

Original article

Study of the quality of life (QoL) in patients with low vision

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ABSTRACT

Objectives: To compare the quality of life (QoL) in patients with low vision using additional questionnaires and NEI-VFQ 25.

Material and Methods: Present study was carried out in outpatient department of Regional institute of Ophthalmology (RIO), PGIMS, Rohtak. Group I comprised of a total of 100 cases of low vision who belonged to category of moderate visual impairment. Group I comprised of a total of 100 cases.

Results: Mean age of group I patients was 59.26 ± 12.61 years and 60.49 ± 9.75 years in group II ($p > 0.05$). Mean comparison of intraocular pressure (left eye) among both the groups shows that group I mean IOP was 14.75 ± 4.69 and in group II, it was 14.40 ± 10.20 ($p > 0.05$). Mean comparison of intraocular pressure (right eye) in both the groups shows that in group I, mean IOP was 15.65 ± 3.51 and in group II, it was 14.62 ± 9.24 ($p > 0.05$). Mean comparison of various questionnaires observed during the study period found to be statistically significant, when compared between two groups.

Conclusion: Low vision affects quality of life of patients in both categories but more in category 2 people who have more difficulty.

Keywords: Low vision, Quality of Life

INTRODUCTION

Normal vision is essential for the functional, social, physical and emotional well-being of an individual. Low vision, therefore, leads to reduction in quality of life (QoL).¹ According to WHO, International Statistical Classification of Diseases, Injuries and Causes of Death (10th revision), 'low vision' is defined as visual acuity of less than 6/18 but equal to or better than 3/60, in the better eye with best possible correction. 'Blindness' is defined as visual acuity of less than 3/60, or a corresponding visual field loss to less than 10°, in the better eye with best possible correction. 'Visual impairment' includes both low vision and blindness. Low vision includes category 1 which is defined as visual acuity between 6/24 to 6/60 in better eye and category 2 defined as visual acuity between 5/60 to 3/60 in the better eye called as moderate and severe visual impairment respectively.²

People with low vision are at increased risk of falls and road-side accidents.³ Low vision may also be related to higher rates of depression. Visually impaired people may not be able to do their work on their own and have to depend on others for their basic needs leading to functional limitations.⁴ Hence, it is important to identify, and treat wherever possible, causes of low vision in adults.

Visual acuity and visual field assessment are used in ophthalmology to assess vision but these are not sufficient to assess actual problems faced by the patients. Hence, it becomes important to know the patient's feelings about their disease in terms of quality of life. The World Health Organization defines 'the quality of life' (QoL) as "individual's perceptions of their position in life in the context of culture and value systems in which they live and in relation to their goals, expectations, standards and concerns." Hence, there was a need to develop a questionnaire to assess patient's feelings about the impact of vision on QoL.⁵ There are various techniques to measure the effects of low vision on QoL. One of the widely used techniques is a questionnaire developed by American National Eye Institute (National eye institute –Visual Functioning Questionnaire-51, NEI-VFQ 51). It was formulated in the mid 1990s to know the effects of visual impairment in people with chronic eye diseases. For research purposes and clinical trials, interview length is important. NEI-VFQ-51 takes a long time, hence the shorter version called NEI-VFQ 25 questionnaire version 2000 was developed.⁶

The NEI-VFQ has already been standardized and translated into various languages all over the world including the countries - Italy,⁷ Turkey,⁸ Japan,⁹ Greece,¹⁰ America/Alaska,¹¹ Nepal,¹² Iran,¹³ Egypt,¹⁴ Serbia¹⁵ and Persia¹⁶ for quality of life in visually impaired. Studies have also been conducted in India in Madurai,¹⁷ Andhra Pradesh¹⁸ and urban Puducherry¹⁹ using different questionnaires.

