RESEARCH PAPER | Medical Science | Volume : 5 | Issue : 7 | July 2015 | ISSN - 2249-555X

Need of low vision aids and proper refraction in children of blind schools in Ahmadabad district.

KEYWORDS: Low vision aid, Blind school, Preventable blindness

Dr Gunjan Tank
M.S. Ophthalmology, Consultant, Vasan eye care, Ahmedabad.

Dr. Pina Soni
M.S. Ophthalmology, Associate professor, GMERS medical college, Sola.

ABSTRACT *AIM : To study children of blind schools and identify those who can be helped by low vision devices and spectacles*

MATERIAL AND METHODS : Children of six blind schools in Ahmadabad district were evaluated by a team of ophthalmologist, optometrist and low vision aid specialist. All children underwent thorough ocular examination including visual acuity assessment, external ocular examination, retinoscopy and proper refractive work up, fundoscopy and low vision work up.

RESULTS : Out of 339 children from all blind schools, 162 were with low vision that are evaluated further. 71 (43.82%) children have preventable blindness. Out of them 94(58%) children were given glasses and 74(45.65%) children were given low vision devices along with glasses. After giving low vision aids and glasses 7 (4.32%) children improved to 6/18 vision in better eye and 18(11.11%) children to 6/60 in better eye.

CONCLUSION : More than fifty percent blindness is avoidable. There needs an enhancing strategies to prevent even a single blindness due to preventable or treatable cause. Proper assessment, refractive correction and low vision devices can help them to rehabilitate.

Childhood blindness is one of the priorities in Vision 2020: the right to sight

[1].It is estimated that there are 1.4 million blind children in the world, two thirds of whom live in the developing countries[2] and that the causes of blindness in children vary according to region and socioeconomic development[3]. The prevalence of blindness in children ranges from approximately 0.3/1000 children in affluent regions to 1.5/1000 in the poorest communities. India has an estimated 320,000 blind children, more than any other country in the world[4].

Although blindness in children is relatively uncommon, this age group is also considered a priority as severe visual loss in children can affect their development, mobility, education, and employment opportunities. This has far-reaching implications on their quality of life and their affected families. In terms of the 'blind person years' they form the maximum burden of blindness on the community, next only to cataract, the commonest cause of avoidable blindness[3].

In many developing countries, children with visual disability are taught in residential schools. This is particularly true in India, where programmes of integrated education are still being developed. A significant proportion of students in schools for the blind in India are visually impaired rather than blind. Despite this most formal education is conducted using techniques appropriate for the totally blind such as braille. There is, however, increasing awareness of the needs of children with low vision and some countries are now developing educational services for students with low vision. Being able to read ink print allows a child much greater access to information and a wider range of recreational activities and educational and employment opportunities. For children with low vision optical devices may be required to attain a near acuity which allows access to ink print.

Information on the major causes of blindness in children is required to design effective prevention of blindness programs. Although blind school represents part of total blind children, study of this can provide us information regarding causes of blindness as well as low vision in children. The primary objectives of the present survey were to determine the causes of blindness, identify those with possibility of sight restoration, to assess benefit of proper refraction and low vision aids and to provide treatment to curable blind.

MATERIALS AND METHODS :

The schools for blind children in the ahmedabad district were identified with the help of blindness control society. The required permission for screening of the children was obtained from the concerned authorities of each school. They were briefed about the aims and objectives of the study. The students who can co-operate for refraction and low vision assessment were included in our study.

The WHO defines blindness as a best corrected visual acuity in the better eye of less than 3/60, and severe visual impairment as corrected visual acuity in the better eye of less than 6/18 but equal to, or better than 3/60.

An ophthalmologist, an optometrist and a low vision specialist examined the children in the respective school premises. The relevant information was collected from the class teachers and parents (whenever possible). The study included all the students of the blind school irrespective of age. Brief demographic details, medical and family history of each child were recorded.

