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Original Article

Frequency of Refractive Error in School Going Children Visiting Eye Opd with Complain of Headache and Eye Strain

Abdullah Bilal [1*], Misbah Sattar [2] and Mahfar Khan [3]

[1]Department of Ophthalmology, District Headquarter Hospital, Vehari, Pakistan
[2]The University of Faisalabad, Faisalabad, Pakistan
[3]Department of Ophthalmology, Al Baqi Trust Eye Hospital, Sheikhupura, Pakistan

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***Corresponding Author:**
Abdullah Bilal
Department of Ophthalmology, District Headquarter Hospital, Vehari, Pakistan
abdullahch.opt@gmail.com

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ABSTRACT

Uncorrected refractive error in children leads to various problems in their daily life and can cause multiple problems. **Objective:** The current study was conducted to determine the presences of headache, eye strain and uncorrected refractive error in school going children. **Methods:** The study was conducted on 220 school going children of ages between 5 to 15 years. Patients with complain of headache and eye strain were included in the study after taking informed consent. All other patients with any type of squint, amblyopic, nerve palsies, or any other pathology were not included in the current study. Equipment used during the data collection include distance visual acuity chart (Snellen chart), trial box, occludes, pen torch, retinoscopy and auto refractometer. **Results:** Out of the total 220 participants, patients presented with complain of headache and eyestrain were 114 (51.8%) and 106(48.2%) respectively. Out of the total 220 patients, 80(36.4%) were myopic, 48(21.8%) were hyperopic and 46(20.9%) were astigmatic. Patients with no refractive error were 46(20.9%). Out of the total patients, 78(35.5%) found with mild degree of refractive error. Out of the total patients, 46(20.9%) were presented with visual acuity of 6/6. **Conclusion:** This study concludes that children complain of headache and eye strain can be associated with the uncorrected refractive error. Mild degrees of refractive error are more prevalent as compared to moderate and severe refractive errors. Myopia is more prevalent in school going children complaining of headache and eye strain as compared to hyperopia and astigmatism.

INTRODUCTION

Good vision is vital for correct bodily and academic progress in growing children. They use their imaginative and prescient to guide other getting to know all processes. Since visual clues are key to how children study and function, impaired vision can have an effect on all components of the development of child (e.g., emotional, neurologic, cognitive and physical) by potentially limiting the range and types of records and experiences that is used for the processing of children health. Hence good vision is vital for every toddler. Globally, refractive error is taken into consideration to be the second main cause of treatable blindness and the purpose of visual impairment of which school children aren't any exception to this reality. Refractive errors are a main contributor to visual impairment which is an extensive motive of morbidity in children globally. Despite the financial, social and fitness care advances which have occurred in our society, many school age youngsters aren't receiving good enough professional eye and vision care. Preventing vision troubles and retaining healthy eyes for all youngsters from birth via adulthood ought to come to be a public fitness priority in Nigeria [1]. Myopia additionally known as short sightedness is a refractive blunder in which with relaxed accommodation, parallel rays of mild converge to a focal point in the front of the retina. If we count on that there is a normal axial length of the eye and normal focal duration for

