration. There are several disorders which cause substantial visual impairment, but are asymptomatic in small, even in older children and may thus be missed by parents.

Screening for these disorders that are silent in manifestation for which timely intervention is effective, a survey of school children particularly in slum areas is the need of the hour.

Children in the school going age group (6-16 years) represent 25% of the population of developing countries. They offer significant representative material, fall best in the preventable blindness age group, and are a controlled population. Schools are the best centers for effectively implementing comprehensive health programs.

Bijapur city located in North Karnataka, South India is famous for its history, has a large number of slums. The main source of livelihood is agriculture and tourism. The children studying in these schools hail from the slums, where midday meal is provided. They work part-time helping in making garlands, daily wages, selling fruits, etc.

To the best of our knowledge, no published data regarding the prevalence of visual impairment and eye diseases in school children in Bijapur city, Karnataka was available. In view of lack of information, and importance of detecting common ophthalmologic problems in school children, this effort was made to present setting, targeting government school children of slum areas in Bijapur city, with an objective to study the prevalence of different eye problems in school children aged 5-12 years particularly in slum areas of Bijapur city and to advice treatment wherever necessary.

MATERIALS AND METHODS

The present study is a cross-sectional study which was conducted in children of primary schools studying in slum areas of Bijapur city, Karnataka in months of June 2010 and July 2010. Institutional ethical clearance was obtained. There were 14 schools out of which 5 were selected randomly (lottery method).

Referring to an earlier study the prevalence of ocular morbidity was found to be 31.6 ≈ 32, with maximum allowable error as 12%.[3] Sample size was calculated as 590 by the formula:

$N = 4pq/L^2$

Where, p = prevalence, q = (100-p), L = 12% of p (allowable error)

Data were analyzed using a computer and presented in proportions and wherever applicable χ^2-test was applied using EpiInfo 6.

Materials used were pen torches, rulers, Snellen's charts, C charts, measuring tape, pinhole, camera.

The schools were informed well in advance regarding eye examination in order to minimize the absentees.

Inclusion Criteria

Children of both the sexes aged 5-12 years studying in standard 1-7 were included in this study, were screened after giving a particular date and time of the examination.

Exclusion Criteria

Absentees on the given date of screening.

The queries were asked in Kannada and Hindi and recorded in English. History was asked from the children, teachers and parents wherever necessary. Children were subjected to general examination and ophthalmologic examination.

Visual acuity was tested with the help of Snellen's charts (Kannada, numbers, C charts) placed 6 m away from the student. Pinhole examination was also done. Improvement with pin hole was considered as refractive error (the visual acuity improves with pin hole if there is a refractive error but it does not improve if there is posterior chamber pathology)

The cutoff of uncorrected visual acuity for defining ocular morbidity due to refractive error in this study was taken as visual acuity <6/9 in the worst eye. Children with visual acuity 6/12 or less were referred to Department of Ophthalmology, BLDEA's Shri B. M. Patil Medical College, Hospital & Research Centre for refraction testing.

Strabismus was diagnosed by recording the corneal light reflex (Hirschberg test) combined with a cover uncover test.

Vitamin A deficiency was determined by recording conjunctival dryness, Bitot's spots with or without a history of night blindness.

RESULT

A total of 600 students between 5 and 12 years of age were examined in 5 different schools visited, 312 were males, and 288 were females. Out of these 117 had some form of ocular morbidity.

As we could inferred from Table 1, 19.5% children had some form of ocular morbidity (Chart 1). 10% were males 9.5% were females.

Table 1: Types of ocular morbidities

Ocular morbidity	Males (%)	Females (%)	Total (%)
Vitamin A deficiency			
Bitot's spots	11 (1.83)	3 (0.5)	14 (2.33)
Xerosis	20 (3.33)	29 (4.83)	49 (8.16)
Refractive errors	19 (3.16)	13 (2.17)	32 (5.33)
Strabismus	2 (0.33)	3 (0.50)	5 (0.83)
Inflammatory	5 (0.83)	6 (1)	11 (1.83)
Conjunctivitis	2 (0.33)	3 (0.50)	5 (0.83)
Opacity	1 (0.16)	2 (0.33)	3 (0.50)
Stye	1 (0.16)	1 (0.16)	2 (0.33)
Blepharitis	1 (0.16)	0 (0.00)	1 (0.16)
Congenital abnormality	2 (0.33)	3 (0.50)	5 (0.83)
Anophthalmos	1 (0.16)	0 (0.00)	1 (0.16)
Dermoid	1 (0.16)	1 (0.16)	2 (0.33)
Ptosis	0 (0.00)	1 (0.16)	1 (0.16)
Heterochromia iridium	0 (0.00)	1 (0.16)	1 (0.16)
Nystagmus	1 (0.16)	0 (0.00)	1 (0.16)
Total	60 (10)	57 (9.5)	117 (19.5)