Visual acuity was assessed in each eye using a Snellen visual acuity test chart. The child who did not cooperate with the "E" chart, were assessed for the ability to fix and follow light and identifying objects. Near vision were assessed using figures equivalent to N. Thorough refractive work up including dilated retinoscopy and correction was

Volume : 5 | Issue : 7 | July 2015 | ISSN - 2249-555X

done. Low vision assessment were done in students. The visual status of children was recorded using WHO categories of visual impairment before and after refraction.

Anterior segments of the eye were examined using a light and loupe magnifier. The posterior segment was examined using direct and indirect ophthalmoscope after dilatation of pupil.The anatomical classification of causes of visual loss defined that part of the eye which had been damaged leading to visual loss (such as cornea, lens, retina, optic nerve, whole globe). Where two or more anatomical siteswere involved the major site was selected, or where two sites contributed equally, the most treatable condition was selected. For each child, the need of optical, medical or surgical interventions was recorded and the visual prognosis was assessed. Children requiring further investigations and treatment procedures were referred to higher centre. All data were entered in Microsoft excel and analyzed.

RESULTS:

Out of 339 students of blind school, 97 students were completely blind with no light perception in either eye. Amongst remaining 242 students, 162 students fulfill inclusion criteria. Rest were either handicapped or mentally retarded so as cannot co-operate for refractive evaluation.

Amongst these 162 students, only 9 were female students, rest all male. From 25 students with low vision, 9 were of category 1 and 16 were category 2 low vision. Rest 137 were blind, amongst them 44 were in category 3 and 93 were in category 4 (Table 1).

According to anatomical site of visual loss (chart 1), retinal pathology was highest 50(30.86%) followed by globe abnormalities 39 (24.07%) and refractive errors 25 (15.43%). Corneal pathology 23(14.19%) and cataract 20 (12.34%) were also major causes of preventable blindness. Glaucoma 3(1.8%) and uveitis 2 (1.23%) were also reason of small portion of blindness. Out of these 71(43.82%) students were having blindness due to preventable cause and 91(56.17%) were due to non preventable cause.

After proper refractive work up, 94(58%) students were given glasses and 74 (45.68%) were advised low vision aids. Also fact of consideration was that 7(4.32) students were improved to category 0 and 18(11.11) to category 1. 13 students were referred to higher centre for further management. Out of low vision devices, 5 needed telescope, 12 were given page magnifier and rest only magnifiers.

DISCUSSION :

The redefinition of low vision has resulted in studies including more people with severe and profound low vision, who would be rehabilitated with intervention. Low vision patients can improve their residual vision and possibly relearn to perform lost functional vision, which often restores the ability to perform daily tasks like reading[5].

In a study by Albert israfil, the students were blind due to globe abnormalities 142 (30.9%), cornea 60 (13%), lens 78 (16.9%), uveitis 5%, retina 43 (9.3%) including retinopathy of prematurity (ROP) and optic nerve lesions 6%. In our study,, retinal pathology was highest 50(30.86%) followed by globe abnormalities 39 (24.07%) and refractive errors 25 (15.43%). Corneal pathology 23(14.19%) and cataract 20 (12.34%) were also major causes of preventable blindness. Glaucoma 3(1.8%) and uveitis 2 (1.23%) were also reason of small portion of blindness.

Various studies have found low vision devices as an effective means of providing visual rehabilitation[6]. Sloan *et al* [7] showed that children, compared to adults, have a very high rate of successful LVD use, when aids are properly prescribed. Faye *et al* [6] found that children with congenital ocular defects can successfully use complex as well as simple LVD. In our study 58% student were given glasses and 45.68% students were given low vision aids with functional good vision. A study of the need for low vision services in blind school students in East Africa showed that 63.9% of African blind school students had functional low vision[8].

The importance of the present study is highlighted by the fact, that low vision services or use of LVD were not available in any of the schools, emphasizing the need to improve awareness of low vision services among parents and teachers involved in special education in developing countries. Three tests of functional vision (useful residual vision) were used to identify those children who might benefit from spectacles and magnifiers (Figure 1). In the present study, 58% children were prescribed spectacles and 45.68% children were prescribed magnifiers. Though the need for low vision aids may have been underestimated in the present study (as only high addition plus lenses were used), which is the feasible option in an Indian setting where there is a poor availability of special LVD. Monocular telescopes, non-optical aids such as fluorescent reading lamps, tinted lenses, as well as adaptive technology in the form of closed circuit television (CCTV), was not feasible due to its cost in this study.

