International Journal of Medical Ophthalmology

E-ISSN: 2663-8274
P-ISSN: 2663-8266
www.ophthalmoljournal.com
IJMO 2019; 1(2): 29-33
Received: 16-05-2019
Accepted: 20-09-2019

Dr. Geetanshu
Resident, Regional Institute of Ophthalmology, Pt. B.D. Sharma PGIMS, Rohtak, Haryana, India

Dr. Manisha Rathi
Professor, Regional Institute of Ophthalmology, Pt. B.D. Sharma PGIMS, Rohtak, Haryana, India

Dr. Sumit Sachdeva
Professor, Regional Institute of Ophthalmology, Pt. B.D. Sharma PGIMS, Rohtak, Haryana, India

Corresponding Author:
Dr. Geetanshu
Resident, Regional Institute of Ophthalmology, Pt. B.D. Sharma PGIMS, Rohtak, Haryana, India

Evaluation and comparison of quality of life in different categories of low vision

Dr. Geetanshu, Dr. Manisha Rathi and Dr. Sumit Sachdeva

DOI: https://doi.org/10.33545/26638266.2019.v1.i2a.17

Abstract
Objectives: To study the quality of life (QoL) in patients with low vision and comparison of QoL in patients with moderate and severe visual impairment.
Material and Methods: Category 1 comprised of a total of 100 cases of low vision who belonged to category of moderate visual impairment and Category 2 comprised of a total of age matched 100 patients with low vision who belonged to the category of severe visual impairment.
Results: Mean age of Category 1 patients was 59.26±12.61 years and 60.49±9.75 years in Category 2 ($p > 0.05$). Mean comparison of various questions asked related to IOL during the study period was found to be statistically significant, when compared between the two categories. 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 and accomplish less than they would because of their vision. They relied too much on others because of their eye sight. Based on NEI-VFQ-25, Category 2 people have more difficulty in reading small print in telephone book, on a medicine bottle, or on legal forms, reading and outdoor activities.
Conclusion: Low vision affects quality of life of patients in both categories: Category 2 people have more difficulty in reading and outdoor activities to rely too much on other people because of their eye sight.

Keywords: Low vision, quality of life (QoL)

Introduction
Visual impairment' includes both low vision and blindness. Low vision includes Category 1 (moderate visual impairment) is defined as visual acuity between 6/24 to 6/60 in better eye and Category 2 (severe visual impairment) is defined as visual acuity between 5/60 to 3/60 in the better eye [1]. In India, prevalence of visual impairment is 4.6% per 100 population and prevalence of blindness is 0.7% per 100 population [2].
Globally the number of people of all ages who are visually impaired is estimated to be 285 million, of whom 39 million are blind. The major causes of visual impairment are uncorrected refractive errors (43%) and cataract (33%). The commonest cause of blindness is cataract (51%). Preventable causes are 80% of the global burden [2].
Normal vision is essential for the functional, social, physical and emotional well-being of an individual [3]. People with low vision are at increased risk of falls and road side accidents [4]. 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 [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 (NEI-VFQ-51). Its shorter version was made in the year 2,000 and called National Eye Institute Visual Function Questionnaire NEI-VFQ25. NEI-VFQ25 is a widely used technique for assessment of vision specific quality of life. NEI-VFQ25 measures the following vision dependent functions: General health, general vision, ocular pain, near activities, distant activities, social functioning, mental health, role difficulties, dependency, driving, colour vision and peripheral vision [6].
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 [7].
To the best of our knowledge, no study has been conducted in North India using these questionnaires to assess the correlation of QoL in patients with low vision. Hence the present study is being undertaken to assess the QoL in patients with low vision.

Material and Methods

The present study was carried out in two categories of 100 patients each who presented to the outpatient department of Regional institute of Ophthalmology (RIO), PGIMS, Rohtak. Category 1 comprised 100 patients of low vision who belonged to category of moderate visual impairment. Category 2 comprised a total of age matched 100 patients with low vision who belonged to the category of severe visual impairment. 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 in Category 1 and Category 2, respectively.

