Assessment of Impact of Low Vision Devices in Adults

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Research Article

Abstract: **Aim:** To assess change in visual function of adults with low vision who are given optical and non optical low vision devices. **Objective:** 1) To find out the improvement in visual function after the use of devices. **Material and Method:** A clinical interventional study was carried out during period of 1st January 2008 to 1st January 2009 in GMCH ABAD. In this study adults with low vision were assessed. All these patients were OPD patients of both genders from urban or rural area. The sample size was 50. **Results:** 52% were above 50 years of age, 67% were males. Among congenital, neurological causes was the most common while among acquired retinal causes (60%) were the most common.64 % accepted aids for distance, while 70% accepted aids for near. Before giving devices 70% were < 1m but after giving devices, only half of them i.e..36% Were < 1m while 2% show improvement till 0.5m.70 % were improved to 1m Most accepted device for distant were spectacles(40%).Most accepted were for near magnifying spectacles.(50%) Non optical aids were also given. **Conclusion:** Low vision aids are very useful to those who have some residual vision. Low vision affects not only visual acuity but also quality of life which can be improved with low vision aids.

Keywords: Low vision, low vision devices, Low vision aids, marginal man, visual functions.

Introduction

The individual with low vision has been described as the 'marginal man', not belonging to the world of the sighted or the blind, but in a gray area, a No-Man's land .This sense of not belonging can feel frightening and confusing to the one who is struggling to gain or regain a sense of independence. A recent population based study has shown the prevalence of low vision to be 1.05% in India [3] It has been observed that almost 90% of those considered blind retain a degree of potentially useful residual vision [4.] Because individuals older than 65 years have more vision loss than any other age group[5]. And Due to increased life expectancy the population over the age of 65 will be more than double between 1995 and 2030, so the burden of low vision is expected to increase markedly[6, 7]. Low vision is associated not only with Decreased visual acuity, but also with increased risk for depression and decreased functional status and quality of life. So low vision rehabilitation does not include only prescribing optical aids but it also includes improvement in patient's quality of life. Patient satisfaction with low-vision services [14, 16-19] and the frequency and type of low-vision aids used [12,13,20-27] have also been investigated.

The main aim of the study is to assess change in visual function with low vision who are given optical and non optical low vision devices.

Materials and Methods

This is a clinical interventional study carried out during the period of October 1st 2008 to October 1st 2009 in adults aged >16 years. Sample was collected from OPD patients visiting in the OPD of Government Medical College Aurangabad, which is a well equipped centre offering low vision care to the partially sighted, both paying and non paying. The sample was thus formed by those who had best corrected visual acuity <6/18. The sample size was 50. The approval of the ethical committee was obtained. An informed verbal consent was obtained from patients. All patients who were <6/18 after best possible visual correction and who could not improve with standard refractive correction or by any surgical means due to various causes such as retinitis pigmentosa, albinism, aniridia, myopic degeneration, glaucoma, corneal diseases and various congenital cause were included. All those patients who were <16 years, and mentally retarded were excluded. Brief demographic details, regarding age, sex, education details and onset, duration and progress of visual loss were recorded. Data was collected by detailed history and examination of adults with low vision. Complete visual assessment was done. Visual acuity was tested using BAILEY LOVIE log MAR charts for near and distance. Dry retinoscopy was done and whenever needed radical retinoscopy. After radical retinoscopy acceptance was assessed and glasses were prescribed to those with low vision. Anterior segments and posterior segments of the eyes were examined using a slit lamp. The posterior segment was examined using slit lamp biomicroscope with +90D lens, a direct ophthalmoscope and indirect ophthalmoscope after dilatation of pupil depending on case. Other visual

functions like contrast sensitivity, colour vision, visual field, difficulty in night vision, photophobia were assessed. Appropriate aids - optical (for near and distance) and non optical - were tried depending upon magnification required and they were prescribed.

