Prevalence of Refractive Errors and Strabismus Among the Children's of Special Education Complex, Peshawar.

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ABSTRACT

Background: Refractive errors are more common in school going children of developing countries but special children are more commonly affected. Vision screening is important in all schools but especially special schools which will lead to timely diagnosis and treatment of ocular disorders.

Objective: The objective of our study was to determine the prevalence of refractive errors and strabismus among students of special education complex.

Martial and Methods: A cross-sectional study was conducted to determine refractive error among the children of special education complex Hayatabad, Peshawar. Refractive errors were determined by doing retinoscopy, subjective and objective refraction, opthalmoscopy, hand held auto refractor were used. Snellen's charts, lea symbol chart and kay pictures were used for assessing the visual acuity in children who could cooperate.

Results: Among 272 children, 225 children were males (82.7%). 34(12.5%) were mentally retard, 182(66.9%) were hearing impaired and 56(20.6%) were physically handicapped. Children suffering from refractive errors were 47(17.3%). 11(4.0%) reported that they were using glasses. Squint was present in 5(1.8%). On examination status of right eye 5(1.8%) were with visual acuity 6/60 or less. For students who are unable to comprehend with snellen visual acuity chart, they were be assessed by using other charts like Lea symbol chart or Kay pictures. 19(7.0%) were assessed by Lea symbol chart, 9(3.3%) were assessed by Kay pictures and maximum number of children's easily understand snellen visual acuity chart that was 244(89.7%).

Conclusion: Refractive errors were common in Children. Timely treatment of these children will help in proper development of child.

Keywords: *Blindness, refractive errors, strabismus, special children, school.*

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INTRODUCTION

Visual impairment which is not corrected is a major public health problem. Worldwide prevalence of myopia and presbyopia has dramatically increased. Low vision is the main cause of visual impairment and the second leading cause of Blindness. Worldwide 285 million people are visually impaired. According to American Blindness one in four school age children have vision problems.

Children with special educational needs are more likely to have refractive errors and visual impairment than normal children. All children who are disabled also need some special education. Ocular and visual disorders such as refractive errors, strabismus, nystagmus, cataract, reduced visual acuity (VA) and poor accommodation are found to be more common in children with intellectual disabilities than in typically developing children. Causes include trauma, nutritional factors of childhood blindness. Vitamin A deficiency, corneal scaring, trachoma and ophthalmia neonatrum and use of harmful traditions practice can occur in poor countries of the world.

A study was done in special education schools in Wales, UK to identify the visual status and ocular disorders. Out of 44 schools 5 schools have reported existence of visual problems.

Another study was conducted in Osan state of Nigeria about the ocular health status of those children. A cross sectional study done in 8 schools total number of children including in this study was 472. In this study the person with low income were more affected by ocular diseases. About 10% of students were found with abnormal ocular findings. In Taiwan a study was conducted in special schools. 241 students from the special school were examined. Total numbers of children who suffer from refractive errors were 35.4%. In this study ocular disorders were associated with multiple disability than the simple intellectual disability group.

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In India, a study was conducted in 11 special schools of learning disabilities. The eye examination was done by ophthalmologist, optometrist, parents and teachers. Data was collected about squint, the child sitting close to television, reading books very close to eye or sit very close to blackboard, Drooping of upper lids, rubbing of eyes, red eyes, itching, white spot in the eye, history of night blindness. Half of the children were found suffering from refractive errors.

A study was done in Iran in which children with hearing impairment were compared with different eye problems. A cross sectional study was done to assess the association of deafness with eye problems including refractive errors, strabismus and amblyopia. This study simply shows that the deaf children have significantly more eye problems as compared to normal children.

Joshi RS and Somani AAK carried out study that is related to ocular disorders in mentally retard children. It was deducted that vision or ocular disorders are neglected in mentally retard children. The children with any disability have higher risk of ocular disorders so annually checkup of these children will help them in their future life activities.[8] A cross sectional study was done in Nepal deaf school. Refractive errors found in deaf children were 14.94%. The refractive errors were found more common in deaf children as compared with normal children.

The survey of blind school was done in Kaduna, Nigeria in which 17% students were deaf. In another study, significant cases of low vision, ptosis, squint, ptergyium, and pale cupped disc were seen. This study also showed association of vision problems with deafness.

A study was done in 7 special schools of Nepal to identify the children with any eye problem. In this study commonest visual disorders were Refractive errors and strabismus. Other ocular findings include blepharitis, conjunctivitis, ectropion and chalazion. In Yemen a study on deaf and dumb students having ocular abnormalities was conducted. The leading abnormality was refractive errors.

In a cross sectional study, Ovenseri-Ogbomo found that astigmatism is the commonest form of refractive error in their study.

A cross sectional study was conducted in Lahore in which High school children were targeted. The result shows that myopia and astigmatism was more common. It was recommended that preschool examination of children was mandatory. A study was carried in madrassa of Haripur. The reason for selecting these madrassa students is that they continuously work on reciting, memorizing and reading of the Holy Quran. This study shows that myopia is more common in children than hyperopia and astigmatism. As continue reading increase the chances of myopia, so it was advised to encourage children to take quick breaks between readings and read at further distance.

Prevalence of refractive errors and strabismus is a major public health issue in Pakistan. Literature search showed no specific work on prevalence of refractive errors and strabismus in special education schools in Pakistan. Due to lack of awareness these special children need extra need, attention and care if these children are not observed at early age than they lead to severe eye problems.