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, radioscopy, slit-lamp examination, tonometry and fundoscopy was done. Patients were interviewed as per NEI-VFQ 25. 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 were analyzed using chi-square test. p values less than 0.05 were considered significant.

Results

Mean age of Category 1 and 2 patients was 59.26±12.61 years and 60.49±9.75 years, respectively (p>0.05). There were a total of 33% males in Category 1 and 55% males in Category 2. Similarly, there were 67% females in Category 1 and 45% females in Category 2. Majority of patients were housewife in Category 1 followed by 20% unemployed, 15% service class / retired persons and 16% were labourer doing farming. In Category 2, maximum number of male patients were unemployed i.e. 36% followed by service class / retired persons 34%. A total of 77% in Category 1 and 82% in Category 2 were found to be in good health. Six percent patients in Category 1 and 4% in Category 2 had diabetes mellitus. Maximum number of patients were illiterate in both the categories i.e. 56% and 47%, respectively.

On examination of right eye of Category 1 patients, maximum number of patients had uncorrected vision 6/24, 6/60 and 6/36 i.e. 23%, 24% and 17%, respectively. Similarly, in Category 2, 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 Category 1 patients, maximum number of patients had vision 6/24, 6/36 and 6/60 i.e. 33%, 18% and 21%, respectively. Similarly, in Category 2, 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 Category 1 and 2 found to be PL negative in one eye.

According to the best corrected visual acuity of right eye in Category 1 patients, maximum number of patients had corrected vision 6/9 i.e. 11(11%) patients and in Category 2, 4% patients each had corrected vision 6/18 and 6/24. No improvement was seen in 63% patients in Category 1 and 87% patients in Category 2. Pl negative was reported in 1 eye of Category 1 and one in Category 2 in one eye.

Regarding left eye examination of in Category 1 patients, maximum number of patients had corrected vision 6/9 i.e. 9(9%) patients and in Category 2, 4% patients with corrected vision 6/9. No improvement was seen in 65% patients of Category 1 and 84% in Category 2. PL negative was found in 1 patient of Category 1.

In Category 1, mean IOP (left eye) was 14.75±4.69 and in Category 2, it was 14.40±10.20 (p >0.05). In Category 1, mean IOP (right eye) was 15.65±3.51 and in Category 2, 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 categories i.e. 66% and 64%, respectively followed by 24% patients in Category 1 and 28% in Category 2 within normal limits. Near total optic atrophy were seen in 4% patients of Category 1 in 1 eye and 1% patient of Category 2. On fundus examination of left eye, media was hazy due to cataract in 66% patients of Category 1 and 65% of Category 2. Optic atrophy was seen in 4% patients of Category 1 and none in Category 2. In the present study, a total of 67 patients in Category 1 and 70 patients in Category 2 had cataract, 7% in Category 1 and 6% in Category 2 had corneal and lenticular opacities, 3% and 2% had corneal disorders in Category 1 and 2, respectively A study on the prevalence of HIV in Indian prisons revealed that 1.7% of male and 9.5% of female inmates were HIV positive. This is significantly higher than the national HIV prevalence of 0.32% in males and 0.22% in females [4].

Tuberculosis in prisoners

This apart from a combination of other factors like inadequate ventilation, poor nutritional seen in Indian prisons. High rates of TB have been reported by Human Rights Watch in India

Table 1: comparison of mean score of questionnaires among two categories

Questionnaires	Category 1 Mean ± SD	Category 2 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 1 shows mean comparison of various questions asked during the study period. With regard to various questionnaires, Part 1 Q. 5, Part 1 Q. 11, Part 1 Q. 17, Part 1 Q. 23 and Part 1 Q. 24 were found to be statistically significant, when compared between two categories. 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 2: Comparison of mean score of questionnaires among two categories

Questionnaires	Category 1 Mean ± SD	Category 2 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 2 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 categories 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 3 also shows only significant mean score of questionnaires.

