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Assessment of the Quality of Life of Low-Vision Patients in Benin-City, Edo-State

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Abstract

This study was aimed at assessing the impact of low vision on the quality of life of low-vision patients and how rehabilitation and low-vision aids helped improve the Quality of life of these patients. The study employed a cross-sectional study design, which involved using a well-structured questionnaire distributed to low-vision patients seen in the University of Benin Optometry clinic and Echos Hospital limited, Benin City. Data was collected to ascertain the level of low vision, and its impact on the quality of life of patients. This was by examining the functional independence of the patients, their psychosocial well-being and outcomes and ability to catty out vision-specific activities to provide a better understanding of how low vision affects the quality of life of low vision patients. The mean score of participants on the general health and general vision subscales were 59.58 ± 19.03 and 54.58 ± 15.83 respectively. Participants' responses to the level of ocular pain they experienced was 63.33 ± 17.04. The mean score of participants for distance activities was 58.33 ± 15.72 while that for near activities was 59.64 ± 17.08201. Mean scores for social functioning, mental health and dependency were 70.83

± 18.95, 36.25 ± 23.92 and 37.78 ± 30.54 respectively. The mean scores for color vision and peripheral vision were 97.50 ± 7.63 and 73.33 ± 25.37. Low vision has effects on vision-specific abilities, and general health as well as mental health effects on patients and rehabilitation services should be made available to curtail these effects. This study provided insight into the effect of low vision on the quality of life and the potential benefits and challenges associated with visual rehabilitation initiatives. It will also contribute to valuable information which will improve the support system for low vision in the community.

Keywords: Low Vision, Vision Rehabilitation, Low Vision Patients, Quality of Life

INTRODUCTION

The World Health Organization defines "low vision" as visual acuity between 20/70 and 20/400, with the best possible correction, or a visual field of 20 degrees or less. It is a condition of a permanent visual impairment which results in a significant reduction in visual function which cannot be corrected with conventional spectacles, contact lenses, or surgical intervention, and hence may interfere with the function of the eye. Low vision could, however, be improved with special optical aids or devices. The effects of low vision on the individual, family and community have been well documented and include visual, functional, psychological, social and economic consequences. The effects on the individual include; limitations in performing certain tasks that require vision, and in educational, occupational, and recreational activities. These limitations tend to reduce the quality of life of the individual affected by low vision. There is the additional psychological consideration of not being able to care for oneself i.e. dependent on others, (Ovenseri-Ogbomo *et al.,* 2016). Stevenson *et al.,* (2004) reported that the ability to care for oneself is related to self-reported visual function and quality of life. This measures the impact of a disease on the affected individual. Rehabilitation can be defined as restoration, especially by therapeutic means to an improved condition of physical function. Low vision rehabilitation aims to optimize the use of residual vision after severe vision loss but also aims to teach skills to improve visual functioning in daily life. Low-vision rehabilitation is a highly effective program that maximizes remaining vision and significantly improves daily living skills. This specialized program promotes independence and active participation in society, empowering individuals with visual impairment to lead fulfilling and productive lives. The

measures have also been applied to determine the influence of medical interventions on disease processes. Several quality-of-life instruments have been developed. While the majority measure the impact of the disease on the total health of the individual (e.g. the health-related quality of life [HRQoL] questionnaire), others are organ-specific, such as the National Eye Institute Visual Function Questionnaire (NEI VFQ). The 25-item NEI VFQ has been validated and found useful in measuring the impact of visual impairment on the quality of life of the individual affected with low vision services are intended to help individuals with residual vision by providing them with low vision devices (LVDs), training them in the effective use of remaining vision, and advising them on environmental modifications to make their surroundings more accessible. These services also connect eye care with education and rehabilitation services to ensure a comprehensive eye care service. The success of low vision services is defined as reducing the level of difficulty in performing visual tasks or goals. However, traditional methods of measuring the effectiveness of low vision services, such as assessing visual acuity, are not sufficient. This is because visual acuity measurements in the clinic do not correlate well with the actual performance of low-vision patients in their environment (Ovenseri-Ogbomo *et al.,* 2016). Therefore, it is essential to consider patient perspectives on the usefulness of devices and other interventions when measuring the effectiveness of low-vision services.

