



Research Article

QUALITY OF LIFE (QOL) ASSESSMENT IN PATIENTS WITH RETINITIS PIGMENTOSA FOLLOWING USE OF FILTERS -A STUDY FROM NORTHERN-INDIA

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ABSTRACT

Introduction: Retinitis Pigmentosa (RP) is a predominant rod dystrophy with degeneration of cones in later stages. RP may occur as sporadic disorder or be inherited in an Autosomal Dominant, Autosomal Recessive or X-Linked Pattern. Retinitis Pigmentosa includes symptoms like night blindness, delayed dark adaptation, tubular vision photophobia or glare. It affects the quality of life (QoL) to a great extent. **Aim:** To find out the role of filters in Retinitis Pigmentosa among patients coming to OPD of Sitapur Eye Hospital in the age group of 11-80 years. **Methods:** In this cross-sectional, prospective study, all patients in the age group of 11-80 years with Retinitis Pigmentosa were included. All fundamental clinical examinations were performed to make a final diagnosis of Retinitis Pigmentosa. The final tests with filters and filters dispensing were done in the Low Vision Aid Department. The patients were called for a follow up visit after 1 month to assess effectiveness of filters and improvements in lifestyle (designed Questionnaire). **Results:** Out of 25 patients diagnosed, 72 % were females and 28 % were males. After the assessment of filters, it was found that 32% patients accepted Grey filter, 24 % accepted Dark brown and 24 % accepted light brown filter (Total brown filter- 48%) and rest 20 % accepted Amber filter. On follow up, 100 % of the patients were relieved from glare and they also had improvement in other lifestyle categories like visual tasks, social and mental health, mobility, object identification, self-care etc. **Conclusion:** Brown filters (Light brown, Dark brown) is effective on improving Quality of life (Visual task, Social, Mental, Daily task, Mobility, Emotion, Object identification, self-care and Dependency) of patient with low vision due to Retinitis Pigmentosa and can be used as visual assistive device.

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INTRODUCTION

Retinitis Pigmentosa(RP) is also known as Rod-Cone Dystrophy as it affects rods first eventually affecting cones. It is a most common hereditary retinal dystrophy. Prevalence of RP is estimated to be 1 in 4000 in western populations. ^[1-2] RP includes symptoms like night blindness, delayed dark adaptation, tubular vision and photophobia / glare. The loss of vision progresses due to the progressive fundus changes affecting the quality of vision as well as life. The contrast sensitivity is typically reduced wherein the patient fails to read low contrast print, or coloured text on a coloured background; walking in dim light or foggy weather. Technology has progressed over the years to provide a variety of visual aids for

managing low vision and glare^[3]. Filters is one of those assistive devices. These filters allow only a certain light wavelength such as (511 ±, 450 ± and 550 ± 10nm etc.) to pass through. They are available in different colours like Light and Dark Brown, Light and Dark Grey, Amber, Orange, Red-orange, Yellow etc. In some case, mixed – colour tinted filters have also been used. These filters can be used practically as visually assistive device.^{4,5} Filters reduces the recovery time in light adaptation, light dispersion and chromatic aberration thus reducing glare and improving quality of life.⁶ Filters can be used both inside and outside (in strong sunlight or when it's cloudy) according to visual needs. Only tests with an eye care professional will be able to confirm the filter or filters best adapted to patients' vision. So, the authors feel

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that this study will help in better understanding of role of filters in improvising the quality of life in patients with RP.

