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Prospective study to evaluate the effectivity and acceptance of optical low vision AIDS

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ABSTRACT

Objective: Prospective study to evaluate the effectivity and acceptance of optical low vision aids.
Materials and Methods: This is a prospective study which included 50 patients with low vision satisfying the inclusion criteria. The cases were divided in to 3 groups less than 20 years (group1), 20 to 60 years (group2) and more than 60 years (group 3). These patients were counseled and trained to us e the low vision aids in our low vision aid clinic. They were followed up for 6 months regularly and during follow up the reason for acceptance and non acceptance of these devices were found out.
Results: In this study patients with better contrast sensitivity greater than or equal to 0.3 on Pelli-Robson contrast sensitivity chart had better acceptance (p value 0.0 23). Younger patients less than 20 years of age have good acceptance for both near vision aids & distance vision aids when compared to elder patients more than 60 years of age who had good acceptance for near vision aids and poor acceptance for distance vision aids (with p value of 0.001). Taking Initial best corrected visual acuity (BCVA) in to account it was seen that patients falling under economic blindness group had better acceptance (p value 0.042).
Conclusion: Prescription of low vision aids (LVA), adequate training and addressing the comorbidities can improve the acceptance level. Similarly economic blindness group more readily accepted the low vision aids since it helped their academic and professional development. Patients with better contrast sensitivity had better acceptance. Addressing the expectation by proper counselling before prescripti on of low vision aids is a must.

1. Introduction

Visual impairment & the need for its rehabilitation are becoming more important because of the increase in life expectancy & better standard of living.[1,2] The challenges faced by patients of different age groups are different in their daily life.[3] Pediatric patients have to adapt fast to the constantly developing world around them, midleaged adults have to work to lead an independent life, whereas elderly patients want to lead a quality life by engaging with their favorite hobbies.[4,5] Hence it is very important to tackle the problems of each of these sectors of patients carefully. In a developing country like India in spite of a rise in irreparable ocular problems like age related macular degeneration, chronic diabetic macular oedema and many other causes, not many people are using low vision aid devices.[3,4,6] It may be due to social stigma, financial aspect, cumbersomeness or any other factor. Through this study we want to find when we offer these patients with Low vision aids what made them to accept and what made them not to accept.

2. Materials and Methods

This was a prospective study conducted in ophthalmology department, SDM college of/Medical Sciences and Hospital Dharwad, Karnataka state, from November 2016 to April 2018. 50 Patients with low vision were included in the study after taking informed consent. Ethical clearance was taken [Letter No: SDMIEC: 0863/2016, dated 28.10.2016]. The study was conducted in accordance with the Declaration of Helsinki.

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2.1. Inclusion criteria

1. Any patient with age more than 4 years.
2. Best corrected visual acuity (BCVA) better than Log MAR 1.3 but worse than Log MAR 0.3, near vision better than or equal to N36 in the better Seeing Eye.

2.2. Exclusion criteria

1. Age less than 4years.
2. BCVA worse than Log MAR1.3 or better than Log MAR 0.3, near vision worse than N36 in the better Seeing Eye.

The patient's visual acuity for distance was assessed by early treatment diabeticr etinopathy study (ETDRS) Log MAR chart, near vision by Jaeger chart and contrast sensitivity by Pelli-Robson contrast sensitivity chart. The ocular condition was clinically diagnosed and the patients were given necessary optical low vision aids. The patients were divided into 3 groups, less than 20 years (group 1), 20 to 60 years (group 2) and more than 60 years (group 3). All 50 patients were counselled and trained to use the devices, and were followed up for 6 months to know the effectivity and acceptance of these devices at the end of 6 months. Reason for non acceptance in each of the group was noted. Chi-square test was used for correlation between variables. SPSS software version 17.0 was used. P value <0.05 was considered statistically significant.

3. Results

In our study we had 50 low vision aid users and majority of low vision aid users were elderly retired males (Table 1). The most common ocular diagnosis under 20 years was macular dystrophy, 20 to 60 year group was chronic diabetic macular edema and more than 60 years of age was age related macular degeneration (Table 2). Younger patients less than 20 years of age (group1) have good acceptance for both near vision aids & distance vision aids when compared to elder patients more than 60 years of age (group 3) who had good acceptance for near vision aids and poor acceptance for distance vision aids at the end of 6 months of follow up with p value of 0.001 (Table 3). Taking initial best corrected visual acuity in to account including all 3 groups it was seen that patients with visual acuity falling under Economic blindness group as defined by national program for control of blindness[7] (distance vision between Log MAR 1.3 to Log MAR 1.0 and near vision between N18 – N36) had better acceptance than patient having vision better than economic blindness group (better vision than Log MAR 1.0 for distance and N18 for near) with p value 0.042 (Table 4). Patients with better contrast sensitivity greater than or equal to 0.3 had better acceptance with p value 0.023 (Table 5). Among LVA users less than 20 years of age (group 1) co morbidities like nystagmus, hearing loss, mental retardation, attention deficit hyperactive disorder and epilepsy was the most common reason for non acceptance, whereas cumbersomeness was the commonest reason for non acceptance among group 2 and 3 (Table 6).