MATERIALS AND METHODS

Research Design

This study was a cross-sectional questionnaire-based study design which involved the use of the University of Benin Optometry clinic and Echos Hospital Limited, Benin City. Data of Low vision patients who visited the clinics were collected and the impact of low vision on the quality of life of patients was ascertained. The questionnaire was well structured containing questions regarding the quality of life of the subject's pre-visual rehabilitation. The questionnaire used was a model of the National Eye Institute Visual Functioning Questionnaire (NEI VFQ-25).

Study Design

A questionnaire cross-sectional-based study design was used. In this study, Questionnaires were distributed to the low-vision patients who filled in the required information with the aid of the clinicians and their guardians.

Study Location

The research project took place at the University of Benin Optometry Clinic and other optometry clinics in Benin City.

Sampling Technique

A purposive sampling technique was used on the patients visiting the respective clinics for low vision rehabilitation.

Study Population

The study was carried out using available subjects who visited the respective Optometry clinics.

Study Duration

This study lasted throughout the second semester.

Sample Size

A sample size of 30 patient was used for this study.

Research Materials

Questionnaires

Inclusion Criteria

Low-vision patients who visited the clinics

Exclusion Criteria

Patients who did not meet the criteria to be regarded as low-vision patients (best corrected VA of 6/18 or less)

Patients who did not give consent for the study to be carried out on them

Ethical Consideration

Ethical approval to conduct this study was obtained from the Research and Ethics Committee of the Department of Optometry, University of Benin.

Procedure

This study involved the use of well-structured questionnaires that contained questions regarding the quality of life of the subjects. The questionnaire used was a model from the National Eye Institute Visual Functioning (NEI VFQ-25). Without a doubt, the most universally used QOL instrument in the field of ophthalmology and visual science is the

National Eye Institute Visual Function Questionnaire (NEI-VFQ). This instrument was commissioned by the National Eye Institute to be able to assess the impact of a broad spectrum of eye diseases on visual functioning and quality of life. Each of the items within the instrument was included as the result of extensive consultation with patient-based focus groups. The focus groups, consisting of patients with a broad range of ocular pathology, concentrate on the symptoms experienced as a result of their condition. The result was a 13-domain instrument (general health, general vision, ocular pain, vision expectations, near vision, distance vision, social problems, mental health, role problems, dependency, driving, peripheral vision and colour vision) that exhibited high levels of internal consistency. The NEI-VFQ has shown high levels of internal consistency. In the NEI-VFQ model used for this study, the questions for general health, driving and role limitations subscales were removed from the appen. The questionnaire was divided into several domains that assessed various aspects of visual function and quality of life of the patients. The questionnaires were either self-administered or interviewer-administered. The essence of the questionnaire was explained to the patients and consent was taken before the survey was started. Different sections of the questionnaire were explained to the patients and directions on how to fill in their responses were given to them. At the end of the survey, the questionnaires were retrieved from the participants. The results obtained from the questionnaire were scored using the NEI VFQ manual.

Data Analysis

The data obtained from this questionnaire study was analysed using Statistical Package for Social Sciences (SPSS) version 22.0.

RESULTS

The subjects consisted of 30 patients who met the criteria of low vision (best corrected visual acuity of 6/18 or less), with 70% being male and 30% female subjects. The age ranges of the patients used were 20–64 with 56.7% of the patients being within the age range of 20-24, 23.3% of the patients being within the range of 25-25, 13.3% being within the age range of 30-34 and 3.3% each for the 45-49 and 60-64 categories.

