

PREVALENCE AND AWARENESS REGARDING REFRACTIVE ERRORS AMONG STUDENTS: A CROSS SECTIONAL SURVEY IN LARKANA PAKISTAN.

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ABSTRACT

Background & Objectives: The majority of curable vision impairment and preventable blindness worldwide is caused by refractive errors (RE). Age, gender, ethnicity, region, and advancements in eye care services with passage of time all affect the prevalence of refractive errors. The objective of this study was to determine the prevalence of refractive errors and evaluate the awareness among school students in Larkana Pakistan

Methods: This is a cross-sectional, conducted among school students in Pakistan, A total number of 322 students were enrolled. Participants were examined for refractive errors and interviewed about their awareness regarding symptoms, risk factors and treatment options for RE.

Results: It was observed that 20.3% had myopia and only 9 (2.8%) participants were hypermetropic. Out of 320, 76.7% participants opted headache as symptoms of refractive errors, followed by 81.37% and 86% pain in eyes and blurred vision. While 92.55% opted Snellen chart test as method of assessment for refractive errors. Comparatively lesser number of students were aware about refractometer and retinoscopy, 96.89 % participants opted spectacles as retention option followed by contact lenses, laser surgery and medication 85.7%, 81.68% and 44.1% respectively. Chi Square Test of association revealed that there was no significant difference of awareness among students of matric and intermediate level.

Conclusion: A sizable proportion of refractive errors were observed among school students. The awareness regarding refractive errors was poor among students. Myopia is reported to be the most common refractive error. More awareness programs, for school students are recommended for better outcomes.

Keywords: Emmetropia, Refractive error, Myopia, School students

INTRODUCTION

Emmetropia, the normal refractive state of the eye, is defined as when parallel light beams from infinity focus on the retina with the accommodation of eye at rest. As a result, an emmetropic eye will provide a clean image of the distinct object without internal adjustment of its optics. Ametropia is a the state of refraction error, it is the state in which light rays do not focus precisely on the retina with accommodation of the eye at rest^[1]. The three main categories of refractive errors are myopia, hyperopia, and astigmatism. Light rays from an object at infinity are concentrated in front of the retina in myopia with accommodation relaxed and behind the retina in hyperopia, whereas they do not focus at a single spot in astigmatism due to differences in the curvature of the cornea or lens at different meridians^[2].

One of the most important ocular abnormalities is refractive error (RE). The main factor causing vision impairment is uncorrected RE^[3]. Myopia has significantly increased in prevalence among children and young people in East Asia in recent decades. According to a Korean research, young adults under the age of 19 had a myopia prevalence of 83.3%^[4]. While prevalence of RE in Pakistan was reported up to 41%^[5]. Refractive errors stay uncorrected because of the lack of knowledge and awareness about the problem at the individual or family level, as well as at the community and public health level; by social and economic barriers; and by the accessibility and expense of eye care treatments.^[6,7] According to research, refractive errors are the most frequent cause of visits to an ophthalmologist or other eye care specialist. It has been determined the leading causes of visual impairment are refractive errors and cataracts (43%) and (33%), respectively. Among children, refractive error-related vision impairment is he most frequent problem^[8,9].

In Pakistan, the prevalence of refractive errors found in different cities of Pakistan, 41%^[5] In

Haripur, 19.8% in Lahore, 20.43% in Kohat, 17.24% in southern Punjab and 21.7 in Lahore^[10,11,12]. The presence of these refractive errors can have many problems with children including educational loss, economic issues, low productivity and impaired quality of life therefore this study is aimed to determine the prevalence of refractive errors and assess the awareness among school students in Larkana Pakistan.

METHODOLOGY

A descriptive cross-sectional research was conducted among school students from June to Sept 2022 at Larkana, Sindh Province Pakistan. Total 322 students studying in matric and intermediate standard in government and private schools and college at Larkana were included in the study. Students were examined using Snellens Chart for refractive errors. The structured questionnaire was used to record students' awareness of refractive errors. Following the socio-demographic details for each participant, students were asked about symptoms of refractive errors, symptoms, potential risk factors and available treatment option. SPSS version 23 was used to enter and analyze the data.

RESULT

In the present study more than ¾th of the participants had normal vision, 20.3% had myopia and only 9 (2.8%) participants were hypermetropic. Figure I

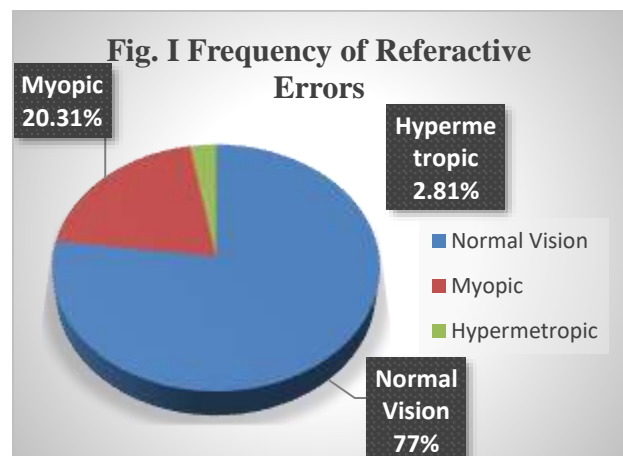


Table I Sociodemographic Factors of the Participants in the Study

Variable	No.	%
Gender		
Male	173	53.73
Female	149	46.27
Education		
Matric	168	52.17
Intermediate	154	47.83
Residence		
Rural	67	20.81
Urban	255	79.19
Monthly Income of Father		
Less than 50 K	71	22.05
51-100K	181	56.21
101-150K	42	13.04
More than 150K	28	8.70
Wearing Spectacles		
Yes	53	16.46
No	269	83.54

