

FREQUENCY OF VISUAL DISORDERS IN SCHOOL CHILDREN OF DISTRICT RAHIM YAR KHAN

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ABSTRACT

Background: Low vision is defined as visual acuity of less than 6/18, but equal to or better than 3/60, or a corresponding visual field loss to less than 20 degrees in the better eye with best possible correction. **Objective:** To determine the frequency of visual disorders in school children. **Subjects and Methods:** In this cross sectional study, 5360 students of different age groups and of both sexes from the urban and rural government schools of all the tehsils of district Rahim Yar Khan, were selected and screened out. Schools were selected in clusters through random sampling. Visual acuity of all the children was checked by using Snellen's Chart and children with refractive errors were refracted at the same place and prescribed the required number for glasses. The children with organic lesion or not improved with refraction were referred to Sh. Zayed Hospital, Rahim Yar Khan (SZH) for thorough assessment and management. The data was entered and analyzed by using SPSS 15. **Results:** Out of total 5360 children 256 (4.77 %) have refractive errors and 33 subjects (0.61%) comprising 23 (69.69%) males and 10 (30.30%) females have low vision. The major cause of low vision was found to be Retinitis Pigmentosa (RP) which accounted 13 cases (39.39%) of the total low vision patients while 7 cases (21.21%) of congenital cataract, 4 (12.12%) Buphthalmos, 3 (9.09%) Optic Atrophy, 3 (9.09%) Albinism, 2 (6.06%) Maculopathy and 1 (3.03%) high Myopia (Chorioretinal degeneration) **Conclusion:** Hereditary diseases have been found to be the major cause of low vision leading to blindness. The study also revealed that low vision is more common in males. There is high prevalence of refractive errors found in this study, giving the picture of the increased burden of eye problems in district Rahim yar Khan.

Key Words: Refractive errors, Visual Acuity, Low vision, Children

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INTRODUCTION

Low vision is a major cause of morbidity and has profound effects on the quality of life for many people as it inhibits/reduces mobility and economical well being of the affected individuals and their families.¹ The World Health Organization's (WHO's) International Classification of Diseases (ICD)-10 categories of visual loss define low vision as “a corrected visual acuity in the better eye of 6/18 (20/63) to less than or equal to 3/60 (20/400).” This definition includes all individuals, regardless of the cause of visual loss. A major limitation of the ICD-10 categories of visual loss is that they do not allow refractive errors to be assessed as a cause of visual impairment, and so the WHO recently suggested that “presenting visual acuity” (i.e., visual acuity tested with distance spectacles, if usually worn), as well as uncorrected visual acuity, be used in all population-based surveys. Most individuals who have a presenting visual acuity in the better eye of

6/18 to less than or equal to 3/60 require spectacles, surgery (e.g., cataract surgery), or other treatment to restore sight and thus do not require assessment for low vision interventions (e.g., optical devices).¹ Childhood blindness has performed consequences not only for the individual child but also for the family and the community. An estimated 1.5 million children are blind worldwide, of whom 1 million live in Asia.² This accounts for approximately 75 million years of blindness, which is similar to the visual morbidity from an operated adult cataract.^{3,4} At least half and possibly up to three-quarters of childhood blindness is avoidable.⁵ The major causes of blindness in children vary widely from region to region, being largely determined by socioeconomic development, and the availability of primary health care and eye care services. In high income countries, lesions of the optic nerve and higher visual pathways predominate as the cause of blindness, while corneal scarring from measles, vitamin A deficiency, the use of harmful traditional eye remedies, and Ophthalmia Neonatorum are the major causes in low income countries. Retinopathy of prematurity is an important cause in middle income countries. Other significant causes in all countries are cataract, congenital abnormalities, and hereditary retinal dystrophies. It is estimated that, in almost half of the children who are blind today, the underlying cause could have been