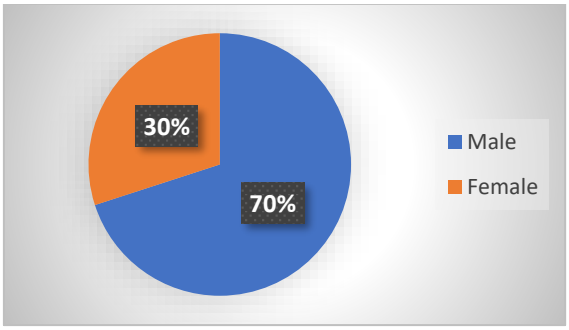

Figure 1: Gender Distribution of Respondents

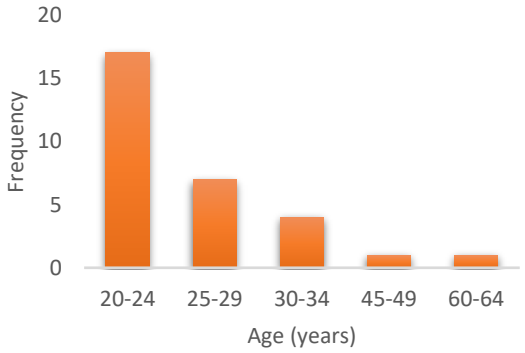

Figure 2: Age Distribution of Respondents

The study included patients between the ages of 20 to 64. Out of all the participants, 17 patients were between the ages of 20 to 24, 7 patients were between the ages of 25 to 29, 4 patients were between the ages of 30 to 34, and only 1 patient each fell within the age ranges of 45 to 49 and 60 to 64.

Table 1: General Health and General Vision of Low-Vision Patients

Scale	Frequency	Percent
General Health		
Poor	15	50.0
Good	15	50.0
General Vision		
Poor	11	36.7
Good	19	63.3

50% of participants had suboptimal general health while the other 50% had satisfactory health levels. 63.3% reported good general vision while 36.7% reported otherwise.

Table 2: Assessment of Ability of Low-Vision Patients to Carry out Distance and Near Activities

Scale	Frequency	Percent
Distance Activities		
Poor	14	46.7
Good	16	53.3
Near Activities		
Poor	11	36.7
Good	19	63.3

46.7 % of the participants had difficulties with distance vision activities while 53.3 % had little to no difficulties with distance vision activities. For near-vision activities, 36.7% of the participants reported having difficulty while 63.3% had little to no difficulty.

Table 3: Ocular Pain Levels of Participants

Scale	Frequency	Percent
Ocular Pain		
Poor	10	33.3
Good	20	66.7

33.3% of the patients had less than 50% for the ocular pain subscale while 66.7% had scores over 50%. Higher ocular pain scores are suggestive of mild ocular pain while low scores are suggestive of moderate to severe ocular pain.

Table 4: Assessment of Vision-Specific Abilities of Low-Vision Patients

Scale	Frequency	Percent
Social functioning		
Poor	8	26.7
Good	22	73.3
Mental Health		
Poor	24	80.0
Good	6	20.0
Level of Dependency		
Poor	24	80.0
Good	6	20.0

After assessing the vision-specific abilities of low-vision patients, it was found that 26.7% of them had suboptimal levels of social functioning. On the other hand, 73.3% had good levels of social functioning. 80% of the patients in the study reported poor mental health levels, while only 20% had good mental health. Furthermore, it was found that 80% of the patients had a high level of dependency.

Table 5: Assessment of Color Vision and Peripheral Vision Abilities of Low-Vision Patients

Scale	Frequency	Percent
Color Vision		
Adequate	30	100.0
Inadequate	--	
Peripheral Vision		
Poor	9	30.0
Good	21	70.0

100.0% of participants had no challenges with colour vision. Similarly, the majority of the respondents (70.0%) showed good peripheral vision and 30 showed poor peripheral vision.