The most common causes of low vision in India are cataract, refractive error, glaucoma, posterior segment disorder, surgical complication, corneal blindness and posterior capsular opacification.²² Cataract is a clouding of lens in the eye which leads to a decrease in vision. Risk factors for cataract include diabetes, smoking, tobacco, prolonged exposure to sunlight and alcohol. Surgery is the only effective treatment. Refractive error is defined as a defect in ability of lens of eye to focus an image accurately, as occurs in nearsightedness and farsightedness. It is often corrected by glasses, contact lenses, or refractive surgery. Glaucoma is a group of eye diseases which result in damage to optic nerve and vision loss. All these causes are treatable. However, if left untreated, they can cause a significant reduction in QoL.

Most people with low vision in North India are either illiterate or don't go to parties, theatres. Further people from rural background were not able to answer the questions. We have introduced new questionnaires to get further insight into QoL for people from rural background. Some of the questions in available questionnaire related to watching movies/television, using mirrors or going to restaurants are not relevant for some of our patients as they do not indulge in any of these activities. Some other requirements such as reading religious books or visiting places of worship or cooking and cleaning are more important for a part of the Indian population. People were not interesting in answering such questions. So, assessment of QoL remains incomplete. To cover these shortcomings of NEI-VFQ25, we planned to make additional questionnaire. We have chosen the activities from their life style. Hence the present study is being undertaken to assess the QoL in patients with low vision, and to compare QoL in low vision using additional questionnaire and NEI-VFQ-25.

MATERIAL AND METHODS

Present study was carried out in outpatient department of Regional institute of Ophthalmology (RIO), PGIMS, Rohtak. Group I comprised of a total of 100 cases of low vision who belonged to category of moderate visual impairment. Group II comprised of a total of age matched 100 patients with normal vision. One hundred patients who presented to outpatient department of RIO, PGIMS, > 21 years of age, with visual acuity in better eye between 6/24 to 6/60 and 100 patients >21 years of age, with visual acuity in better eye between 5/60 to 3/60 (as measured by Snellen's chart) were included.

Informed and written consent was taken from all the patients. Each patient was assessed using a Snellen's chart placed 6 meters away in a well illuminated area. The tumbling E-chart was used for illiterate patients. Refraction, retinoscopy, slit-lamp examination, tonometry and fundoscopy was done. Patients were interviewed as per modified NEI-VFQ 25 and some additional questions pertinent to the lifestyle and requirement of patients. Reasons for low vision were also determined.

STATISTICAL ANALYSIS

The data was entered in Microsoft excel spreadsheet. The collected data was analyzed using SPSS Windows software version 21.0. The data was tested for normality and was compared using Student t-test as per normality conditions. The frequencies was analyzed using chi-square test. p values less than 0.05 was considered significant.

RESULTS

Mean age of group I patients was 59.26±12.61 years and 60.49±9.75 years in group II (p >0.05). A total of 33% male in group I and 55% male in group II found. Similarly, 67% female in group I and 45% female in group II found. Majority of patients were housewife in group I followed by 20% unemployed, 15% service class / retired persons and 16% were farmer. In group II, maximum number of patients were unemployed i.e. 36% followed by service class / retired persons 34%. A total of 77% in group I and 82% in group II found in good health. Six percent patients in group I and 4% in group II had diabetes mellitus. Maximum number of patient was illiterate in both the groups i.e. 56% and 47%, respectively.

On examination of right eye of group I patients, maximum number of patients had vision 6/24, 6/60 and 6/36 i.e. 23%, 24% and 17%, respectively. Similarly, in group II, we observed majority of patients had vision 3/60, 4/60 and 5/60 i.e. 16%, 35% and 27%, respectively.

Similarly, on examination of left eye of group I patients, maximum number of patients had vision 6/24, 6/36 and 6/60 i.e. 33%, 18% and 21%, respectively. Similarly, in group II, we observed majority of patients had vision 3/60, 4/60 and 5/60 i.e. 18%, 33% and 34%, respectively. A total of 1 patient each in group I and II found to be PL negative.

