



PATTERN OF OCULAR MORBIDITY AND VISUAL DISABILITY IN CHILDREN ATTENDING EYE OUT PATIENT DEPARTMENT IN CENTRAL INDIA.

Ophthalmology

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ABSTRACT

Purpose: This study aims to evaluate the pattern of ocular morbidity in children less than 18 years in central India. **Methods:** An out patient (OPD) department based prospective observational and interventional study was done from July 2016 to March 2020. **Results:** A total of 5000 children out of which 2960 (59.2%) were males and 2040 (40.8%) were females. These children were divided into groups based on age: 0-3 years, >3-7 years, >7-11 years, >11-15 years, >15-18 years. The most common cause of ocular morbidity was refractive error (34.4%) followed by ocular injury (12.2%), Vitamin A deficiency and conjunctivitis (6.8%), squint without amblyopia (5.6%), corneal opacity (4.8%), blepharitis (4.4%), squint with amblyopia (4.2%) and cataract (4.2%) and so on. Children under low vision category were 740 (14.8%), with economic blindness were 425 (8.5%), with social blindness were 122 (2.4%), manifest blindness were seen in 64 (1.2%) and absolute blindness were seen in 39 (0.78%). Overall 27.8% (1390) children were in category of blindness. **Conclusions:** Most of the studies included school screening method but this can miss congenital malformations as most of these children don't go to school. Small awareness among parents can prevent devastating change in their child life.

KEYWORDS

Ocular morbidity, epidemiology, visual impairment in children.

INTRODUCTION:

Ocular morbidity includes different eye conditions which can be both visually impairing and non-visually impairing. The prevalence of blindness in developed countries is as low as 0.1/1000 children aged 0-15 years and to 1.1/1000 children in the developing countries.^[1] Around 0.80/1000 is the prevalence of low vision in India.^[2] The importance of early detection and treatment of ocular morbidity and visual impairment in young children can be made by considering the fact that 30% of India's blind lose their sight before the age of 20 years.^[3] A study on the pattern of ocular diseases in children is very important because, there are some eye conditions which just causes ocular morbidity in the form of discomfort, while others invariably may eventually lead to blindness.

Various interventions can be employed to manage paediatric disorders by means of using optical, orthoptic, medical and surgical ways. Their selection should be precise in children, as they are unable to express their problems, and they are potential candidates to develop amblyopia due to early visual impairment.^[4]

The incidence of childhood blindness is very difficult to ascertain, and there is lack of resources of data. Similarly, not much data is available from central India regarding visual disability categories. Taking all these into consideration, our study was designed to estimate the prevalence of different types of ophthalmic morbidities, to find out visual disability categories with goal of prevention of blindness and creating awareness.

METHODS:

Institutional Review Board (IRB)/Ethics Committee approval was obtained. A prospective observational and interventional study was done from July 2016 to March 2020 in 5000 children in Gwalior, Madhya Pradesh at G.R.M.C and Jaya Arogya group of hospital.

All children underwent complete ophthalmologic evaluation including Visual Acuity assessment, cycloplegic refraction, orthoptics, a detailed anterior segment and posterior segment examination, relevant investigations, and the necessary management was done for the children. Interpretation and analysis of the data were done using Epi Info Software (developed by Centers for Disease Control and Prevention (CDC) in Atlanta, Georgia, USA).

RESULTS:

A total of 5000 children between birth and 18 years of age were examined during the study period. These children were divided into groups based on age: 0-3 years, >3-7 years, >7-11 years, >11-15 years and >15-18 years. Maximum number of children who attended OPD were from age group >7-11 years and >11-15 years which was 1100 (22%). The gender distribution was 2960 (59.2%) males and 2040 (40.8%) females. In all group males were prominent. Based on the part of the eye involved, ocular morbidities have been classified grossly [Table 1].

Table 1: Types of Ocular Involvement

Ocular Involvement Of Different Parts	Number (5000)	Percentage (%)
Disorders of eyelid, lacrimal system and orbit	480	9.6
Disorders of conjunctiva	340	6.8
Disorders of sclera, cornea, iris and ciliary body	240	4.8
Disorders of choroid and retina	180	3.6
Disorders of refraction and strabismus	2290	45.8
Disorders of lens	210	4.2
Congenital malformations of eye	360	7.2
Injury of eye and orbit	510	10.2
Glaucoma	50	1
Vitamin A deficiency	340	6.8

Most common morbidity was disorders of refraction and strabismus accounting for 2290 (45.8%) and least common was glaucoma 50 (1%).

Most common symptom they had was blurring of vision (40.0%). Non-specific complaints included watering, discharge from eyes, reference calls for ocular manifestation of various diseases, ROP screening, etc. This is elaborated in table 2.

Table 2: Ocular Symptoms on Presentation

Symptoms	Number of children in the group, (%)
Headache	1330, (30.8)
Blurring of Vision	2000, (40)
Redness and pain in eyes	560, (11.2)
Deviation of Eyes	570, (11.4)
Difficulty of vision at night	340, (6.8)
Non-specific	200, (4)

Overall myopia comprises 1015 (59.01%), followed by astigmatism which was 380 (22.09%) and hypermetropia 325 (18.89%). In 190 (3.8%) children vision was indeterminable due to newborns, uncooperativeness, mentally handicapped or semi-conscious state of the child. Myopia was the most common refractory error in all age group except for <3 years in whom hyperopia was the most common.