Table 3: Significant mean score of questionnaires among two categories

Questionnaires	Category 1 Mean±SD	Category 2 Mean±SD	Statistical analysis
Part 1 Q.5	60.25±29.64	36.45±29.15	<0.001 Sig.
Part 1 Q.11	80.30±27.26	62.75±32.46	<0.001 Sig.
Part 1 Q.17	36.25±28.95	47±27.81	<0.01 Sig.
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 A.3	52.77±33.80	33.85±19.63	<0.001 Sig.
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.

Discussion

Mean comparison of various questionnaires observed during the study period depicts that Part 1 Q. 5, Part 1 Q. 11, Part 1 Q. 17, Part 1 Q. 23 and Part 1 Q. 24 found to be statistically significant, when compared between two categories. It shows that Category 2 people have more difficulty in reading ordinary print in newspaper, more difficulty in reading small print in telephone book, on a medicine bottle, or on legal forms while wearing glasses, 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 NEI-VFQ-25, Category 2 people have more difficulty in recognising people they 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.
Many studies have been conducted in South India and outside India for validity and reliability of NEI-VFQ-25. The NEI-VFQ has already been standardized and translated into various languages all over the world including the countries-Italy [8], Turkey [9], Japan [10], Greece [11], America/ Alaska [12], Nepal [13], Iran [14], Egypt [15], Serbia [16] and Persia [17] for quality of life in visually impaired. Studies have also been conducted in India in Madurai [18], Andhra Pradesh [19] and urban Puducherry [21] 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 al.* [21] included 5429 subjects. They concluded that in the NHANES, glaucoma subjects do not exhibit differing compositeVFQ-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' QoL in large population-based surveys.
Based on the above findings, the present study cannot be compared with other studies in the literature because this being conducted for the first time in North Indian population.

Conclusion

Low vision includes Category 1 as uncorrected visual acuity between 6/24 to 6/60 in better eye and category 2 defined as uncorrected visual acuity between 5/60 to 3/60 in the better eye called as moderate and severe visual impairment respectively.
The present study concluded that low vision affects quality of life of patients in both categories. Category 2 people who have severe visual impairment had 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 people 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.
People in Category 2 have more difficulty in seeing dark coloured cars, difficulty in moving around in a darkened theatre, dependence on others at night or poor light, difficulty in seeing colours at night, difficulty in seeing furniture in dimly lit room with dark floors, difficulty seeing in candle light, difficulty with peripheral vision in bright sunlight, difficulty in driving in rain at night, difficulty in driving at night, difficulty in driving at dawn or dusk due to glare. Category 2 people worry more to make a mistake at social event under poor – lighting conditions. Category 2 people feel bad or depressed about their ability to see at night / poor lighting conditions, feel bad / depressed for their inability to do all that they would like to and also because they can't help others as much as they can because of their vision at night under poor lightening.
The present study also compared quality of life in both categories. It concluded that Category 2 people have poor quality of life in comparison to Category 1.
Most common causes for low vision are: lenticular (cataract) 67% in Category 1 and 70% in Category 2 patients, followed by others 15% in Category 1 and 7% in Category 22. Corneal lenticular opacities were found in 7% patients of Category 1 and 6% of Category 22. Similarly, corneal problems were observed in 3% in Category 1 and 2% in Category 2 patients. Posterior segment observed in 4% of Category 1 and 5% of Category 2 patients. Thus, majority of patients had treatable causes of low vision.