Result

Table 1: Age wise distribution of patients

16-30 YEARS	**15 (30%)**
31-45 YEARS	09(18%)
46-60 YEARS	11(22%)
61-75 YEARS	10(20%)
>75 YEARS	5(10%)

Table 2: Types of visual loss

	Congenital	**Acquired**
WHOLE GLOBE	01(2%)	01(2%)
CORNEA	-	-
LENS	-	02(4%)
UVEA	-	-
RETINA	O1(2%)	30(60%)
OPTIC NERVE	-	06(12%)
NEUROLOGICAL	05(10%)	-
TRAUMA	-	-
AMBLYOPIA	-	04(8%)

Table 3: Comparison of vision before and after the use of LVD

		Pre LVD	**Post LVD**
PL- 6/60	PL-1M	35(70%)	18(36%)
6/60-6/38	1M-O.8M	15(30%)	20(40%)
6/38-6/24	0.8M-0.6M		10(20%)
6/24-6/19	0.7M-0.5M		01(2%)
<6/19	<0.5M		01(2%)

Table 4: Visual function changes in pre and post use of LVD

	Pre LVD	**Post LVD**
<8M	01(2%)	0
8M-4M	22(44%)	05(10%)
3.2M-2M	25(50%)	10(20%)
1.6M-1M	02(4%)	35(70%)

Table 5: Type of low vision aids used for distant vision correction

Spectacle	**20(40%)**
Uniocular Telescope	05(10%)
Binocular Telescope	15(30%)
No Aid Given	10(20%)

Table 6: Type of low vision aids used for near vision correction

Hand Magnifier	**03(6%)**
STAND MAGNIFIER	15(30%)
MAGNIFYING SPECTCLE	25(50%)
NO AID	07(14%)

Demographic details were assessed in respect of age and gender. We found that most of the patients with low vision were above 50 years of age. The distribution of the patient among different age group is as shown in table no 1.most of them i.e. about 67% patients were male. The most common causes for low vision which and acquired are shown in table 2. Table no 3 and 4 showing improvement in distant vision and near vision after using low vision devices. While table no.5 and table no. 6 showing the most commonly used devices for distant and near vision.

Discussion

So in our study we consider the impact of low vision rehabilitation on quantitative aspect. Age wise distribution showed 52% were above 50 years of age, about 30% of which was young population between 16-30 years of age. As per other studies also most cases of low vision were found in the 50 to 70 years of age group (42.9%).[47] In our study the causes of low vision in adults were congenital and acquired ,among which congenital causes were 14% While acquired causes were found in 86% .Among acquired retinal were 60% followed by optic nerve diseases(12%)Among retinal causes, the main causes for low vision were retinis pigmentosa followed by diabetic retinopathy and this is consistent with results carried out by study in india at L.V. Prasad eye institute ,which showed the main cause were retinitis pigmentosa (19%), diabetic retinopathy (13%), Macular diseases (17.7%), and degenerative myopia[44.] Before giving low vision device 70% were <1M, 30% were between 1M-0.8M,while after giving low vision device half of them i.e. 64% were > 1M. While 2% showed improvement till 0.5 M. For distance the most common accepted device was spectacles (40%). While for near vision 86 % were <2M before low giving low vision devices while after giving low vision devices 70% patients improved to 1M. Magnifying spectacle (50%) was the most common accepted aid for near. Similar results were found in cohort study done by Trauzettel-Klosinski, Susanne MD *et al* who found that only 13% were able to read newspaper print before consultation 90% were able to do so afterwards[48]. Similar results were found with the study carried out by scott *et al*. According to their study it had been found that Low-vision services are associated with high patient satisfaction. Over 98% showed subjective improvements with care and 53.2% reported low vision services as "very useful". A study by Nilsson showed that after receiving low vision care, the number of patients able to read newspaper text increased from 1.3% to 97.5%, and 72% of the patients who were forced to stop working due to their vision loss had returned to work[49]. At first follow –up compliance rate was very good 98.5%, as far as reading and writing were concerned. This indicates the satisfaction and improvement in the quality of life of these adults. Leas *et al* found similar results in their study. They found 89.5% reported benefits and 81% regularly used their low vision aid. But as compared to other study our compliance rate was high[50]. At end of second follow-up i.e. after six month use of low vision devices, overall compliance rate was 89.5%. There was

marked improvement and satisfaction with use of devices up to 81%.

Conclusion

Low vision aids are very useful to those who have some residual vision. Low vision affects not only visual acuity but also quality of life which can be improved with low vision aids. The commonest determinants of low vision in adults were neurological causes among congenital (50%)while retinal causes(67.79%) were most common among acquired once .None of study yet assessed the co-relation of education, literacy, occupation on quality of life of low vision patients. But our study found out the most common aid that will be beneficial to the common occupation. 'Best glasses' / distance correction were the most commonly accepted optical aids in this study in 50% of patients, while magnifying spectacle was accepted as the most common aid for near work.Compliance as measured in terms attending follow-ups and regular usage of aids provided (98.5% at end of first follow-up and 89.5% at end of second follow-up. It was very heartening to note that use of low vision aids was associated with high level of satisfaction.

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