

## **PHYSICAL EYE HEALTH STATUS AMONG HIGH SCHOOL STUDENTS IN ISLAMABAD, PAKISTAN**

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### **ABSTRACT**

More than 400 schools present in Islamabad and 200,000 students' study in these schools. In 2019, World Bank estimated that 5% the people of Pakistan had eye problems and 45% of below 18 years had eye problem. To determine the physical health of eye in normal students and infected students and to determine the significance and correlation between different physical eye parameters. To measure the distance for eye checking with the help of meter tape (3 meter) and use the card for eye checking of student in the school provided by PIMS Instructor and write down the results under the screening record sheet provided by the sight saver. Statistical analysis was conducted using SPSS version 25, and significance was assessed using One Way ANOVA Test at p value 0.05. The present study to determine the physical health conditions of eye are present in students (Boys), aged 11–17 years in High Government School in 807th the capital Islamabad, Pakistan. The result showed that the students have epiphora (18.1%), reddish (5.4%), Painful (5%) and Blurred vision (1%). The result indicated that 30 % of students are suspected for eyesight problems. The present study reveals that weakness of eye can be prevented by using eye glasses, as it is reversible process. Eyesight problems are spreading among students due to unhygienic conditions, poverty, and unawareness of living condition, such as weak fly control (domestic waste management), excessive use of mobile phones, and television, etc., which affect the physical eye health of students. The eye of students should be routinely checked by the School Medical officer to diagnose eye lesions at the earliest stage and prevent any complications later on.

**Keywords:** Eye, School, Perception, Misconceptions, Trauma, Superstitions, Pakistan

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### **INTRODUCTION**

The Right to Sight is a worldwide organization of the World Health Organization (WHO) and its coworkers helped to overcome the weakness of eyesight problems in children by 2020. It has been executed on the teachers to screen out the students which have eye problems (Burnett *et al.*, 2015). In many schools, the students are required glasses for the eyesight due to error in refractive index of the eyesight of the students which not only affect physically but also disturb the social activities of life as well as future employability and earning opportunities (Shickle *et al.*, 2014).

The WHO also recommends that early detection of the eye sight diseases in students helped to reduce the burden of eyesight problems with the help of school integrated programs (Azodo and Ezeja, 2014). Due to insufficient resources in Pakistan and many other developing countries take the support of teachers in eye health education. Schools also provide good opportunity for health education about prevention of eyesight issues in children which a big cause of loss of vision (Irving *et al.*, 2018). This paper reports the findings of a quantitative study undertaken to explore the high school children perceptions of eye health in Pakistan.

### **METHOD FOR EYE CHECKING**

The study involved 298 students (boys) aged 11–17 years in High Government School in the capital Islamabad, Pakistan. The education in Government School is almost free to attract the children from lower income society. The study was conducted under Ethics Review Committee of Pakistan Institute of Medical Sciences (PIMS) and the Area Education Officer (AEO) for government schools and Principal of the school.

### Study design

First, we measure the distance for eye checking with the help of meter tape (3 meter) and use the specific card for eye checking of student in the school provided by PIMS Instructor as shown in figure 1 and write down the results under the screening record sheet provided by the sight saver. The weakness of vision may be stopped by using glasses; the number given to the person is called refractive index. The whole activities about checking of the eyesight were taken in classrooms, so that it was an extension of normal classes.

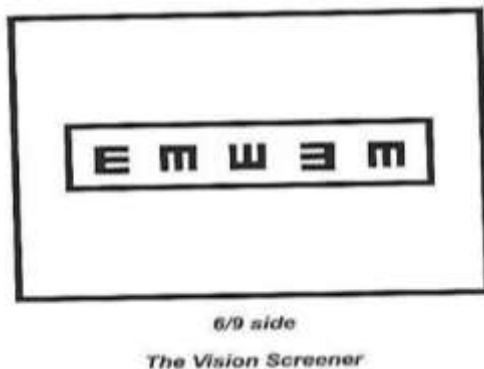


Fig. 1. Specific card provided by the PIMS Instructor.

### Study setting

Pakistan Institute of Medical Sciences (PIMS), Pakistan

### Study duration

One-year Duration

### Inclusion Criteria

Male Students which are mentally fit who have no psychological problem and age group from 11 to 17 years old.

