Frequency of Amblyopia Among School Going Children

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ABSTRACT

Purpose: To find out the frequency of amblyopia gender-wise, age-wise in children with respect to the most frequent type of amblyopia.

Methods: It was a descriptive cross-sectional study comprising of 264 individuals. The study was conducted at Elementary school, Muridkey from January, 2023 till May, 2023. Students enrolled in elementary school were included in study by convenient sampling. A self-designed Performa was used to gather the data which mainly included individual's biodata, ocular history and visual acuity. Individual's eyes were examined using Auto refractometer, Retinoscope, Ophthalmoscope, trail box with, occlude, Snellen chart used and all the findings were then recorded on the Performa. When it comes to entering and analyzing the data, the IBM SPSS was used.

Results: A total of 264 subjects participated out of which 104(39.3%) were females and 160(60.6%) were males. The mean age of the subjects was 9.45±2. 871. 1.5% of the individuals were amblyopic and 98.5% of the individuals were non-amblyopic. These 1.5% amblyopic subjects had refractive amblyopia. All the study participants were orthophoric with full extra ocular motility and clear ocular media.

Conclusion: Our study concludes that 1.5% individuals are amblyopic and have refractive type amblyopia and 98.5% individuals are non-amblyopic.

Keywords: Amblyopic, Refractive error, Visual acuity, Esotropia, Exotropia.

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INTRODUCTION

Amblyopia is a decrease in best-corrected visual acuity in one or both eyes which cannot be attributable only to a structural defect of the eye. Amblyopia occurs during childhood and disrupts normal cerebral visual pathway functioning. It can be defined clinically as an alteration in the best-corrected perception of two or more lines between the eyes.[1] The prevalence of amblyopia was 1.75% in an Indian study including children between 6 months and 16 years of age group. The prevalence of amblyopia is underestimated due to the lack of awareness and knowledge in parents, especially in rural areas and hence there is a late ophthalmological referral for visual assessment.[2]Amblyopia & strabismus are two frequent childhood eye disorders that have both functional and aesthetic implications. Many amblyopia therapies focus primarily on improving unilateral visual acuity, which improves in only around half of children.[3,4] The sensitive period for amblyopia development may not be the same as the sensitive phase for treatment.

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Amblyopia can also be attributed to either disuse owing to a lack of a clear image on the back of the eye (anisometropia nor deprivation) or abuse due to improper binocular contact (strabismic).[5] A generally recognized description of amblyopia as based on visual acuity is a difference of two or more Snellen or log MAR lines among eyes in best-corrected VA.[6]

Recently, optimal refractive correction was reported to be beneficial for anisometropic amblyopia among kids aged 3 to 7 yrs., with a responder rate of 77% & a resolution rate of 27%.[7] A more successful and easy alternative therapy for anisometropic amblyopia is necessary, particularly for adolescents.[8] Effective therapy of amblyopia depends on an early and precise diagnosis. A cycloplegic refraction to determine the eye's refractive error, a visual acuity test to determine how well the eye can see.[9,10] The severity of the condition, the patient's age at the time of therapy, and the patient's compliance with the treatment plan are just a few variables that affect how well a treatment will work.[11] To address underlying structural problems that contribute to the condition in more severe instances, surgery might be required.[12]

Early detection and treatment of amblyopia are essential for managing the disease and preventing irreversible vision loss. Regular eye exams and vision screenings are essential, particularly for kids who have amblyopia risk factors. To guarantee prompt diagnosis and intervention, it is crucial to increase awareness of this disease and its potential effects on visual function.[13]

METHODS

This descriptive cross-sectional study comprising of 264 individuals was conducted after ethical approval vide no REC/UOL/1106-06-2023. The study was conducted at Elementary school, Muridkey from January, 2023 till May, 2023. Students enrolled in elementary school were included in study by convenient sampling. After informed consent, a self-designed Performa was used to gather the data which mainly included individual's biodata, ocular history and visual acuity. Individual's eyes were examined using Auto refractometer, Retinoscope, Ophthalmoscope, trail box with, occlude, Snellen chart used and all the findings were then recorded on the Performa. Best corrected visual acuity and refraction was noted and documented. Data was entered and analyzed in SPSS version 26.

RESULTS

The aim of this study was to find out the prevalence of amblyopia among school going children. A total of 264 subjects were included in this study with their age between 5 to 15 years. The results of our study were 264 out of which 1.5% of the individuals are amblyopic and other 98.5% are non-amblyopic. These 1.5% amblyopic subjects had refractive amblyopia. In our study 235 individuals were emmetropic and 21 individuals had refractive error myopia, 5 had astigmatism and 3 individuals had hypermetropia.

