e-ISSN: 0975-5160, p-ISSN: 2820-2651

Available online on www.ijtpr.com

International Journal of Toxicological and Pharmacological Research 2023; 13(4); 71-76

Original Research Article

Prevalence of Ocular Disorders among School Going Children in the Age Group of 5 to 12 Years

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Received: 30-01-2023 / Revised: 28-02-2023 / Accepted: 27-03-2023

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Conflict of interest: Nil

Abstract

Background and Aim: Several eye disorders have their beginnings in childhood, and the morbidity may go unrecognized and negatively impact the child's academic performance as well as produce serious ocular handicap in later life. There is information accessible on the epidemiology of ophthalmologic issues from many different nations, including several regions of India. As a result, our programme is designed to identify the root causes in the formative years and begin the most effective treatments then.

Material and Methods: This study, which included schoolchildren aged 5 to 12, was cross-sectional in nature. 1500 children from five schools in rural Gujarat participated in the study. To screen children, a multistage process was designed. School officials were notified about the screening camp and received signed informed consent from parents for screening pupils for various eye illnesses after receiving ethical committee clearance. Study was done on the relationship between ocular diseases, colour vision, and visual acuity. Children that need more evaluation were forwarded to the hospital.

Results: Refractive error was the most prevalent eye problem among 1500 students from 5 different schools. 16% of people had myopia-related astigmatism. 75% of the population, of which 125 were against the rule and 55 had astigmatism, which was followed by simple myopia. Simple hypermetropia (16.6%), simple astigmatism (2.5%), simple hypermetropia (5.83%) (6). Twenty-six children, or 1.73%, squinted. 46.15% (12) of the kids had alternate divergent squints, of which 2 had refractive error. Corneal opacity was present in 1.06 %(16), defective color vision was there in 0.9%(14); lids and adnexal disorders 0.8%(13) and cataract 0.7%(11).

Conclusion: Refractive error was the most common cause of ocular morbidity. The majority of the reasons might be avoided or treated. Early eye issue detection was made simple and successful by using a school screening. Early diagnosis and treatment slow the disease's course and can stop visual impairment.

Keywords: Ocular Diseases, Hypermetropia, Refractive Error, School Going Children.

Introduction

While some eye illnesses just cause ocular morbidity, others inevitably result in blindness, making a study of the pattern of ocular diseases in children particularly significant. However, while some illnesses, like refractive defects and cataracts, can be treated, others, like measles and vitamin A insufficiency, can mainly be avoided.[1] Several eye disorders have their beginnings in childhood, and the morbidity may go unrecognised and negatively impact the child's academic performance as well as produce serious ocular handicap in later life. The detection of treatable causes of impaired vision, particularly refractive errors, and the reduction of long-term visual handicap are both facilitated by effective methods of vision screening in schoolchildren. Blindness in childhood is defined as having a best corrected visual acuity of less than 3/60 in a person under the age of 16. [2] In terms of years with a blind person, it is only surpassed by cataract. [3] 90 percent of the estimated 1.5 million children with visual impairment reside in poor nations. [2] According to studies, 50% of childhood blindness is preventable, and many of the circumstances that cause it are also linked to child mortality (e.g. premature birth, measles, congenital rubella syndrome, vitamin A deficiency and meningitis). Thus, preventing childhood blindness is intimately related to ensuring child survival. [4]

One of the reasons of visual loss in children is amblyopia. A lot of screening programmes put a lot of emphasis on testing for amblyopia because of how common it is, how it affects kids and society, and how well it can be treated. Many studies show that amblyopia is best treated in the early years of life and can be prevented by early identification of the underlying variables. There may be a "critical time" after which permanent vision loss may develop if early help is not received for the condition of strabismus, or misalignment of the eyes. Since that congenital CVD are incurable and not generally regarded as diseases, colour vision deficiency (CVD) is rarely included in screening programmes. Testing for CVD should be a part of screening programmes because it can influence a child's development. Several external eye disorders, vitamin A insufficiency, paediatric cataracts, allergic conjunctivitis, congenital abnormalities, and congenital glaucoma are among the other illnesses targeted in paediatric vision screening programmes. [5,6]

There is information accessible on the epidemiology of ophthalmologic issues from many different nations, including several regions of India. There are extremely little statistics from rural areas in India while the majority come from metropolitan areas. As a result, our programme is designed to identify the root causes in the formative years and begin the most effective treatments then.