DISCUSSION

This study set out to determine the extent to which low vision affects the quality of life of low-vision patients in Benin City. Several studies have shown that low vision can affect patients in various aspects of life. A study conducted by (Scott *et al.,* 1999) stated that individuals over the age of 65 have more vision loss than any other age group. Vision loss has been ranked third, behind arthritis and heart disease, among conditions that cause persons older than 70 years to need assistance in activities of daily living (Nipsen *et al.,* 2019). Vision loss is mainly a problem in older adulthood and is known to compromise the quality of life (Langelaan *et al.*, 2007). It has also been found that visual impairments can affect vision-dependent daily activities, cause vision-related dependency and poorer vision-related mental health (Varma *et al.,* 2006). A study found that in adolescents and young adults with congenital cataracts, there was difficulty with near and distance activities and lower vision-specific social functioning, role difficulties, and mental health.

In this study, the gender distribution of respondents was 70% males and 30% females as shown in Fig 4.1 with a ratio of 2.3:1. The (Olusanya *et al.,* 2012) study gave a similarly higher ratio of occurrence of low vision in males than female with a ratio of 1.9:1 among 193 patients. This result however is inconsistent with other studies in developed countries where more females were found to present for low vision services. This probably demonstrates the reduced access and utilisation of eye care services by females in developing countries. In addition, it has been reported that the female predominance observed in studies from developed countries becomes more noticeable with age and may be related to greater longevity in women. Further research into the gender distribution among low-vision clinic patients may shed more light on this observation. **The age ranges of the participants were presented in Fig 4.2** and the range was 20 to 64. Out of all the participants, 17 patients were between the ages of 20 to 24, 7 patients were between the ages of 25 to 29, 4 patients were between the ages of 30 to 34, and only 1 patient each fell within the age ranges of 45 to 49 and 60 to 64. Table 4.1 shows the results for the general health and general vision of low-vision patients who took part in this study. The general health subscale had a Mean ± SD score of 59.5833 ± 19.02905. Similarly, according to (Scott *et al.,* 1999) the Mean ± SD score for general health among 156 patients was 53.2 ± 10.3 before low-vision clinic visits and 52.6 ± 8.9 after low-vision clinic visits. The slightly higher SD (standard deviation) may be a result of a younger population in our study. 50% of participants had suboptimal general health while the other 50% had satisfactory health levels. This is in line with the study carried out by (Ekemiri *et al.,* 2023) whose result suggested that HRQOL-14 and NEI-VFQ-25 scores were significantly reduced in low-vision participants, suggesting that the general health as well as the vision-related quality of life is affected in patients with low vision. From our result, there is a 50% prevalence of good general health among low-vision patients. This is most probably owing to the etiology of low vision among these patients as a majority of our study subjects had albinism.

It is also important to note that the NEI VFQ is a vision-specific quality of life questionnaire and the CDC HRQoL-14 questionnaire is a better instrument for accessing general health. The Mean ± SD score for the general vision of the participants was 54.5833 ± 15.82615 and 63.3% of the participants reported good general vision while 36.7% reported otherwise. This suggests that fewer number of patients (36.7%) had scores less than 50% for the general vision subscale. These results could be because most subjects of the study are young (20-29) and according to (Scott *et al.,* 1999) individuals over the age of