Table 1: Gender Distribution

Gender	Frequency(n)	Percentage %
Female	104	39.4
Male	160	60.6
Total	264	100.0

Table 2: Frequency of Visual acuity of unaided right eye

Visual Acuity	Frequency(n)	Percentage %
6/12	16	6.1
6/18	5	1.9
6/6	234	88.6
6/60	3	1.1
6/9	6	2.3
Total	264	100.0

Table 3: Frequency of visual acuity of unaided Left eye

Visual Acuity	Frequency(n)	Percentage %
6/12	14	5.3
6/18	6	2.3
6/6	236	89.4
6/9	8	3.0
Total	264	100.0

Table 4: Frequency of visual acuity with pin hole in right eye

Visual Acuity	Frequency(n)	Percentage %
6/12	3	1.1
6/18	1	0.4
6/6	251	95.1
6/60	2	0.8
6/9	7	2.7
Total	264	100.0

Table 5: Frequency of visual acuity with pin hole in Left eye.

Visual Acuity	Frequency(n)	Percentage %
6/12	3	1.1
6/6	253	95.8
6/9	8	3.0
Total	264	100.0

Table 6: Frequency of corrected visual acuity in right eye

Visual Acuity	Frequency(n)	Percentage %
6/18	1	0.4
6/6	260	98.5
6/60	2	0.8
6//9	1	0.4
Total	264	100.0

DISCUSSION

Our study was similar to the previous study conducted by Pawan et al in 2020 it was a cross section study to find out the prevalence of school going children with their age between 5 to 15 years underwent screening. Study included 4020 school going children and 44 were diagnosed with amblyopia.[14] These individuals had different type of amblyopia. Twenty nine (29.5%) of the individuals had anisometropic amblyopia which are the type of refractive amblyopia. No statistically significant associations were found in the geographical distribution or in the gender distribution. This study shows that 44(1.1%) of the children were diagnosed with amblyopia and these 44 subjects underwent occlusion therapy. This research shows the importance of screening in school going children for early detection and treatment.[15,16]

A prior study was conducted by Bhatnagar DG in Faridabad Haryana to determine the prevalence of amblyopia among school going children. It was a population based cross-sectional study included 2370 children.[17] Visual acuity was noted in this study by Snellen chart and refractive error was measure by Retinoscope and Auto refractometer. Direct ophthalmoscope was used to assess the anterior chamber, red reflex and fundus. The mean age of the study group was 11 and amblyopia was present in 1.39 %. Male 66.66% was more than female 33.33%.

Amblyopic subject were younger than non-amblyopic subjects. Due to refractive error 28 (84.84%) students were amblyopic in which hyperopic were (16), myopic (7), astigmatism (4) and visual deprivation (1). The majority of the children in this research got amblyopia as a result of untreated refractive error, which might have been averted simply by diagnosing and correcting fault on time.[18,19] Similarly in our study age of the children was between 5-15 years. Mean age of the individual was 11 years and both males and females gender were included. Male gender was more than in females in this study. Refractive errors anisometropia (24) 72.72%. In our study 1.5% of the individuals had anisometropic amblyopia. Similar study was performed by Mazhar ul Haq in Karachi, Pakistan20 to determine the prevalence of amblyopia amongst school going children. All youngsters between the ages of 5 and 20 were evaluated. They were tested for visual acuity using the Snellen acuity chart. Those with visual acuity below or equal to 6/9, or with a bilateral variation of two visual acuity lines on the Snellen chart, were subjected to cycloplegic refraction or dilated fundoscopy. Hirschberg light reflex, cover uncover, prism cover-uncover, and extra ocular motions were also tested. There were 2500 youngsters examined, while 169 (6.7%) were determined to be amblyopic. There were 61 amblyopic males (36.1%) & 108 (63.9%) amblyopic females. Amblyopia was most prevalent in children under the age of 12 years (63.3%), and the most common cause of amblyopia was anisometropia (61.1%), followed by meridional

amblyopia 45(36.6% mixed). In our study population of 264 subjects, 1.5% were diagnosed to be amblyopic but all the individuals were orthophoric, had clear ocular media and full extra ocular muscle movement.

The data was collected from a single centre and an elementary level school which are major limitations of this study. Large populations-based studies are required to design strategies to reduce the burden of visual impairment. Awareness programs should be carried out about the eye health through the media, public education.

CONCLUSION

Our study concluded that 1.5% of the students are amblyopic in an elementary school. School teachers should be trained to conduct screening for refractive errors, strabismus and amblyopia. Optometrist should be appointed at basic health units to provide proper eye examinations and manage refractive errors accordingly.

Conflict of Interest: None to declare

Author Contributions: Ahmad Faraz: Concept, Design, Data Collection, Literature Review

Faiza Akhtar: Literature Review, Data Collection, Draft

Zara Arif: Literature Review, Data Collection

Aiza Sajjad: Literature Review, Data Collection

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