### Exclusion Criteria

All those male students which are above or below the age limits (below 11 or above 17) which are not consenting to take a part of the study.

### Analysis plan

For continuous variables, mean and standard deviation were determined using SPSS version 20 and R Programming. For the categorical variable, the frequency and percentage were determined. All of the information was presented in the form of tables and figures.

The main objective of the study to determine the physical health of eye in normal students and infected students and to determine the significance and correlation between different physical eye parameters.

## RESULTS

The teachers and students are not enough knowledge about the physical health conditions of eyes to maintain the proper health of eye. They should know the physical characteristics of healthy eye such cornea is white and clear, and the pupil become smaller in bright light (Uhr *et al.*, 2016). In present study to determine the physical health condition of the eye in students which are divided into different age groups from 11 years to 17 years and to find out the frequency and percentage of the normal students as well as infected student as reported in Table 1 and shown in figure 2. The result indicated that 30 % of students are showed different sign and symptoms for weakness of eye in our school which showed that eye problems are more prevailed in our children. The similar results are also reported in students of the Mardan (Owais 2024).

The significance level between the infected students and normal students are measured by one-way ANOVA test after that to determine the correlation between them as reported in table 2 and figure 3. The infected students are referred to PIMS hospital for further check-up of eye. The treatment of the infected students and also provided the eye glasses to correct the refractive index of infected students at free of cost which are supported by Sight Saver Welfare Organization. The result is supported with related paper that indicated the weakness of eyesight responsible for different diseases of eye in children due to poverty and unhygienic conditions. The physical health of eye is

measured as watery /reddish /painful / Blur vision as reported in Table 2. The result showed that the students have infected by epiphora (18.1%), reddish (5.4%), Painful (5%) and Blur vision (1%).

Table 1. Physical health conditions of eye present in students (n=298).

PHYSICAL HEALTH OF EYE IN STUDENTS						
Age of the students Years	Physical eye condition (Normal)		Physical eye condition (Infected)		One Way ANOVA Test P < 0.05	Remarks Significant /Non Significant
	Frequency	Percentage (%)	Frequency	Percentage (%)		
11 years	12	4.0	9	3.0	0.000	Significant
12 years	28	9.3	5	1.7	0.000	Significant
13 years	21	7.0	18	6.0	0.000	Significant
14 years	45	15.1	20	6.7	0.000	Significant
15 years	44	15	20	6.7	0.000	Significant
16 years	40	13.4	6	2.0	0.000	Significant
17 years	20	6.7	10	3.3	0.000	Significant
<b>Total Students</b>	210 (70%)		88 (30%)		0.000	Significant

Table 2. Physical eye health of infected students in High school (n = 298).

Parameters of infection	Physical eye condition (Infected students)			Status
	Frequency	Percentage (%)	Correlation	
<b>Epiphora (watery)</b>	54	18.1	1	Strong Association
<b>Reddish</b>	16	5.4	1	Strong Association
<b>Painful</b>	15	5	1	Strong Association
<b>Blurred Vision</b>	3	1	1	Strong Association

ONE WAY ANOVA-Test ( $\alpha$  significance 0.05)

The significance and correlation showed that they have strong association between different physical eye health parameters as reported in table 3.

Table 3. Correlation present between the different parameters of physical eye conditions.

Physical Eye Parameters	Correlation	ANOVA Test (P < 0.05)	Status	Remarks
<b>Epiphora vs Reddish</b>	1	0.000	Strong Association	Significant
<b>Epiphora vs Painful</b>	1	0.000	Strong Association	Significant
<b>Epiphora vs Blur vision</b>	1	0.000	Strong Association	Significant
<b>Reddish vs Painful</b>	1	0.000	Strong Association	Significant
<b>Reddish vs Blur vision</b>	1	0.000	Strong Association	Significant
<b>Painful vs Blur Vision</b>	1	0.000	Strong Association	Significant

ONE WAY ANOVA-Test ( $\alpha$  significance 0.05)

The present study is also compared with the reported value of the sign and symptoms of the eyesight problems in children (9 to 12 years old) of the four primary schools in Abbottabad district, northern Pakistan (Ahmad *et al.*, 2006), the similar kind of worked was also done in Nigeria to determine ocular health in the adults (Azodo and Ezeja, 2014) as showed in Table 4.