There were 53.7% male participants, 52.1 % participants from matric level, rest belonged to intermediate level. Most of the participants (79.1%) had urban type residence. Nearly 1/5th (22%) participants had family income less 50K per month, 8.7% had family income more than 150K, remaining participants had a family income ranging from 51K to 150K per month. Out of 74 (23.1%) participants with disturbed vision, 53 (16.46%) participants had spectacles. Table I

Out of 322, 76.7% participants opted headache as symptoms of refractive errors, 81.37% and 86% pain in eyes and blurred vision. While 92.55% opted Snellen chart test as method of assessment for refractive errors. Comparatively lesser number of students were aware about refractometer and retinoscopy. 96.89 % participants opted spectacles as retention option followed by contact lenses, laser surgery and medication 85.7%, 81.68% and 44.1% respectively. Table II

Red eyes	296	91.93
Tearing	281	87.27
Pain in eyes	262	81.37

Table II Awareness of Study Participants

Awareness of participants regarding Symptoms of Refractive Errors		
	No.	%
Headache	247	76.71
Blurred Vision	277	86.02
Itching in eyes	265	82.30

Awareness of Participants Regarding Assessment of Refractive Errors

Snellen Chart	298	92.55
Auto Refractometer	156	48.45
Retinoscopy	201	62.42

Awareness of Participants Regarding Treatment Option				
Spectacles	312	96.89	Contact lenses	276 85.71
			Medication	142 44.10
			Laser Surgery	263 81.68

Chi Square Test of association revealed that there was no significant difference of awareness among students of matric and intermediate level. Table III

Table III Association of Students' Awareness with Level of Education

Participants Response Regarding	Students' Education Level			Chi Square P-Value
	Matric (168)		Intermediate (154)	
Symptoms of Refractive Errors				
Headache	247	86.02	118	129
Blurred Vision	277	86.02	135	142
Itching in eyes	224	69.57	96	128
Red eyes	216	67.08	101	115
Tearing	231	71.74	110	121
Pain in eyes	262	81.37	123	139
Assessment of Refractive Errors				
Snellen Chart	279	86.65	133	146
Auto Refractometer	156	48.45	65	91
Retinoscopy	144	44.72	52	92
Treatment Option				
Spectacles	312	96.89	160	152
Contact lenses	276	85.71	132	144
Medication	142	44.10	51	91
Laser Surgery	263	81.68	117	146

DISCUSSION

Refractive error (RE) is the second-leading cause of curable blindness and one of the most prevalent causes of visual impairment worldwide[13]. Surprisingly, only half of the people with refractive defects in the globe have access to desired eye examination and successful treatment.

In the present study more than ¾th (77%) of the participants had normal vision, 20.3% had myopia and only 9 (2.8%) participants were hypermetropic. On contrary, A study conducted in Haripur Pakistan revealed that the prevalence of refractive errors was 41%^[5].while the prevalence of refractive errors reported in Lahore was 19.8%, 20.43% in Kohat, 17.24% in southern Punjab^[10-12]. According to a research conducted in Pakistan, refractive errors are one of the leading causes

of blindness in Pakistan, along with cataract, glaucoma, posterior capsular opacification, uncorrected aphakia, glaucoma, and phthisis^[14]. Out of 74 (23.1%) participants with disturbed vision, 53 (16.46%) participants had spectacles. Compared to this, much higher proportion of medical students were having spectacles on at King Abdul-Aziz University Hospital, Jeddah, Saudi Arabia^[15]. Based on this assessment, the awareness of participants regarding refractive errors was observed to be different.

In the present study, 96.89 % participants opted spectacles as retention option followed by contact lenses, laser surgery and medication 85.7%, 81.68% and 44.1% respectively. In line with our findings, according to the research, more than half of the students (53.7%) felt their glasses to be comfortable, and convenience of use was the key factor (50.8%)^[16]. Approximately half of the students felt comfortable wearing contact lenses for cosmetic reasons and convenience, which is consistent with findings from other studies^[17,18,19]. According to reports, the majority of participants (54.8%) said that their primary sources of information were their family and friends^[15].

In the present study, we observed that out of 322, 76.7% participants opted headache as symptoms of refractive errors, 81.37% and 86% pain in eyes and blurred vision. On the other hand, 83.4% participants believed that spectacle can relieve various discomfort like headache, tearing, and burning sensation^[20]. According to another survey, refractive errors related headaches were the second most prevalent kind of headache, occurring in 64% of cases^[21].

In this study, Chi Square Test of association revealed that there was no significant difference of awareness among students of matric and intermediate level. This finding in our study can be explained with lack of general awareness among students since there are no

any structured programs for awareness and education rendered under the domain of public health.

CONCLUSION

A sizable proportion of refractive errors were observed among school students. The awareness regarding refractive errors was poor among students. The awareness regarding refractive errors was poor among students. Myopia is reported to be the most common refractive error. More awareness programs, for school students are recommended for better outcomes.

STRENGTHS AND LIMITATIONS OF THE STUDY

This study is one of its kind at the study setting since in our knowledge there is no any reported research conducted among students examining refractive errors at schools. However, being a cross sectional study, we are unable to establish causality between refractive errors and risk factors. Due to the paucity of the time, larger sample size with multiple colleges could not have been considered.

COMPETING INTERESTS

No any competing interests were declared.

FUNDING

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AUTHOR'S CONTRIBUTION

Zainab S and Morisha G collected the data, Zafar AO and Zuhaib S analyzed the data, Mazhar A and Maqbool AJ drafted the manuscript and Imran AP critically analyzed the draft.

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