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the optical system, then myopia can arise in the severe forms, the axial length of the eye may be normal and the focal length of the optical system shorter than normal, or the axial length of the eye longer than ordinary and the focal length of the eye's optical system is normal. Hyperopia also known as long sightedness may be described as a refractive abnormality in which with relaxed accommodation, parallel rays of mild converge to a focus at the back of the retina. Hyperopia is a natural shape of refractive error in infancy and early adolescence earlier than Emmetropization. Most new child toddlers have moderate hyperopia (approximately +2.00) with best a small quantity of instances falling in the moderate to high variety (>3.50D). Emmetropization typically consequences in gradual lower inside the stage of hyperopia in most children [2]. Astigmatism is a refractive anomaly in which the eye's optical structure is incapable of forming a specific image for a specific item because the refracting strength of the eye's optical system varies from one meridian to some other. In astigmatism, versions in symmetry of those curvatures (typically cornea) bring about rays failing to center on a single factor, the power of astigmatism is measured in cylinders, astigmatism is frequently found in affiliation with some power of myopia or hyperopia. However, astigmatism is widely categorized into irregular and regular types [3]. Headache is a main, yet beneath-diagnosed purpose of incapacity globally [4]. The universal one-year occurrence of headache in India is sixty-four% [5]. Children with headache have a decrease health-related quality of lifestyles, and go through an extra considerable effect on their education, because of school absenteeism and bad scholastic overall performance [6]. School-based totally cross-sectional studies globally have suggested a headache prevalence of approximately 20% in younger kids, and as much as 88% in children [7]. A Refractive Error Study in Children (RESC) in India showed hyperopia present in 7.7% of children and myopia in 7.4%. Overall occurrences of refractive errors were discovered to be 29.5%. Headache becomes the single most common place symptom said by 38.58% kids. Nearly 36.54% boys and 36.98% females had mild visual impairment at the same time as 4.80% boys and 2.75% women had severe visual impairment. Among the kids having refractive errors 61.02% kids did not use spectacles [8]. An upward trend of myopia turned into mentioned coinciding with school access (7-8 years) and 11-14 years' age around pubertal boom spurt [9]. Screening applications are designed to target these age groups in school health screening programs particularly in useful resource in poor locations. It is an extraordinary task to reduce the obstacles a few of the children to purchased and regularly put on the glasses [10]. Headache is a not unusual complaint in children and teens. Headache occurrence quotes among youngsters' variety from 5.9% to 37.7% and develop in college-age (40-50%) and adolescent youngsters (eighty %) [11]. An assault of excessive headache can produce anxiety in each discern and infant; it represents one of the most common place reasons for a go to a pediatric emergency department (ED). In a pediatric ED, the number one goal is to apprehend the serious existence-threatening conditions requiring instant hospital treatment the various extensive spectrums of headache diagnoses. Moreover, in much less intense headache types, appropriate assessment and investigation may prevent needless hospitalization [12, 13]. Headache is the most typical neurological circumstance in terms of the range of human beings affected. It is also a commonplace symptom and fitness problem among school children. Though, the overall incidence of headache in children is 53% in developed international locations, the existence time incidence in adult will reach up to 77% [14, 15]. An epidemiologic survey of school going children discovered that about one 1/3 of the children who have been as a minimum seven years of age and one 1/2 of individuals who were as a minimum 15 years of age had repeated headache. Recurrent headaches can negatively impact a toddler's life in numerous methods, which includes absence from school, decreased academic performance, social stigma, and impaired potential to establish and keep peer relationships. The quality of lifestyles in a child with migraine gets impaired to a volume similar to cancer or arthritis [16, 17].

METHODS

A hospital based descriptive cross sectional study was conducted at outpatient department of ophthalmology at Al Baqi Trust eye hospital, Sheikhupura. A sample size of 220 patients was calculated by using WHO sample size calculator. All the patients of ages between 5 to 15 years visiting eye department with complain of headache and eye strain were included in the study after taking informed consent. All other patients with any type of squint, amblyopic, nerve palsies, or any other pathology were not included in the current study. Equipment used during the data collection include distance visual acuity chart (Snellen chart), trial box, occlude, pen torch, retinoscopy and auto refractometer. Written informed consent attached was taken from all the participants. All information and data collection was kept confidential. Participants were remained anonymous throughout the study. The subjects were informed that there are no disadvantages or risk on the procedure of the study. They were also being informed that they will be free to withdraw at any time during the process of the study. Data were kept in under key and lock while keeping keys in hand. In laptop it was kept under

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password. Statistical Package for the Social Sciences (SPSS) version20 was used for the data analysis. The results were expressed as percentages and proportions for categorical variables. P < 0.05 was considered statistically significant.

RESULTS

Out of the total patients 220 (100%), patients presented with age group between 5-10 years are 95 (43.2%) and the patients with age group between 11-15 years were 125 (56.8%) Out of the total patients, 94 (42.7%) are males and 126 (57.3%) were females. Out of the total 220 participants, patients presented with complain of headache were 114(51.8%) and patients presented with complain of eye strain were 106 (48.2%). Out of the total patients, 46(20.9%) are presented with a visual acuity of 6/6.the patients with the visual acuity between 6/9-6/12 were 78 (35. 5%).patients with visual acuity between 6/18-6/24 were 63 (28. 6%).patients with visual acuity of 6/36-6/60 were 33 (15.0%) as shown in Table 1.

Visual Acuity	Frequency(%)
6/6	46 (20.9%)
6/9-6/12	78 (35.5%)
6/18-6/24	63 (28.6%)
6/36-6/60	33 (15.0%)
Total	220 (100.0%)

Table 1: Visual Acuity Wise Distribution of Participants

Out of the total patients, 174 (79.1%) patients are found with refractive error and 46(20.9%) are not found with refractive error as shown in table 2.