According to the best corrected visual acuity of right eye in group I patients, maximum number of patients had corrected vision 6/9 i.e. 11(11%) patients and in group II, 4% patients each with corrected vision 6/18 and 6/24. No improvement was seen in 63% patients in group I and 87% patients in group II. Pl negative was reported in 1 patient (in one eye) of group I and none in group II.

Regarding left eye examination of in group I patients, maximum number of patients had corrected vision 6/9 i.e. 9(9%) patients and in group II, 4% patients with corrected vision 6/9. No improvement was seen in 65% patients of group I and 84% in group II. PL negative was found in 1 patient of group I in one eye.

In group I, mean IOP (left eye) was 14.75 ± 4.69 and in group II, it was 14.40 ± 10.20 ($p > 0.05$). In group I, mean IOP (right eye) was 15.65 ± 3.51 and in group II, it was 14.62 ± 9.24 ($p > 0.05$). On fundus examination of right eye, we observed majority of patients had media hazy due to cataract in both the groups i.e. 66% and 64%, respectively followed by 24% patients in group I and 28% in group II within normal limits. Optic atrophy were seen in 4% patients of group I and 1% patient of group II. On fundus examination of left eye, media hazy due to cataract was observed in 66% patients of group I and 65% of group II. Optic atrophy was seen in 4% patients of group I and none in group II. A total of 25% patients in group I and 26% in group II found within normal limits. In the present study, we found a total of 67 patients in group I and 70 patients in group II with lenticular, 7% in group I and 6% in group II with corneal lenticular, 3% and 2% with corneal disorders in group I and II, respectively.

Table 1
Comparison of residential status among two groups

Residential status	Group I	Group II	Statistical analysis
Urban	40(40%)	38(38%)	p=0.771
Rural	60(60%)	62(62%)	

Table 1 shows residential status among two groups. In the present study a total of 40 patients belonged to urban area in group I and 38 in group II. Similarly, with reference to rural background, majority of patients in the present study belonged to rural areas. A total of 60 patients in group I and 62 in group II belonged to rural areas. On statistical analysis, the difference among these two groups were found to be statistically insignificant ($p > 0.05$).

Table 2
Comparison of mean score of questionnaires among two groups

Questionnaires	Group I Mean±SD	Group II Mean±SD	Statistical analysis
Part 1 Q.1	38.75±17.17	40.75±18.34	0.427
Part 1 Q.2	33.6±15.79	37.8±20.47	0.105
Part 1 Q.3	39.5±30.79	40.5±25.07	0.799
Part 1 Q.4	86.25±24.45	82.25±27.81	0.281
Part 1 Q.5	60.25±29.64	36.45±29.15	<0.001 Sig.
Part 1 Q.6	45.5±28.51	44.94±22.58	0.880
Part 1 Q.7	41.25±25.96	42.25±23.21	0.774

Part 1 Q.8	46.93±30.96	44.68±24.42	0.644
Part 1 Q.9	40.42±24.62	39.43±23.89	0.777
Part 1 Q.10	55.05±30.71	53.12±25.96	0.637
Part 1 Q.11	80.30±27.26	62.75±32.46	<0.001 Sig.
Part 1 Q.12	60.60±31.56	59.43±23.68	0.769
Part 1 Q.13	58.53±29.71	54.46±30.34	0.383
Part 1 Q.14	27.27±30.52	41.66±25.18	0.151
Part 1 Q.15a	-	-	-
Part 1 Q.15b	-	-	-
Part 1 Q.15c	-	-	-
Part 1 Q.16	20±21.54	43.75±43.81	0.09
Part 1 Q.17	36.25±28.95	47±27.81	<0.01 Sig.
Part 1 Q.18	41±26.95	45.5±27.14	0.240
Part 1 Q.19	84±26.71	83±24.06	0.781
Part 1 Q.20	50.50±34.25	55±27.06	0.305
Part 1 Q.21	39±28.27	37±21.46	0.573
Part 1 Q.22	50.75±26.22	46±24.80	0.189
Part 1 Q.23	63.25±31.87	45±27.75	<0.001 Sig.
Part 1 Q.24	62.25±30.46	54.25±29.31	<0.05 Sig.
Part 1 Q.25	39.5±34.30	45.75±28.43	0.162