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prevented, or the eye condition treated to preserve vision or restore sight.⁶ In industrialized countries, hereditary diseases predominates; this is also true for societies in which inter cousin marriages is a common practice.⁷ As blindness in children is relatively rare, accurate prevalence data are difficult to obtain, because very large samples are required for population based prevalence surveys. Some data are however, available from population surveys that included children, from community based rehabilitation programs, and from registers of the blind. These sources suggest that the prevalence of blindness in children varies according to socioeconomic development and under-5 mortality rates. In low income countries with high under-5 mortality rates, the prevalence may be as high as 1.5 per 1000 children, while in high-income countries with low under-5 mortality rates, the prevalence is around 0.3 per 1000 children.^{7,8} Refractive error is one of the most common causes of visual impairment around the world and the second leading cause of treatable blindness.⁹ Good primary health care and personnel trained in primary eye care are essential for the control of blindness in children. In many countries, measles immunization programmes are reaching target coverage levels, and the number of measles cases has been dramatically reduced. There is evidence that the success of the Expanded Programme on Immunization (EPI) is also reducing corneal ulceration and scarring in children.¹⁰ International efforts to control vitamin A deficiency in children, stimulated by evidence that vitamin A deficiency in childhood is associated with an increased mortality rate,¹¹ are also likely to have an impact, thus reducing corneal scarring in childhood. Approaches to reduce vitamin A deficiency include the promotion of home gardening; health and nutrition education; fortification of commonly consumed foods; food supplementation programmes and supplementation for at risk populations with high dose vitamin A in capsule or syrup form. Linking vitamin A supplementation to routine immunization programmes and by distributing vitamin A supplements on immunization days is a recommended strategy to increase coverage.¹²

SUBJECTS AND METHODS

This community based cross sectional survey was conducted at different schools of district Rahim Yar Khan. Subjects were selected from the various urban and rural Government schools of all the tehsils of District Rahim Yar Khan in collaboration with College of Ophthalmology and Allied Vision Sciences (COAVS)/K.E.M.U, Lahore and Special Education Department Punjab. The schools were selected in clusters through random sampling. Visual disorders included in study were refractive error and low vision. 5360 students of different age groups and of both sexes from various government schools of Rahim Yar Khan were screened out. Visual acuity of all the children was checked using Snellen Visual Acuity chart. Retinoscopy and subjective refraction were done in the children having visual acuity less than 6/12 in one or both eyes. Children having refractive errors were prescribed glasses. Children with organic lesion and those not improved with refraction were referred to Sh. Zayed Hospital, Rahim Yar Khan for thorough assessment and management, where medical and surgical interventions were given to the children and low vision cases were referred to the low vision centers in tertiary care centers where facilities of Low vision assessment and management is available. The data was entered and analyzed by using SPSS version 15.

RESULTS

Out of total 5360 children 256 (4.77 %) had refractive errors and 33 subjects (0.61%) comprising 23 (69.69%) males and 10 (30.30%) females have low vision. The major cause of low vision was found to be Retinitis Pigmentosa (RP) which accounted 13 cases (39.39%) of the total low vision patients while 7 cases (21.21%) of congenital cataract, 4 (12.12%) Buphthalmos, 3 (9.09%) Optic Atrophy, 3 (9.09%) Albinism, 2 (6.06%) Maculopathy and 1 (3.03%) high Myopia (Chorioretinal degeneration).

Figure 1: Prevalence of refractive error among children

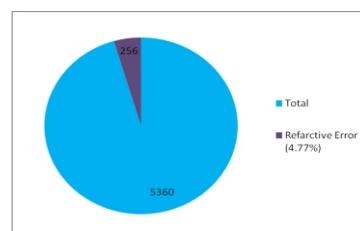
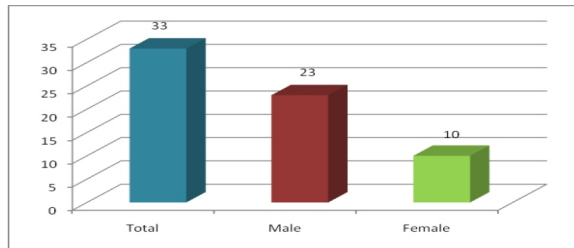
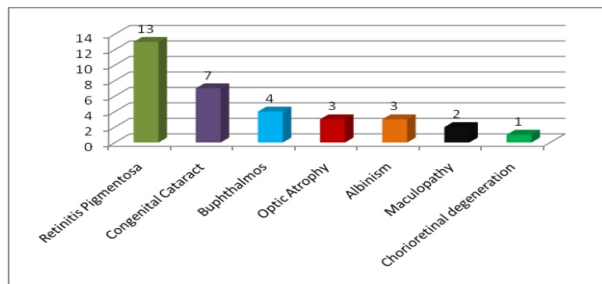