References

1. International statistical classification of diseases and related health problems.10th revision. 5th Ed, 2011. Available from: http://who.int/iris/ bitstream/10665/246208/1/978924159165v1-eng.pdf.
2. Pascolini D, Maiotti SPM. Global estimates of visual impairment, 2010. Br J Ophthalmol. 2012; 96:614-8.
3. Adigun K, Oluleye TS, Ladipo MM, Olowookere SA. Quality of life in patients with visual impairment in Ibadan: a clinical study in primary care. J Multidiscip Healthc. 2014; 7:173-8.
4. Mueleners LB, Hendrie D, Lee AH, Ng JQ, Morlet N. The effectiveness of cataract surgery in reducing motor vehicle crashes: A whole population study using linked data. Ophthalmic Epidemiol. 2012; 19:23-8.
5. Van NRM, Vreeken HL, Comijs HC, Deeg DJ, Van rens GH. Role of vision loss, functional limitations and the supporting network in depression in a general population. Acta Ophthalmol. 2016; 94:76-82.
6. Mangione CM, Lee P, Gutierrez PR, Spritzer K, Berry S, Hays RD. Development of the 25-list-item National Eye Institute Visual Function Questionnaire. Arch Ophthalmol. 2001; 119:1050-8.
7. Visual impairment and blindness. Available from: http://gmch.gov.in>e study> blindness.
8. Rossi P, Delcampe A, Gueudry J, Duncombe A, Gabison E, Doan S *et al*. Gas permeable sclera lens for management of severe kerato-conjunctivitis sicca secondary to chronic graft-versus-host disease. J Fr Ophthalmol. 2015; 38:793-9.
9. Toprak AB, Eser E, Guler C, Baser FE, Mayali H. Cross validation of the Turkish version of the 25-item National Eye Institute Visual Functioning Questionnaire (NEI-VFQ25). Ophthalmic Epidemiol. 2005; 12:259-69.
10. Suzukamo Y, Oshika T, Yuzawa M, Tokuda Y, Tomidokoro A, Oki K *et al*. Psychometric properties of the 25-item National Eye Institute Visual Functionning Questionnaire (NEI-VFQ 25), Japanese Version. Health Qual Life Outcomes. 2005; 3:65.
11. Labiris G, Katsanos A, Fanariotis M, Tsirouki T, Pefkianaki M, Chatzoulis D *et al*. Psychometric properties of the Greek version of the NEI-VFQ 25. BMC Ophthalmol. 2008; 8:4.
12. Mc Clure TM, Choi D, Becker T, Cioffi GA, Mansberger SL. The effect of visua impairment on vision-related quality of life in American Indian/ Alaskan Natives. Ophthalmic Epidemiol. 2009; 16:128-

35.
13. Gyawali R, Paudel N, Adhikari P. Quality of life in Nepalese patients with low vision and impact of low vision services. J Optom. 2012; 5:188-95.
14. Pakpour AH, Zeidi IM, Saffari M, Labiris G, Fridlund B. Psychometric properties of the National Eye Institute refractive error correction quality of life questionnaire among Iranian patients. Oman J Ophthalmol. 2013; 6:37-43.
15. Abdelfattah NS, Amgad M, Salama AA, Israel ME, Elhawary GA, Radwan AE *et al*. Development of an Arabic version of the National Eye Institute Vision Function Questionnaire as a tool to study eye disease patients in Egypt. Int J Ophthalmol. 2014; 7:891-7.
16. Kovac B, Vukosavljevic M, Kovac JD, Smiljanic M, Grgurevic A. Validation and cross-cultural adaptation of the National Eye Institute Visual Function Questionnaire (NEI-VFQ 25) in Serbian patients. Health Qual Life Outcomes. 2015; 13:142.
17. Asgari S, Hashemi H, Nedjat S, Fotouhi A, Shahnazi A. Persian version of the 25-item National Eye Institute Visual Functioning Questionnaire (NEI-VFQ 39): A validation study. Iran J Ophthalmol. 2017; 23:5-14.
18. Fletcher AE, Ellwein LB, Selvaraj S, Vijaykumar V, Rahmathullah R, Thulasiraj RD. Measurements of vision function and quality of life in patients with cataracts in Southern India. Report of instrument development. Arch Ophthalmol. 1997; 115:767-74.
19. Nutheti R, Shamanna BR, Nirmalan PK, Keefe JE, Krishanaih S, Rao GN *et al*, Impact of impaired vision and eye disease on quality of life in Andhra-pradesh. Invest Ophthalmol Vis Sci. 2006; 47:4742-8.
20. Kumar SG, Majumdar AGP. Quality of life and its associated factors using WHO-QOL-BREF among elderly in urban Puducherry, India. J Clin Diagn Res 2014; 8:54-7.
21. Lim AK, Shaikh Y, Yu F, Coleman AL. Quality of Life in Glaucoma as Measured by the Abbreviated National Eye Institute Visual Function Questionnaire. Invest Ophthalmol Vis Sci, 2011, 52.