Table 2 shows mean comparison of various questionnaires observed during the study period. With regard to various questionnaires, Part 1 Q. 5, Part 1 Q. 11, additional GSM/fairs, Part 1 Q. 17, Part 1 Q. 23 and Part 1 Q. 24 found to be statistically significant, when compared between two groups. It shows that category 2 people have more difficulty in reading ordinary print in newspaper, seeing how people react to things, going to street festivals / fairs, to accomplish less than they would because of their vision, to rely too much on what other people would tell them and they also need a lot of help from others because of their eye sight.

Table 3
Comparison of mean score of questionnaires among two groups

Questionnaires	Group I Mean±SD	Group II Mean±SD	Statistical analysis
Part 1 A.1	64.1±16.94	61.8±13.66	0.291
Part 1 A.2	47.1±18.38	50.2±13.63	0.177
Part 1 A.3	52.77±33.80	33.85±19.63	<0.001 Sig.
Part 1 A.4	52.34±41.24	56.89±25.12	0.468
Part 1 A.5	51.52±36.63	47.46±26.73	0.483
Part 1 A.6	53.75±30.64	45.25±27.22	<0.05 Sig.
Part 1 A.7	43.63±39.73	28.77±31.92	<0.05 Sig.
Part 1 A.8	44.01±32.03	40.41±32.25	0.524
Part 1 A.9	79.29±29.45	72.25±30.20	0.154
Part 1 Q11a	59±34.72	59±28.31	1
Part 1 Q11b	52.5±30.25	54.5±26.20	0.617
Part 1 Q12	54.5±34.15	47.5±26.25	0.100
Part 1 Q13	53±32.23	54.25±27.76	0.769

Table 3 depicts mean comparison of various questionnaires observed in the present study. Questions such as Part 1 A.3, Part 1 A.6 and Part 1 A.7 shows significant difference among both the groups and statistically found to be significant ($p < 0.001$ and < 0.05). Based on VFQ-25, category 2 peoples have more difficulty in reading small print in telephone book, on a medicine bottle, or on legal forms which wearing glasses, in recognising people you know from across a room and difficulty taking part in active sports or other outdoor activities that they enjoy (like jogging or walking). Rest other activities were insignificant.

Table 4
Comparison of mean score of additional questionnaires among two groups

Additional questionnaires	Group I Mean±SD	Group II Mean±SD	Statistical analysis
Playing card games	8±24.45	5.4±20.66	0.417
Counting money	65.65±34.05	72.8±29.20	0.113
Wall clock	41.4±30.38	34.2±29.71	0.09
Wrist watch	46±39.13	39.8±39.13	0.263
Cleaning pulses	29.4±32.09	21.2±29.10	<0.05 Sig.
Dialing phone numbers	29.6±36.56	35.2±35.97	0.276
Reading books	11.6±24.31	15.4±25.71	0.284
Difficulty in occupation	17±29.31	14.4±27.86	0.521
Additional VT/M/CHU	57.2±33.99	57±33.19	0.966
Additional GSM/Fairs	44.8±36.52	33.8±32.37	<0.05 Sig.

Abbreviations used: VT/M/CHU - visiting temple, mosque and church, GSM/Fairs: Street festivals and others

Table 4 shows various additional activities that noted during the study period and found to be comparable among both the groups except cleaning pulses and GSM/Fairs activities were found to be significant ($p < 0.05$).