Refractive Error	Frequency(%)
Present	174 (79.1%)
Absent	46 (20.9%)
Total	220 (100.0%)

Table 2: Refractive Error Wise Distribution of Participants

Out of the total 220 patients, 80(36.4%) were found myopic,48(21.8%) were hyperopic. patients found with astigmatism 46(20. 9%).patients with no refractive error were 46(20.9%) as shown in table 3.

Type of Refractive Error	Frequency(%)
Myopia	80 (36.4%)
Hyperopia	48 (21.8%)
Astigmatism	46 (20.9%)
No refractive error	46 (20.9%)
Total	220 (100.0%)

Table 3: Distribution of Participants Based On the Type of Refractive Error

Out of the total patients, 78(35.5%) found with mild degree of refractive error.63 (28.6%) found with moderate degree of refractive error.33 (15.0%) were found high degree of refractive error. 46 (20.9%) were presented with refractive error as shown in table 4.

Degree of Refractive Error	Frequency(%)
Mild	78 (35.5%)
Moderate	63 (28.6%)
High	33 (15.0%)
No refractive error	46 (20.9%)
Total	220 (100.0%)

Table 4: Distribution of Participants According to the Degree of Refractive Error

DISCUSSION

A hospital based descriptive cross sectional study was done to assess the frequency and degree of refractive error in the patient presented with the complain of headache and eye strain and which type of refractive error is more likely found in the children of age between 5-15 years. The study was done at Al Baqi Trust Eye Hospital under considering the inform consent from the guardians of children. Social economic demographic characteristics was collected by pre tested questionnaire which includes information about age gender chief complain and the relevant information necessary. Both gender male and female with age group 5-15 years were included as similar in previous study according to current study the total number of participants was 220(100%) while in previous study the number of participants were 414(100%). 95(43.2%) were present with age group 5-15 years. Patients with age group 11-15 years (56.8%) while in previous studies 162 (39.13%) were presented in age group 5-10 years while 252 (60.87%) were presented in age group [18]. According to our study patients having refractive error were 174 (79.1%) while the patients with no refractive error were 46 (20.9%). 114(51.8%) were presented with complain of headache and 106 (48.2%) were found with complain of eye strain. According to previous studies patients with complain of headache were found 162 (39.13%) in male and 252 (60.87%) were found in females while in control group 187 (45.17%) were found in males and 227 (54.83%) were present in females [18]. This study shows close association of headache with refractive error as it was clearly shown in the past studies. The previous studies and our study shows that headache is closely associated with the moderate degree of refractive error [15]. According to current study patients with visual acuity 6/6 were 46 (20.9%). Patients' ranges visual acuity between 6/9-6/12 were 78(35.5%). Patients with visual acuity between 6/36-6/60 were 33 (15%) while in previous studies, patients with visual acuity between 6/6-6/9 were found 302(72.9%). 6/12-6/36 were found 109 (26.3%), patients having visual acuity<6/60 were found about 3 (0.8%) [19]. According to this study, patients found with mild degree of refractive error were 78(35.5%), patients with moderate degree of refractive error were 63(28.6%) while the patients with high degree of refractive error 33(15%) and the patients with no refractive error were

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found 46(20.9%). According to the previous studies, patients found with mild level of myopia were 15, moderate 13, severe 0. Patients with hyperopia were found with the mild degree were 53, moderate were 8, severe 0 [19]. According to this present study the participants were divided on the basis of their different type of refractive error. Out of the total participants' patients found with myopia were 80 (36.4%), patients with hypermetropia were found 48 (21.8%) while the patients with Astigmatism was 46 (20.9%) while the patients with no refractive error were found about 46 (26.9%). According to previous study the participants which were included in that study were found with complain of headache have a refractive error with the frequency of 228 (55.1%) while in control group 72 (17.39%) were found. 28 (12.3%) were found with myopia in headache group while 48(66.7%) were found in control group. Hyperopia were found about 61(26.8%) in headache group and 14 (19.4%) were found in control group. Patients with astigmatism were found about 139(60.9%) in headache group while on the other hand 10 (13.9%) are found in the control group. While the patients with astigmatism were found with the rule astigmatism were 31, against the rule were 82 and oblique were found about 17. According to previous study it was found that myopia is more likely present in the patients with complain of headache and have a mild and moderate degree of myopia. While in our study it was found that the patients with headache have a myopic refractive error in the participants [20].

CONCLUSIONS

This study concludes that children complain of headache and eye strain can be associated with the uncorrected refractive error. Mild degrees of refractive error are more prevalent as compared to moderate and severe refractive errors. Myopia is more prevalent in school going children complaining of headache and eye strain as compared to hyperopia and astigmatism.

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