Figure II: Sex wise distribution of low vision among children**Figure III: Causes of low vision among children**

DISCUSSION

This community based cross sectional survey was conducted at different schools of District Rahim Yar Khan. In our study, out of total 5360 subjects screened 256 (4.77 %) had refractive errors this is similar to the study of Abdullah KN et al, who screened a total sample of 3153 children, aged 5-15 years in madaris of Peshawar. The prevalence of low vision was 4.5 per cent. Refractive errors were the major cause of low vision in this study. Out of the 142 children with low vision, 130 children had uncorrected refractive errors.¹³

Afghani T et al, conducted a study from 1992-99, a total of 1,018,741 children were screened. 4.62% of the total children screened had impaired visual acuity while 4.27% were found to have refractive errors. The prevalence of natural refractive errors was found to be slightly more common among females.¹⁴

A preliminary survey was conducted to detect the prevalence of refractive error (RE) and low vision among 5839 schoolchildren aged 7-14 years in Cairo, Egypt. Screening was done using Landolt broken ring chart and pinhole test. The prevalence of RE (visual acuity $\leq 6/12$) among the schoolchildren was 22.1% and low vision (visual acuity $\leq 6/18$) was 12.5%. The prevalence of low vision was greatest among the preparatory schoolchildren aged 12+ years. RE was higher among the female students than males (21.4% and

13.6% respectively).¹⁵

In another study, a total of 1000 children from 20 schools were selected. However, 940 were examined. The prevalence of refractive error was 8.9%. Mean age of the students was 9.49 ± 2.5 years. Dominant ethnic group was Urdu speaking. Only 10.9% children were ever checked for their ophthalmic examination. Refractive error was associated with female sex.¹⁶ In our study, 33 subjects (0.61%) comprising 23 (69.69%) males and 10 (30.30%) females had low vision. The major cause of low vision was found to be Retinitis pigmentosa (RP) which accounted 13 cases (39.39%) of the total low vision patients while 7 cases (21.21%) of congenital cataract, 4 (12.12%) Buphthalmos, 3 (9.09%) and Optic Atrophy, 3 (9.09%). Similarly, Retinal dystrophies like Retinitis pigmentosa, macular dystrophies and leber's amaurosis were the commonest forms of genetic diseases found in 28% of the cases in the study done by Afghani T.¹⁷ Similarly, Gilbert et al, in the same review found retinal dystrophies to be the commonest forms of hereditary diseases responsible for 42-80%.⁷ The strong reason for these hereditary diseases is consanguinity as a study revealed that consanguinity particularly between close relatives, allows the expression of recessive genes.

The higher proportion of genetic diseases due to autosomal recessive mode in eastern Mediterranean region (50-56%) have been attributed to the high levels of consanguineous marriages practiced in this region.^{18,19} The limitations of this study were, we visited only limited Government schools through cluster sampling while a large number of remaining government, private and blinds schools could not be screened out due to the lack of time and resources. So similar studies on the large scale should be conducted within diverse populations for clear picture of the situation in the country.

CONCLUSION

Hereditary diseases have been found to be the major cause of low vision leading to blindness. The study also revealed that low vision is more common in males. There is high prevalence of refractive errors found in this study, giving the picture of the increased burden of eye problems in district Rahim yar Khan.

Recommendations

The district Health Management Team should establish school eye screening programme for early detection and treatment. Awareness programmes regarding the education about cousin marriages among the general public at the basic levels is necessary to avoid the risk of hereditary diseases spreading in the next generation. Low vision rehabilitation centers should be established at all teaching and hospitals district level at urgent basis.

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