The overall visual function of a child has four major components; communication, mobility, daily living activities and sustained near vision tasks like reading and writing, including color vision and contrast sensitivity assessment[9]. A more detailed evaluation of these parameters including psychological assessment, can aid in planning special education for visually impaired children[10]. Changes in environment that does not cost much, should be an integral part of the low vision care of these children. Depending on the educational need to use Braille or ability to use print as educational medium, additional wings of low vision care need to be setup within available rehabilitation services, in blind schools. Some of these children with low vision, studying in blind schools, after being trained once, can possibly be integrated in regular schools and thus the blind schools can be reclassified as schools for the visually impaired.

In conclusion, the ophthalmologists must be made aware of the potential value of spectacles and low vision devices in the "incurably blind children". The present study demonstrates the need for ophthalmic evaluation, refraction and assessment for low vision devices and spectacles, prior to admission to schools and the periodic review thereafter. In addition, training to use low vision devices with print education should be introduced in the blind schools, along with teaching Braille, keeping in mind both the short term visual outcome and the long term visual prognosis.

Table 1: Category of blindness before and after refraction :

Category of blindness	Before refraction	After refraction
0	0	7(4.32%)
1	9(5.55%)	20(12.34%)
2	16(9.87%)	6(3.7%)
3	44(27.16%)	36(22.22%)
4	93(57.4%)	93(57.4%)

Volume : 5 | Issue : 7 | July 2015 | ISSN - 2249-555X

Chart 1: Cause of blindness according to site of visual loss :

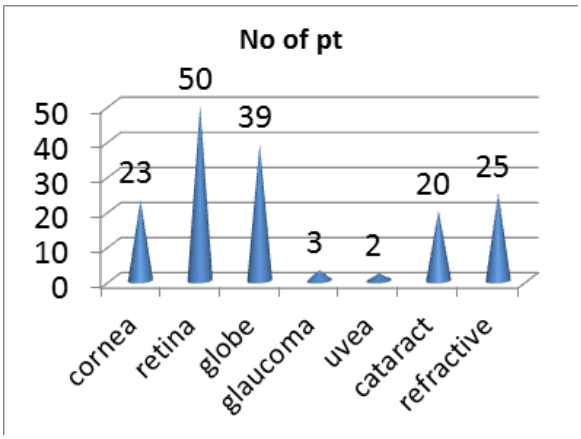

Figure 1 : Spectacle and magnifier lens

REFERENCE

World Health Organization. Global initiative for the elimination of avoidable blindness. WHO/PBL/97.61. Geneva: WHO, 1997. | | World Health Organization. Preventing blindness in children. Report of a WHO/IAPB scientific meeting..WHO/PBL/00.71. Geneva: WHO, 2000. | | Anon. Blindness in the world. Surv Ophthalmol 2000;45(Suppl):s21–31 | | Census of India 2001. India: Registrar General and Census Commissioner, 2001. | | Margrain TH. Helping blind and partially sighted people to read: The effectiveness of low vision aids. Br J Ophthalmol 2000;84:919-21. | | Faye EE, Padula WV, Padula JB. The low vision child. In : Clinical low vision, 2nd ed, Little, Brown and Co: Boston, USA; 1984. p. 437-75. | | Sloan L. Reading aids for the partially sighted- factors which determine success or failure. Arch Ophthalmol 1968;76:101-5. | | Silver J, Gilbert CE, Spoerer P, Foster A. Low vision in east African blind school students: Need for optical low vision services. Br J Ophthalmol 1995;79:814-20. | | Hyvarinen L. Assessment of low vision for educational purposes and early intervention, Part 1, Precision Vision: La Salle; 1999. p. 28. | | O'Connor AR, Stephenson TJ, Johnson A, Wright SD, Tobin MJ, Ratib S, et al . A comparison of findings on parents' and teachers' questionnaires and detailed ophthalmic and psychological assessments. Arch Dis Child 2004;89;831-5. |