Retinoscopic findings for myopia and hyperopia was divided into three groups based on severity Low Grade (<2.00D), Moderate grade (2.00D-6.00D) and severe grade (>6.00D). Retinoscopy of children with refractive errors indicated most of children had low grade myopia (27.5%) except in children <3 years who had high hyperopia as most common refractive error.

Strabismus accounts for 470 (9.4%). Overall most common type of strabismus noted was esotropia (68.08%) followed by exotropia (23.40%), congenital cranial disintegrational disorders (CCDDs) (8.51) and alphabetic pattern strabismus 2 (0.42%) and both were V pattern.

Ocular injuries were the second most common ocular disorders seen in 610 (12.2%) children, male preponderance of 70.58% and females with 29.41%. Ocular injuries were most common in age group from >15-18 years of age making 39.2%. Most common place where injury occurred was playground 257(50.39%) followed by house 246(48.23%) followed by school 7(1.37%).

Visual Disability Categories in children less than 3 years presenting with signs of eye poking, nystagmus, unilateral deviation of eye, coloboma, white reflex, searching eye movements were considered to have poor vision^[5] less than 6/60. Other methods in preverbal children depend upon preferential looking using a patterned target.^[5] In children from 18 months till 3 years Kay's Picture test was used.^[5] In 190(3.8%) children visual acuity could not be determined either due to uncooperativeness, mentally handicapped or semi-conscious state of the child. The categories of visual disability [Table 3] has been done based upon protocol used all over India.^[6]

Table 3: Visual Disability Categories among Children.

	0-3yr	>3-7yr	>7-11yr	>11-15yr	>15-18yr
Total (N)	680	1050	1100	1100	1070
Indeterminable(x)	123	50	10	05	02
Final(N-x)	557	1000	1090	1095	1068
Low Vision [6](20%)	05(0.89%)	33(3.3%)	155(14.22%)	250(22.83%)	379(35.48%)
Economic Blindness[6](40%)	02(0.35%)	17(1.7%)	26(2.38%)	82(7.48%)	58(5.43%)
Social Blindness[6](75%)	20(3.59%)	45(4.5%)	55(5.04%)	48(4.38%)	37(3.46%)
Manifest Blindness[6](100%)	00	55(5.5%)	108(9.90%)	30(2.73%)	12(1.12%)
Absolute Blindness[6](100%)	10(1.79%)	10(1%)	50(4.58%)	20(1.82%)	10(0.93%)

Absolute blindness was found in 100(2%) children. Most common cause for absolute blindness was developmental 66% followed by trauma 34%.

DISCUSSION:

In present study ocular morbidity was 2960 (59.2%) males and 2040 (40.8%) females. This was similar to studies done in Berhampur^[7], Allahabad^[3], Etawah^[8], Chennai^[9], South East Turkey^[10] where males were more and it was different from West U.P^[11], Southeast Iran^[12], Central Ethiopia^[13], Rural Karnataka^[14], Saudi Arabia^[15] where females were predominant. These differences could possibly be due to differences in the sample size, differences in the selected age group of the study and gender bias, as compared to the present study.

In our study most common ocular morbidity was refractive error which was similar to studies done in Vietnam^[16]. Compared to studies done in Central Ethiopia^[13], Etawah^[8] most common ocular morbidity was conjunctivitis which is likely due to the dusty local environment (largely farming communities), the study season (which favors vernal catarrh), and the climate itself. Moreover, rural living is a risk factor for the development of chronic allergic conjunctivitis in children.^[13] The cause of higher incidence of allergic conjunctivitis can be because of the tropical climate with long summer weather and low socio economic status of the patients in the population covered by the Institution.

In our study, the most common refractive error was myopia (61.62%), followed by Astigmatism (22.09%) and hypermetropia (16.27%). We compared studies published after 2010 with sample size >500 with our results. In West Bengal myopia was most common (54.44%), followed by hypermetropia (24.85%) and astigmatism (20.71%).^[34] This was different in Nepal where most common refractive error was Astigmatism (46.99%) followed by Myopia (34.21%) and Hypermetropia (14.66%)^[32] which was similar to study done in Central Ethiopia.^[25] Whereas West China prevalence of hypermetropia and astigmatism were almost similar.^[17] One of the major differences of these studies is the age range of the studied population. In some studies, sampling was population-based and included 5-year-old

children while other studies were school based and including 7 to 15-year-old children or similar age ranges.^[14] Since some studies have suggested ethnicity, genetics and lifestyle as possible determinants of myopia,^[18] these factors may also account for the difference in the results of studies.^[17] In central India, refractive error was the most common cause of ocular morbidity which is treatable followed by ocular injury by penetrating object especially while playing and at home. Most common cause of absolute blindness was developmental followed by ocular trauma which in most cases can be preventable. Small awareness among parents can prevent devastating change in their child life.

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