METHODOLOGY

In this prospective, cross-sectional study, 25 patients with low vision due to Retinitis Pigmentosa were included. A person with low vision is one who has “impairment of visual function even after treatment and /or standard refractive correction, and has a visual acuity of less than 6/18 to light perception, or a visual field of less than 10° from the point of fixation, but who use, or a potentially able to use, vision for the planning or execution of a task,” according to low vision criteria of WHO. This study was conducted in low vision department of Sitapur Eye Hospital, Sitapur Uttar Pradesh India. The study was conducted for duration of 6months from March,21 to August,21. Informed verbal consent was taken from all the patient who participated in the study. R.P patients belonging to the pediatric age group, consent for the study were taken from their parents. The sampling strategy used was non probability sampling method. All patients in age group of 10-80 years having low vision due to R.P were included. Those who didn’t gave the consent or had any other associated ocular pathology with R.P were excluded. Detailed history was taken regarding chief complains (visual & non visual), systemic history, previous medical history, family history (F/H/O R.P.), history of consanguineous marriages, social history, birth history, and history of use of any previous Low vision devices/ filters. Visual acuity of the patient was checked using a Log Mar chart for distance (@ 3-meter distance), then converted into Snellen Chart equivalent (@ 6-meter distance). Visual acuity for near was checked with both Log MAR and Snellen chart. Objective refraction was done using streak-based retinoscopy whereas subjective refraction was done using loose trial lenses and trial frame. Complete low vision workup was done according to the standard protocol. Demographic data of the patient were collected which included age, gender, religion, address (urban/rural), education, occupation, income, number of family member. The Validated Questionnaire for measuring the impact of vision impairment on Quality of Life was taken from Impact of Vision Impairment (IVI) profile, Center for Eye Research Australia (CERA)⁷. The standard validated questionnaire was than filled by the patient regarding quality of life of patient which included 14 questions based on ability to perform visual task, social behavior, daily task, mobility, emotional status, object identification, self-care, dependency (APPENDIX 1). Patient was asked to use different Color filters (Dark Brown, Light Brown, Dark Grey, Light Grey, Amber, Orange, Red Orange, Yellow), and was evaluated for any improvement in symptoms like photophobia & Glare. And the most appropriate filter was dispensed to the patient with best correction power. Patient was then called for follow-up after one month & the same questionnaire was filled again to know the improvement in the quality of the life.

RESULTS

In the present study, 25 patients of clinically diagnosed case of retinitis pigmentosa were referred from retina and pediatric clinic to low vision department of Sitapur Eye Hospital, Uttar Pradesh during the study period. Out of which 18(72%) were male and 7(28%) were female patients. The mean age of the patients was 45 years (10-70 years). The baseline characteristics of these patients are depicted in Table 1. Different Color filters [Dark Brown (6 patients), Light Brown

(6 patients), Grey (8 patients), Amber (5 patients), Orange (0), Red-Orange (0), Yellow (0)] were checked for photophobia & Glare, and the most appropriate filter was dispensed to the patient along with the best correction power. Brown filter was most beneficial to the Retinitis Pigmentosa patients (12 out of 25 patients, 48%). Among the filters dispensed, 48% were brown filters (24% light brown, 24% dark brown), 32% were grey filters, 20% were Amber filters (Figure 1). On Follow-up after 1 month: - Pre and post filter changes in Quality of Life (QoL) in RP patients are depicted in (Figure 2).

Table 1: Baseline Characteristics of patients presenting with Retinitis Pigmentosa in the Low Vision Clinic of our hospital

Parameters	(n=250), n (%)
Age (In years)	
Mean ± SD	45 ± 4.5yr
Min – Max	10yr – 70yr
Gender	
Male	18(72%)
Female	07(28%)
Inhabitants	
Urban	03(12%)
Semi-Urban	01(04%)
Rural	21(84%)
Education	
Uneducated	08(28%)
Primary school	13(48%)
High school	03(12%)
Intermediate	01(04%)
Graduate	01(04%)
Post-Graduate	01(04%)
Occupation	
Unemployed	06(24%)
Housewife	05(20%)
Farmers	02(08%)
Businessman	03(12%)
Students	09(36%)

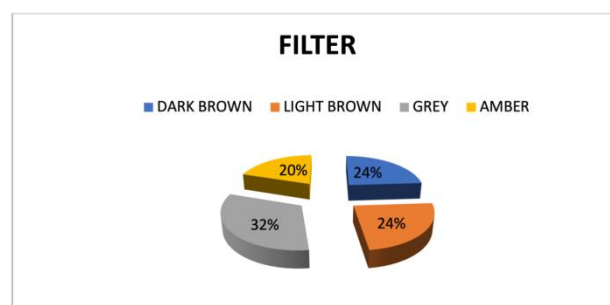


Figure1 Pie chart showing the percentage of patients to whom the various filters were distributed

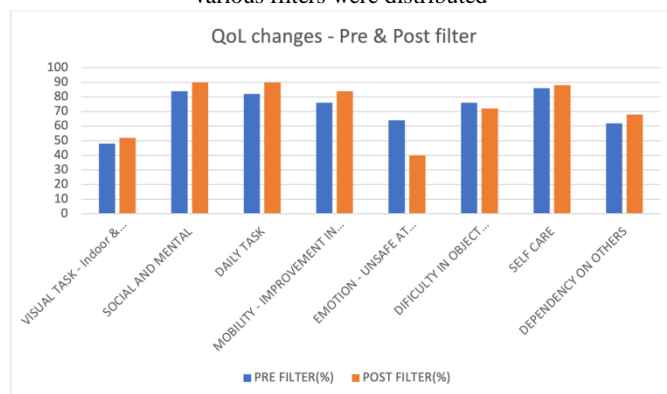


Figure2 Bar diagram showing improvement in quality of life (QoL) after use of filters