Material and Methods

This study, which included schoolchildren aged 5 to 12, was cross-sectional in nature. 1500 kids from five schools in rural Gujarat participated in the study. Prior to the start of the investigation, approval from the institutional ethics committee was obtained. Six months were allotted for the study.

Children in classes 1 through 7 (ages 5 to 12) were chosen for the schools. Children under the age of six and those older than 12 were not included. To screen children, a multistage process was designed. School officials were notified about the screening camp and received written informed consent from parents before screening pupils for various ocular illnesses after receiving ethical committee clearance. The principal of the school was contacted for permission and informed consent, which was duly signed, and a screening date was set. Exams were conducted on the campuses of the respective schools. Two ophthalmologists, two optometrists, one paediatrician, and other support professionals made composed the examination team. Children who were present

on the examination day were the only ones screened. First, height and weight were measured after age and sex were noted.

The Snellen's VA chart was used to measure visual acuity (VA) at a distance of 6 m. To distinguish between pathological situations and refractive defects in children with VA 6/6, a pinhole test was performed. When a VA worse than 6/9 improved on the pinhole test, refractive error was identified. The visual acuity of kids who already wear glasses was assessed both with and without the glasses. The school did not perform post-mydriatic testing (PMT) or cycloplegic refraction. Ocular movements were examined, a convergence insufficiency test was performed, and colour vision was assessed using an Ishiharas chart. A torchlight was used to examine the anterior segment, which included the eyelids, lacrimal sac, conjunctiva, cornea, anterior chamber, pupil, iris, and lens. With the help of the cover-uncover and alternate cover tests, visual axis alignment was examined. Each youngster underwent an undilated fundus examination using a direct ophthalmoscope. Children who need additional evaluation and management were forwarded to the hospital. For each child aged 5 to 12, information including name, age, gender, years of education, and the name of the school were gathered. A correspondence card was provided for the school's eye exam. On the day of the exam, it was suggested that children wearing glasses bring them. For the children who arrived in the hospital, VA evaluation, cycloplegic refraction with cyclopentolate/atropine, PMT, orthoptics, a thorough anterior segment and posterior segment examination, pertinent investigations, and the required care were carried out.

Statistical Analysis

Microsoft Excel 2007 was used to compile and input the collected data, which was then exported to the data editor page of SPSS version 15 for analysis (SPSS Inc., Chicago, Illinois, USA). The level of significance and confidence level for each test were set at 5% and 95%, respectively.

Results

1500 students from five different schools were tested in all, 790 of them boys and 710 of them females (Table 1). Refractive error, of which myopic astigmatism was the most prevalent type (16%), was the most common eye condition. 75% of the population had astigmatism, of which 125 were against the rule and 55 had the rule, followed by simple myopia (16.6%), simple hypermetropia (5.73%), and hypermetropic astigmatism (2.5%). (6). Just 79.1% (190) of these students were discovered to be using glasses, and the remaining 20.83% (50) did not know they had refractive errors. Allergic conjunctivitis was the second most frequent eye condition, accounting for 2% of cases (30).

Twenty-six children, or 1.73%, squinted. 53.84% (14) of these students showed alternate convergent squints, with 4 having hypermetropia. 46.15% (12) of the kids had alternate divergent squints, of which 2 had refractive error. 1.06 percent (16) of patients had corneal opacity, 0.9% (14) had poor colour vision, 0.8% (13) had abnormalities of the lids and adnexa, and 0.7% had cataracts (11). Refractive error was seen in 12 of the children with BMI less than 16, 31 of the 173 kids with BMI 17 to 23, and 7 of the 24 or higher BMI students.

Table 1: Gender wise distribution of students

Gender	Number	Percentage (%)
Male	790	52.66
Female	710	47.33
Total	1500	100

Table 2: Prevalence of ocular disorders and their percentage

Morbidity	Number	Percentage (%)
Refractive errors	240	16
Allergic conjunctivitis	30	2
Squint	26	1.73
Corneal opacity	16	1.06
Defective colour vision	14	0.93
Chalazion	13	0.86
Cataract	11	0.73
Normal	1150	76.6

Table 3: Types of refractive error

Types	Number	Percentage (%)
Myopic Astigmatisim	180	75
Simple Myopia	40	16.6
Simple Hypermetropia	14	5.83
Hypermetropic Astigmatisim	6	2.5
Total	240	76.6

Discussion

Each survey's morbidity is heavily influenced by the locations that were studied; therefore conclusions drawn from them may not be transferable to other regions. Yet, these neighbourhood surveys are helpful in determining the nation's general disease pattern.