Research Objective:

To determine the prevalence of refractive errors among students of special education complex.

To determine the prevalence of strabismus among students of special education complex.

MATERIAL AND METHODS

This study was cross sectional study design. Data was collected from special education complex hayatabad Peshawar. Special education complex is having categories of deaf, mentally retard, physically handicap and blind.

All the students registered in daily attendance sheet of special education complex of Peshawar were selected. Blind students were excluded from the study.

Approval from social welfare department of Khyber PakhtunKhwa was also taken. The researcher visited the complex and took the informed consent from the parents of students, students and teachers. The next day research team visited again for detail examination which included relevant history regarding the type of disability, Ocular examination was carried out with

retinoscope, ophthalmoscope and flash light. Snellen's E chart, Kay symbols were used for assessing the visual acuity in children who could read and co operate.

For descriptive statistics scale variables i.e. age (in years), mean and standard deviation were calculated while for categorical variables i.e. gender, frequencies and percentages were calculated. Chi square test were used for association between variables like gender, strabismus and refractive errors and Independent t test were used for association of quantitative variables like age with strabismus.

RESULTS

Among 272 children, 86 (31%) were 5 to 9 years old, 87 (31%) were 10 to 14 years old, 89 (31%) were 14 to 19 years old and remaining were more than 20 years old, 225 children were males (82.7%), 34(12.5%) were mentally retard, 182(66.9%) were hearing impaired and 56(20.6%) were physically handicapped. There were 129 (47%) children in primary, 61(22%) in middle and 82 (30%) studying in higher secondary classes.

Children suffering from refractive errors were 47(17.3%). 11(4.0%) reported that they were using glasses. Squint was present in 5(1.8%). On examination status of right eye 5(1.8%) were with visual acuity of 6/60 or less. For students who are unable to comprehend with snellen visual acuity chart, they were be assessed by using other charts like Lea symbol chart or Kay pictures. 19(7.0%) were assessed by Lea symbol chart, 9(3.3%) were assessed by Kay pictures and maximum number of children's easily understand snellen visual acuity chart that was 244(89.7%).

DISCUSSION

This study was conducted to determine the refractive errors of the special children. The prevalence of refractive error was estimated at 17%. In a meta analysis in India, it was estimated that the overall prevalence of refractive error per 100 children was 8.0 (CI: 7.4-8.1) and in schools it was 10.8 (CI: 10.5-11.2). The difference in the prevalence of our study from this meta analysis may be due to the difference of selection of the sample from a different population. In our study the sample was from a highly compromised population while in India the selection was from general population or schools of normal children. This is also confirmed by other studies.

Table 1 Presence of refractive errors

Presence of refractive errors	Frequency	Percent
Yes	47	17.3
No	225	82.7

Table 2 Association of refractive errors with different potential risk factors

Age Groups (n=271)	Yes	No	Test value	P value
5 to 9 years	20	66	10.011	.018
10 to 14 years	10	79		
15 to 19 years	12	73		
20 and above years	5	7		
Gender				
Male	35	190	2.707	.100
Female	12	35		
Class				
Primary	29	100	11.093	.004
Middle	2	59		
Higher	16	66		
Children presented with				
Mentally retard	8	26	1.605	.448
Hearing impairment	28	154		
Physically handicap	11	45		

In another study in India it was found that the prevalence of refractive error was about 50%. This huge difference may be due to the diagnosis technique used in this study. The authors in the study used untrained people (parents and teachers) as data collectors which may have altered the results of the study. The use of untrained people for diagnosis will make the results un-reliable.

A study in Calcutta shows there results in conformity with our results. The prevalence of uncorrected refractive error in their study was about 14%. These results may be due to use of trained persons to identify the refractive errors just like ours. Another reason may be the normal population which was assessed in their study.

In our study hyperopic is more common. Esotropia was more common type of squint than the other. While esotropia is also prevalent type in our study but less number of children's was affected by strabismus. Puri S and Bhattarai D in their study on ocular and visual disorders among children with intellectual disability studying in special schools of Nepal. In their study females were more common than male. Maximum numbers of children were in the age group of 5 to 9 years and minimum number of children in age group 10 to 14 years. Some of children may previously suffer from ophthalmic disorders.

Woodhouse M J et al in their study in special schools of Wales documented that astigmatism is more common than myopia and hyperopia while myopia is common in our study. Esotropia is common in their study; Other ocular abnormalities were also present like cataract, hazy cornea, blepharitis, in their study.

Joshi RS et al in their study in children with mental disorder in India age group was 6 to 16 years documented that myopia was more common in mentally retard children than myopic and astigmatism. The children with increased mental level have more refractive errors and other ocular abnormalities. Strabismus is also common in their study.

Another study which was carried by Isawumi M and Akinsola in special schools of Nigeria. Refractive errors were more common, but the cause of blindness and visual impairment was due to corneal diseases while in our study blind students were excluded.

CONCLUSION

The study provided baseline data for some refractive errors in special education complex which was absent earlier.

Many of the children especially boys were unaware of their condition, thus there conditions were uncorrected.

Higher number of children with refractive errors may be present in hearing impaired children as their diagnosis is a difficult job.

The easy solution and cheapest correction of refractive errors were spectacles. We provided spectacles free of cost to those who were diagnosed.

Recommendations

Arrangements need to be ensured to examine the children for periodic yearly assessment inclusive of ophthalmology.

School need to take the cases accordingly with the health department for corrective measures.

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