65 have more vision loss than any other age group. Vision loss has been ranked third, among conditions that cause persons older than 70 years to need assistance in activities of daily living (Nipsen *et al.,* 2019). This suggests that an older population of low-vision patients will likely have a higher prevalence of poor general vision. Aetiology can also be a factor to consider as it has been found that albinism is easily aided with spectacle and contact lenses and already corrected patients will likely give good general vision responses. In the (Gopalakrishnan *et al.,* 2023) study, spectacle correction was prescribed as single-vision glasses in 70.8%, bifocal glasses in 9.7%, and separate near-vision glasses in 1.3% of the patients. Although there was no statistically significant improvement in the distance visual acuity, most of the subjects reported improved clarity of vision after LVI in the under 18 years and above 40 years category. There was a statistically significant improvement in pre-presbyopic adults where the mean visual acuity improved from 0.84 logMAR to 0.79 logMAR ($\boldsymbol{P} < 0.05$). Near visual acuity improvement was statistically significant in all three categories ($\boldsymbol{P} < 0.05$) irrespective of the presenting visual acuity. This could be because of the recent advancement of assistive devices, which provide a wide range of magnification and various modes of contrast. Table 4.2 shows results for the Assessment of the Ability of Low-Vision Patients to Carry out Distance and Near Activities. The Mean ± SD score for distance vision activities was 58.3333 ± 17.08201 and 46.7 % of the participants had difficulties with distance vision activities while 53.3 % had little to no difficulties with distance vision activities. For near-vision activities, the Mean ± SD score was 59.6389 ± 17.08201 and 36.7% of the participants reported having difficulty while 63.3% had little to no difficulty. The effect of low vision on distant and near activities in this study is consistent with other literature. The (Jamal *et al.,* 2023) study on The Effect of Visual Impairment and Its Severity on Vision-Related and Health-Related Quality of Life in Jordan had results findings with Mean ± SD score for distance vision for the control and the patient group as 99.0 ± 4.3 and 51.1± 27.7 respectively. For the near activity, 97.3 ± 7.8 and 44.8 ± 27 respectively for the patient and control groups respectively. This shows that vision impairment can affect the results for the distance and near activity subscales. The results of the Assessment of Vision-Specific Abilities of Low-Vision Patients are shown in Table 4.4. After assessing the vision-specific abilities of low vision patients, it was found that the Mean ± SD score for social functioning was 70.8333 ± 18.95245 with 26.7% of the participants having suboptimal levels of social functioning and on the other hand, 73.3% had good levels of social functioning. 80% of the patients in

the study reported poor mental health levels, while only 20% had good mental health. There was a Mean ± SD score of 36.2500 ± 23.92067 for mental health. Furthermore, it was found that 80% of the patients had a high level of dependency and a Mean ± SD score of 37.7778 ± 30.53901. The rest of the participants had low dependency levels. These results agree with (Varma *et al.,* 2006) that visual impairments can affect vision-dependent daily activities, and cause vision-related dependency and poorer vision-related mental health. The lower prevalence of these vision-related depletion in the quality of life could be related to findings by (Scott *et al.,* 1999) which stated that individuals over the age of 65 have more vision loss than any other age group. Given that the majority of the age group in this study were within the age groups of 20 to 29. The (Klauke *et al.,* 2023 study) established that low vision and blindness are risk factors for anxiety and depression. This relationship has been attributed to multiple factors, including anxiety about disease progression, and a lack of access to work and social activities.

Table 4.5 presented the results for the Assessment of Color Vision and Peripheral Vision Abilities of Low-Vision Patients. The Mean ± SD score in this study was 97.5000 ± 7.62821 for colour vision and 100.0% of participants had no challenges with colour vision. The Olusanya ***et al.,* 2012** study showed that Colour vision was normal in 143 (74.1%) patients, while 37 (19.2%) patients had nystagmus. Similarly, the majority of the respondents (70.0%) showed good peripheral vision and 30% showed poor peripheral vision with the Mean ± SD score being 73.3333 ± 25.37081. In the (Jamal *et al.,* 2023) study, the Mean ± SD score for Color vision for the control was 99.5 ± 3.6 and the score for the patient group was 74.3 ± 34.4. similarly, the Mean ± SD score for Peripheral vision among the control group was 99.3 ± 4.2 and the patient group was 59.7 ± 33.5. possible reasons for the incongruity in result could be due to the aetiology of the condition, clinical stage of the condition and the age of the subjects.

CONCLUSION

From this study, it can be concluded that low vision has a significant negative impact on the quality of life of patients. It can affect patients in so many aspects such as general health, general vision, ability to carry out distant and near activities, dependency levels, social functioning, mental health and ocular pain.

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