Children and teenagers make up a sizable section of the Indian population and are crucial since they will shape the nation's future growth. While some eye illnesses just cause ocular morbidity, others inevitably result in blindness, making a study of the pattern of ocular diseases in children particularly significant. People typically ignore their symptoms until it is too late, which is an awkward part of the natural history of blinding disorders. The burden of blindness on a society might be exacerbated by childhood eye diseases. The majority of ocular morbidity, sub-normal and low vision, and blindness causes might be avoided or treated.

In our study, 1500 children were tested, and the total prevalence of ocular morbidity was 19.8%. This was comparable to a study from a remote area of Tanzania, Africa, where children aged 7 to 19 years had a lower prevalence of ocular morbidity of 15.6%. In the age range of 5 to 12 years, refractive errors were the primary cause of vision impairment, accounting for 16% of ocular illnesses. One of the most frequent causes of vision impairment and the second most common cause of curable blindness worldwide is refractive error.[7] The prevalence of refractive errors among children aged 12 to 17 in Ahmadabad city was found to be similar. [8]

Nirmalan *et al* [9] discovered a prevalence of 13.6% in the Kariapatti paediatric eye examination initiative started by Arvind Eye Hospitals. These variances could be attributed to various writers' diagnostic standards, racial or ethnic variations in refractive error prevalence, various lifestyles, or various living situations. Vision screening is an appropriate technique to lessen visual impairment from the standpoint of public health. The majority of this impairment is brought on by refractive error, which is easily, quickly, and affordably treated. The most frequent cause of refractive error was discovered to be myopic astigmatism (75%), followed by simple myopia (16.6%). When asked, only a small percentage of

children with uncorrected refractive error report experiencing eye discomfort. 80.5% of the 240 children who had refractive problems were wearing glasses; while the remaining children were unaware they had the problem. Parental knowledge of the vision issue, attitudes towards the necessity for corrective lenses, the cost of lenses, their cosmetic appeal, and worries that wearing glasses would speed up the progression of refractive error are all obstacles to the use of corrective lenses. [10] The majority of this impairment is brought on by refractive error, which is easily and successfully treated. As a result, screening these students facilitates the early identification of symptoms and prompt intervention. After this, allergic conjunctivitis came in second with a low frequency of 2% compared to previous studies. Some studies have found that allergic conjunctivitis occurs more frequently (3–17.5% of the time). [8,9] The discomfort, chronicity, and recurrence of allergic conjunctivitis might result in school absences even though blindness is a rare side effect.

Then, among male students, tiny corneal opacities of 1.06% that did not impair vision and red-green colour blindness of 0.9% were discovered. Similar prevalence of color blindness has been observed in an earlier study conducted in this part of the country. [11] Nevertheless, Pratap *et al*. from North India observed a lower rate of colour vision impairments (0.11%). [12]

Children tend not to protest as much about colour blindness. To prevent future dissatisfaction and assist the child in selecting a suitable career, colour vision abnormalities in school-aged children should be identified as soon as possible and appropriate counseling should be provided. Chalazion 0.8% and cataract 0.7% came after this. Our prevalence rates are slightly lower than WHO estimates, which included an estimate of all the children in the community, because our survey only included school-aged children.

The nutritional status and its impact on the occurrence of ocular morbidity were assessed using body mass index based on percentile. In our study, a BMI between 16 and 24 was considered normal, a BMI over 24 was considered overweight or obese. 15.2% of underweight students had refractive error. Those who were normal weight had refractive error of 17.1%, whereas those who were overweight had 24.9%. As comparison to the underweight and normal groups, the prevalence of refractive error was considerably higher in the overweight/obese group. When it comes to visual impairment, eye care needs to be given extra attention. Eye illnesses with the potential to blind a kid need to be identified and treated right away since they could permanently hinder their ability to learn.

Conclusion

According to this study, refractive error was the most frequent reason for ocular morbidity. The bulk of the reasons might be avoided or treated. Early eye issue detection was made simple and successful by using a school screening. Early diagnosis and treatment slow the disease's course and can stop visual impairment. According to this study, refractive error was the most frequent reason for ocular morbidity. The bulk of the reasons might be avoided or treated. Early eye issue detection was made simple and successful by using a school screening. Early diagnosis and treatment slow the disease's course and can stop visual impairment. At least once a year, eye exams should be conducted in schools. A benefit for management is early diagnosis of childhood eye problems. The results of this study aid in the treatment of all preventable causes of blindness and visual impairment.

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