4. Discussion

In our study majority of the patients were elderly retired males with reading hobby and age related macular degeneration was the most common ocular disease in these patients (Tables 1 and 2), which is similar to other studies.[3,4,6] Elderly patients had good acceptance for near vision devices but poor acceptance for distance vision aids when compared with younger patients who had better acceptance for both near & distance vision aids (Table 3). Since younger patients had wide range of activities like reading books, seeing black board at school, playing in park, seeing video games in electronic gadgets, they needed the support of both telescopes and near vision aids to perform their tasks. Whereas older patients were more confined to the near vision activities and felt telescopes were cumbersome to operate, especially when they had problems like tremors and cervical spondylosis. The main reason for non acceptance of optical low vision aids among younger patients was associated co morbidity like nystagmus, hearing difficulties, mental retardation, attention deficit hyperactive kids, epilepsy (Table 6). Some of these problems can be treated or kept under control before giving a low vision aid trial, and this might help in better acceptance. Other studies[8–11] also showed that, additional disabilities like (hearing disability, Mental retardation, cerebral palsy, syndrome child) had poor low vision aid acceptance. The profile from these studies showed that a typical LVA user is an older child (12-15 yrs), with no additional disability. This is comparable with our study which showed co morbidity as a main reason for non acceptance in patients less than 20 years of age.

Economic blindness group more readily accepted the low vision aid devices when compared to patients with better initial BCVA (Table 4) because they had a constant drive to improve in their academic and professional career, hence targeting this group had very good acceptance. Main reason for non acceptance in 20 to 60 year age group and above 60 year age group in our study was cumbersome more than social stigma (Table 6). Causes of failure of usage in other studies[9–12] was expectation of patient more than Cumbersomeness and Social stigma. Since we have counseled all our patients prior to low vision aid prescription that low vision aid is the only solution to their problem, we did not have failures due to expectation. Hence tackling the expectation of patients prior to LVA trial is key for success.

Patient with good contrast sensitivity more than or equal to 0.3 on Pelli-Robson contrast sensitivity chart had better acceptance (Table 5). Contrast sensitivity is a direct indicator of visual and retinal function[13,14] hence patients

Table 1: Age and gender distribution

Age in years	Frequency	Percentage
<20	9	18.0
20 - 60	20	40.0
>60	21	42.0
Total Males Females	50 38 12	100.0 76 24

Table 2: Clinical diagnosis of ocular diseases

Age group	Clinical diagnosis	Number of cases
Below 20 years	Macular dystrophy Retinitis pigmentosa Chorioretinal atrophy	5 2 2
20 to 60 years	Chronic macular edema Retinitis pigmentosa Disc pallor Chorioretinal atrophy Corneal dystrophy / opacity	8 4 4 2 2
Above 60 years	Age related macular degeneration Disc pallor Chronic macular edema	14 5 2

Table 3: Pattern of LVA users between group 1 and group 3 at end of 6 months of training

Age	Less than 20 years (Group1)	More than 60 years (Group 3)
Number of patients	9	21
Telescope users	6	1
Near vision aid users	6	15

Note: Younger patients less than 20 years of age had better acceptance for distance vision aids when compared with elderly patients more than 60 years of age (P 0.001)

Table 4: Acceptance based on initial best corrected visual acuity including all 3 groups

Visual acuity	Vision better than economic blindness group	Economic blindness group
LVA users	16	34
Acceptance	8	28

Note: patients with vision under economic blindness group had better acceptance with p value 0.042

Table 5: Pelli-Robson contrast sensitivity including all 3 groups

Contrast sensitivity	More than 0.3	Less than 0.3
LVA users	32	18
Acceptance	27	9

Note : Patients with pelli-robson contrast sensitivity more than 0.3 had better acceptance p value 0.023

Table 6: Reason for non acceptance in all 3 groups

Age group	C ause for non acceptance	Number of cases
Less than 20 years	Co morbidity	3(100%)
20 to 60 years	Cumbersome Social Co morbidity	3(50%) 2(33%) 1(17%)
More than 60 years	Cumbersome Social	3(60%) 2(40%)

with better contrast more readily accepted the devices.

5. Conclusion

Prescription of low vision aids, adequate training and addressing the co morbidities can improve the acceptance level. Similarly economic blindness group more readily accepted the low vision aids since it helped their academic and professional development. Patients with better contrast sensitivity had better acceptance. Addressing the expectation by proper counselling before prescription of low vision aids is a must.

6. Source of Funding

None.

7. Conflict of Interest

None.

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