Table 4. Comparison of Physical eye health of infected students in High school and Primary school.

Parameters of Visual Perceptions (Visual Impaired)	Physical Eye Condition (Infected students)					
	Present study (n=298)		Ahmad et al., (2006) Reported value (n=160)		Azodo and Ezeja (2014) Reported value (n=82)	
	Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)
Epiphora (watery)	54	18.1	25	15.6	5	6.1
Reddish	16	5.4	66	41.3	10	12.2
Painful	15	5	10	6.3	9	11
Blur Vision	3	1	46	28.8	1	1.2

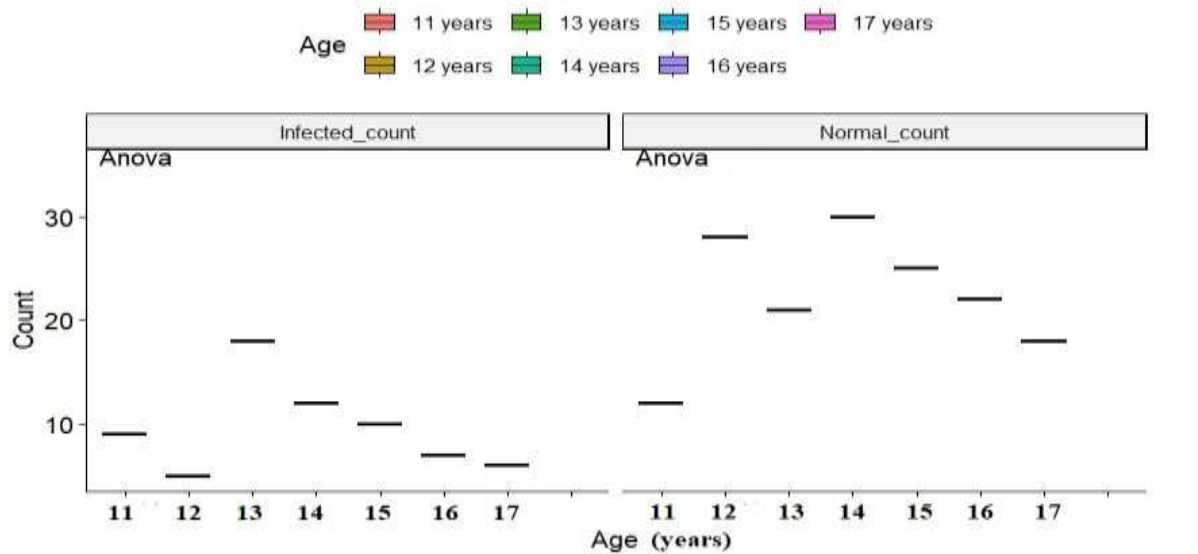


Fig. 2. ANOVA plot between Normal and Infected Eye conditions of students in different age group.