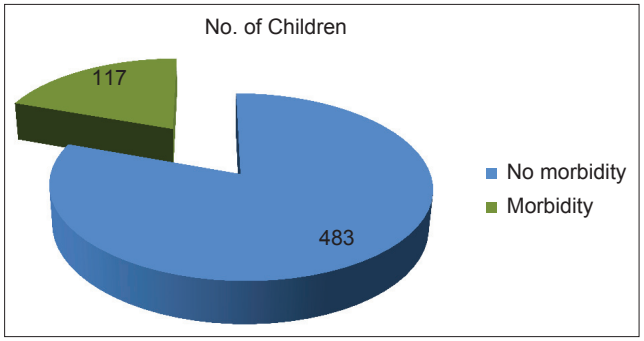

Chart 1: Percentage of morbidity

DISCUSSION

Of the 600 school children examined, 117 had ocular morbidity. The prevalence of ocular morbidity was 19.5% that is similar to a study in an Urban Slum in Delhi where the prevalence was reported to be 22.7%.[3]

However, high prevalence of ocular morbidity has been reported in a study done in Shimla (31.6%), Bhubaneswar (24.7%), Gujarat (40%), Karnataka (74.29%).[3,5-7] It was due to a higher prevalence of refractive errors and wider age groups covered in Shimla, Bhubaneswar, Gujarat.

Lower prevalence was observed in a study done in school children of Hyderabad (14.7%) because of lower prevalence of refractive errors (8%).[8]

Review of international studies revealed lower prevalence of ocular morbidity in school children of Kathmandu (11%), private school children in rural Karnataka (10.33%) and still lower prevalence 8.67% in school children of Greater Accra region of Ghana.[7,9,10] International differences may be explained by racial, ethnic variations partly due to different lifestyles and living conditions in addition to a different methodology used.

The prevalence of refractive error in our study was 5.33% that correlates with study done in Delhi (5.4%), Kathmandu (8%), private school children in rural Karnataka (6.25%).[4,5,7,9] The prevalence of refractive error being more in Bhubaneswar (16.6%)[5] is due to variation of cut off level which was visual acuity 6/9 or less, wider age group employed (it is a well-known fact that refractive errors increases with age).

Vitamin A deficiency to the extent of 10.5% correlates to a study done in rural Delhi (10.6%).[11] However, it is much higher than similar studies in Bhubaneswar (2.2%), Hyderabad (3.2%), Delhi (4%) and lower than a study in Karnataka Government Schools (74.29%).[4,5,7,8] This can be explained by lower socioeconomic status associated with unhealthy dietary pattern of children in the underprivileged strata of the society represented by the slum areas. A prevalence of 6.01% has been estimated for India.[12] Majority of cases detected asymptomatic, only six children complained of night blindness.

This emphasizes the importance of screening and regular documentation to be aware of the current patterns existing in the society.

The prevalence of inflammatory diseases was 1.83% that correlates to the study done in Bhubaneswar (5.9%).[5]

The prevalence of squint was 0.83% comparable to 1.63% in the study conducted in Hyderabad.[8]

Contrary to the general idea imprinted that refractive errors are more common in causing ocular morbidity in school children, in our study vitamin A deficiency was a major cause. This may be due to the inclusion of economically weaker section of the society represented by the school children of slum areas. Also, the lower refractive error can be explained due to the cut-off value of visual acuity taken as 6/9 or less and younger age group selected.

CONCLUSION

The present information suggests that Vitamin A deficiency is a significant problem amongst the school children in Slum areas in Bijapur city Karnataka only to be followed by refractive errors. These disorders are easily preventable and treatable. Identifying and treating these children will eventually reduce the ocular morbidity in children that is much needed in a developing country like India. The biggest obstacle to preventable measures is due to the

inability to create favorable conditions to motivate the population and to facilitate the access to available services. Despite awareness, many do not opt for available services due to financial restraints. Regular and periodic eye checkup for school children in economically backward classes of the community is much needed in the present scenario to curb the blindness.

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