Changes in Visual Task

We found that 52% had problems in watching TV which remained almost same i.e. 50% post filter, 44% had difficulty in playing outdoor and indoor games in pre filter assessment and post filter showed minimal improvement with the percentage having persisted symptoms reduced to 39%. 76% of them had problem in reading newspaper / book, instruction over medicine, recognizing mobile no., which remained same in post filter assessment. All 100% patient had problem in working outdoors and opening eyes and post filter all of them were comfortable. 36% patient had problems in reading and writing which remained same post filter.

Social behavior

84 % patients preferred spending time with their family and friends and post filter the percentage increased to 90%.

Daily task

88% patient were able to do their household chores and post filter it increased to 90%

Mobility

76% had difficulty in walking or climbing stairs and were able to travel alone but post filter percentage became 84%.

Emotional status

64% patient felt unsafe outside house and post filter percentage 40%. 24% patient comfortable to travel alone and post filter percentage become 68%. 92% patient felt safe inside house and which remained same in post filter assessment. 72% patient felt hopeless and lonely and post filter percentage became 68%.

Object Identification

Total of 76% of patients found it difficult to meet and recognize people and post filter percentage become 72%.

Self-Care

86% were able to do their own work and post filter percentage become 88%.

Dependency

In which 62% needed the help of others and post filter percentage become 68%.

DISCUSSION

Retinitis pigmentosa (RP) is a rare genetic disorder that primarily affect photoreceptors (the light-sensitive layer of retina) and retinal pigment epithelial (RPE) function. There occurs degeneration of rods first, followed by degeneration of cones.⁸ It has varied inheritance pattern - may occur as sporadic disorder or be inherited in an Autosomal Dominant, Autosomal Recessive or X-Linked Pattern. Sen *et al.* estimated presence of RP in age group ≥ 40 years and found prevalence to be much higher in rural than urban population.⁹ A much higher prevalence is noted in Southern Indian population. It's a well-known fact that visual disorders are much more prevalent in consanguineous marriages.¹⁰

In our study, 48% of the patients were in age of thirteen or more, the reason of this late presentation might be lack of awareness or knowledge among parents or guardians about child's condition or lack of formal education and school screening programs.

Retinitis Pigmentosa includes symptoms like night blindness, delayed dark adaptation, tubular vision and mainly photophobia / glare. It also leads to low vision and poor quality of life. Low vision assistive devices can be important tools to manage low vision and photophobia. Filters are one of those assistive devices. In this research the authors tried to assess the role of filters in patients of Retinitis Pigmentosa and the way it affects the lifestyle.

Clark stated the fact that VA through yellow, brown, or orange tinted lenses was comparable to VA through luminance.¹¹ Visual quality with brown filters is better than ND filters for low contrast objects but identical for objects of higher.¹² Tinted filters are known to significantly improve the visual acuity as well as contrast sensitivity in diabetic retinopathy, macular degeneration etc.^{13,14} No studies have directly addressed whether filters can affect the quality of vision in RP patients. There is need of more data, obtained from well-controlled experiments to determine whether there is any real benefit to be gained by using filters. We found that the Brown filters were relatively much beneficial to the patients. Filters might improve the social behaviour, mobility, visual task in RP patients.

CONCLUSION

Brown filter (Light brown, Dark brown) is effective on improving Quality of life in terms of visual task, social life, mental health, daily task, mobility, emotion, object identification, self-care and dependency) of patient with low vision due to Retinitis Pigmentosa and can be used as visual assistive device.

LIMITATION AND FUTURE RECOMMENDATION

The limitation of our study was: 1. Retinitis Pigmentosa was not classified in different stages; hence the role of filters in different stages of Retinitis Pigmentosa could not be assessed. 2. Less sample size.

Future studies can be done regarding

- I. Contrast sensitivity - It evaluates the visual performance better than visual acuity in low vision patient.
- II. Color vision – The effects on color vision with filters can be assessed.
- III. Vision criteria - Pre and Post filter visual acuity comparison study can be done

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Conflicts of Interest: There are no conflicts of interest.

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