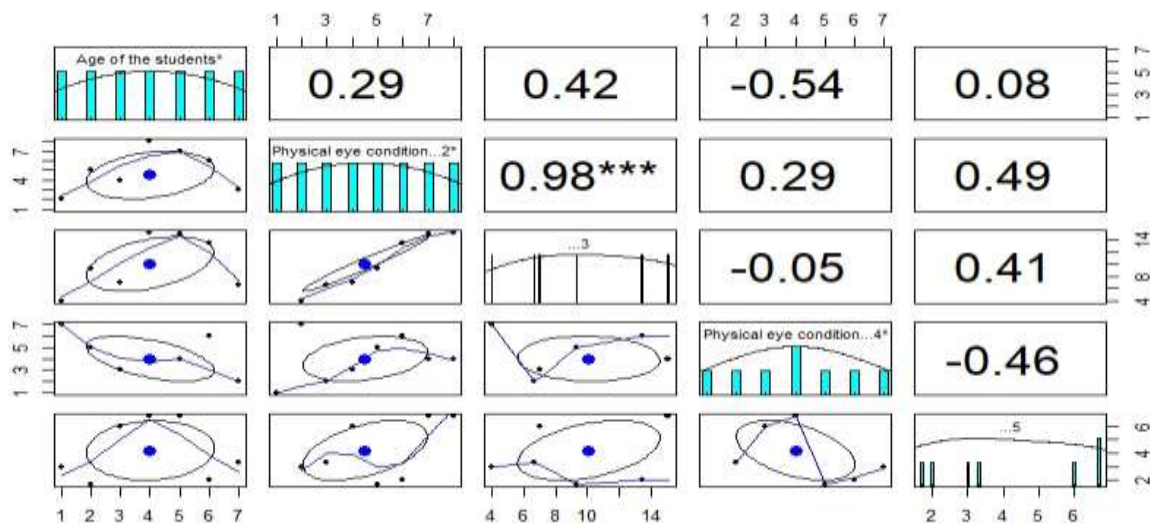


Fig. 3. Correlation plot between Normal and Infected Eye conditions of students in different age group.

## DISCUSSION

These results indicated that to learn about the normal livelihood conditions such as livestock management, excessive use of mobile, Television, etc which affect the eyesight of the children. In Pakistan, mostly people kept their livestock in the houses and do not awareness about domestic waste management. Such practices need to be discouraged. This present study indicated that students should be educated about the refractive index of eye which has badly affected the education of students, increase the risk of eyesight related problems and social isolation of the students. The physical conditions of eyesight are also responsible for many problems such as short attention span, difficulty writing in straight lines, headache, and low self-esteem (Butt *et al.*, 2021). Developing countries like Pakistan have not enough resources to screen the refractive errors present in the student of the school. In these circumstances, if teachers are properly trained and equipped with latest techniques to handle the eyesight problems which helped to reduce the burden of eyesight problems (Hung *et al.*, 2021).

It was an alarming situation that mostly of our students are affected by the sun, watching television and other sources of light which is responsible for eye damage (Sandholdt *et al.*, 2024). The sun is a common source of UV light radiations which have badly affect the eyesight of the students of different age groups while those students which have prolonged staying at the sun can cause the burning of eye muscles.

It was also interesting fact prolonged reading may cause to myopia (shortsightedness) which is an important health issue in several Asian countries (Stern *et al.*, 2024). Teachers as well as students are well aware of the importance of fruits and vegetables to maintain the eye health. Vitamin A deficiency is a significant issue for public health problem in Pakistan and school health education system should promote the importance of the foods and vegetables rich in vitamin A such as carrots, eggs, liver, yellow fruits and dark green leafy vegetables (Lawrenson and Downie, 2019).

Teachers as well as students are well aware to provide protection to the eyes such as wash faces, avoid sharp ended objects and dust, and visit a doctor to avoid the infection of serious eye disease (Malik *et al.*, 2022). There are many misunderstandings about eye drops such as Arqa Gulab and other ointments keep their eyes healthy. This practice should be avoided even the excessive use of medicine is cause to damage eye. Kajal in any form such as eye liner can cause lead poisoning in the eyes. Several studies indicated that excessive exposure of leads causes to anemia, renal diseases, and nervous disorders, and can also affect the mental health of children.

## CONCLUSION

The present study shows that the physical conditions of students are depending on their hygienic conditions. Teachers should advice the students about the good habits for healthy eyes; such as to wash face with clean water, avoid sunlight, bright light, self-medication, reading in dim light, rubbing eyes with dirty hands, and also avoid to holding the book too close. Teachers should advise children to eat fresh vegetables (especially carrots), to drink milk and suggest to use vitamin A as per the doctor advice. Regular eyes examination is important for our eyesight because it will help to detect certain eye conditions, such as cataracts, glaucoma and age-related macular degeneration, which could lead to sight loss. Eye of students should be routinely checked by the School Medical officer to diagnose the eye lesions at the earliest stage and prevent any complications later on.

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## Disclaimers

### Author Contributions

Usman Ahmad and Muhammad Aaqil Nadeem to take part in Vision Screening Training conducted by Pakistan Institute of Medical Sciences (PIMS), Integrated School Health Program and Sight Saver (UK welfare).

Usman Ahmad and Muhammad Ali Raza designed the study, performed the statistical analysis, and wrote the manuscript.

Irfan Mumtaz and Muhammad Alam assisted with data interpretation and manuscript revisions.

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<b>Trial Registration</b>	NA
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