DISCUSSION

Mean comparison of various questionnaires observed during the study period depicts that Part 1 Q. 5, Part 1 Q. 11, additional GSM/fairs, Part 1 Q. 17, Part 1 Q. 23 and Part 1 Q. 24 found to be statistically significant, when compared between two groups. It shows that category 1 people have more difficulty in reading ordinary print in newspaper, seeing how people react to things, going to street festivals / fairs, to accomplish less than they would because of their vision, to rely too much on what other people would tell them and they also need a lot of help from others because of their eye sight.

Based on VFQ-25, category 2 peoples have more difficulty in reading small print in telephone book, on a medicine bottle, or on legal forms which wearing glasses, in recognising people you know from across a room and difficulty taking part in active sports or other outdoor activities that they enjoy (like jogging or walking).

Many studies have been conducted in South India and outside India for validity and reliability of VFQ-25. The NEI-VFQ has already been standardized and translated into various languages all over the world including the countries - Italy,¹¹ Turkey,¹² Japan,¹³ Greece,¹⁴ America/Alaska,¹⁵ Nepal,¹⁶ Iran,¹⁷ Egypt,¹⁸ Serbia¹⁹ and Persia²⁰ for quality of life in visually impaired. Studies have also been conducted in India in Madurai,²¹ Andhra Pradesh²² and urban Puducherry²³ using different questionnaires.

Although, there was no similar study found in the literature, but we could find one study which dealt with glaucoma patients. In this study, Lim et al²⁴ reported 5429 subjects out of these, 178 were classified as having glaucoma. Compared to other subjects over the age of 40, glaucoma subjects had similar mean composite VFQ-9 scores. They found lower mean scores on the distance vision (glaucoma - 88.4, 95% CI: 84.3; 92.5 vs. none - 93.6, 95% CI: 93.0;94.1) and peripheral vision subscales (glaucoma - 94.0, 95% CI: 91.7;96.3 vs. none - 97.0, 95% CI: 96.7;97.4). Subjects who reported having a diagnosis of glaucoma but did not meet clinical criteria had a lower mean composite VFQ-9 score (88.1, 95% CI: 84.9;91.4) than those who did not report a diagnosis of glaucoma and did not have clinical evidence of the disease (92.4, 95% CI: 92.0;92.8). They concluded that in the NHANES, glaucoma subjects do not exhibit differing composite VFQ-9 scores from controls but do have lower peripheral and distance vision subscale scores. Belief of having a diagnosis of glaucoma results in lower quality of life scores whether the subject has clinical signs of the disease or not and recommended VFQ-9 suitable for use in evaluating glaucoma subjects' quality of life in large population-based surveys.

Additional questionnaire is more relevant to rural and illiterate population of India and is showing poor quality of life in category 2 people in comparison to category 1 but the change is not significant in all the parameters except cleansing pulses and GSM/Fairs activities ($p < 0.05$).

Based on the above findings, the present study can't be compared with other studies in the literature because this is de novo study. Previous studies were related to the reliability and validity of questionnaires.

CONCLUSION

The present study concluded that low vision affects quality of life of patients in both categories. Category 1 people who have more difficulty in reading ordinary print in newspaper, seeing how people react to things, going to street festivals / fairs, to accomplish less than they would because of their vision, to rely too much on what other people would tell them and they also need a lot of help from others because of their eye sight.

Category 2 peoples have more difficulty in reading small print in telephone book, on a medicine bottle, or on legal forms which wearing glasses, in recognising people you know from across a room and difficulty taking part in active sports or other outdoor activities that they enjoy (like jogging or walking).

Most common causes for low vision are: lenticular (cataract) 67% in group I and 70% in group II patients, followed by others 15% in group I and 7% in group II. Corneal lenticular was found in 7% patients of group I and 6% of group II. Similarly, corneal problems were observed in 3% in group I and 2% in group II patients. Posterior segment observed in 4% of group I and 5% of group II patients.

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