Quality of life among patients with glaucoma in Riyadh

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Abstract

Background: There is lack of research which identifies and analyses the quality of life among patients with primary open angle glaucoma by using the National Eye Institute Visual Function Questionnaire-25 (NEI VFQ-25) and the World Health Organization Quality of Life abbreviated version questionnaire (WHOQOL-BREF) tool. Therefore, the aim of the current study was to assess the quality of life among patients in Riyadh, Saudi Arabia with primary open angle glaucoma using these tools.

Methodology: This was a cross sectional study conducted among patients with primary open angle glaucoma who lived in Riyadh, Saudi Arabia. Data was collected via an online questionnaire and through contact with the patients in Arabic. The questionnaire included two main tools to assess the quality of life among patients with open angle glaucoma including the National Eye Institute Visual Function Questionnaire-25 (NEI VFQ-25) and the World Health Organization Quality of Life abbreviated version questionnaire (WHOQOL-BREF) tool.

Results: In the current study, we collected 392 responses to our questionnaire from patients who were diagnosed with open angle glaucoma. The mean score of the NEI VFQ-25 was 69.68 (SD=21.08) where the highest scores were reported in colour vision (76.47 (SD=27.28)), followed by social functioning (74.32 (SD=25.21)), general vision (73.55 (SD=16.72)), general health (71.4 (SD=18.64), and distance activities (71.46 (SD=23.53)). The poorest quality of life because of open angle glaucoma was reported considering role difficulties (65.53 (SD=27.58)), ocular pain (66.01 (SD=23.54)) and mental health (66.06 (SD=23.84)). According to the WHOQOL-BREF, the mean total score was 3.38 (SD=0.72) out of score of 5 where the highest quality of life was reported for physical health (61.04 (SD=18.39) while the worst scores were reported regarding the environmental domain (58.4 (SD=18.14). There is a significant difference between patients with better vision compared with those with poor vision in all domains of both tools.

Conclusion: The current study confirmed the previous studies which showed that open angle glaucoma had a significant negative impact on the patients' quality of life.

Keywords: quality of life, glaucoma, Riyadh

Introduction

As it causes irreversible blindness, glaucoma is the second leading cause of vision loss worldwide [1]. Glaucoma is a group of diseases in which there is an increase in the intraocular pressure which leads to optic nerve destruction due to a buildup of fluid and impaired drainage. Primary open angle glaucoma is a progressive type of glaucoma in which there is buildup of fluid which cannot naturally drain. Patients gradually lose their field of vision. Angle closure glaucoma is a sudden rise of fluid within the eye with concomitant manifestations such as blurry vision, headaches, and pain in the eye [2]. Saudi citizens are mainly affected by primary open angle glaucoma as it is the most common type of adult glaucoma in Saudi Arabia followed by angle closure glaucoma and juvenile glaucoma [3]. The estimated prevalence of glaucoma in the country is 5.6% [4] while 2.2% of the worldwide population is affected by the disease. The predicted incidence of the disease worldwide exceeds 110 million [5]. As the disease progresses, patients with glaucoma experience the narrowing of their field of vision which limits their physical activity. While central vision is the last visual field affected it puts the patient at risk of car accidents and trauma, limits their physical activity and leads to a reduction in their quality of life [6]. Sample size, the lack of a control group and the questionnaire are designed specifically to identify the quality of life among glaucoma patients. Quality of life may not influence the disease burden quickly, but it helps the physician to work collaboratively with patients to minimize the effect of the disease on their lives. Being aware of the quality of life of any patient is crucial to achieve the best outcome.

There is a lack of research which identifies and analyses the quality of life among patients with primary open angle glaucoma using the National Eye Institute Visual Function Questionnaire-25 (NEI VFQ-25) and the World Health Organization Quality of Life abbreviated version questionnaire (WHOQOL-BREF) tool. Therefore, we conducted a cross-sectional study to assess the quality of life among patients with primary open angle glaucoma by using these tools in Riyadh, Saudi Arabia.

Methodology

This was a cross sectional study conducted among patients with primary open angle glaucoma who lived in Riyadh Saudi Arabia. The sample size needed was calculated with the EPI INFO (Epidemiological Information Package) version 7.2. According to the software, the sample size needed was at least 384 participants, using a margin of error of ± 5%, a confidence level of 95%, and a 50% expected frequency. The inclusion criteria included males and females who were diagnosed with primary open angle glaucoma and who were aged 18 and above. Patients who were diagnosed with angle closure glaucoma or cataracts were excluded. The questionnaire was an online self-administered questionnaire. Data was collected via an online questionnaire, through contact with the patients in Arabic.

The questionnaire included two main tools to assess the quality of life among patients with open angle glaucoma including the National Eye Institute Visual Function Questionnaire-25 (NEI VFQ-25) and the World Health Organization Quality of Life abbreviated version questionnaire (WHOQOL-BREF) tool. The National Eye Institute (NEI) sponsored the development of the VFQ-25 with the goal of creating a survey that would measure the dimensions of self-reported vision-targeted health status that is important for persons who have chronic eye diseases. The VFQ25 generates the following vision-targeted subscales: global vision rating, difficulty with near vision activities, difficulty with distance vision activities, limitations functioning socially, role limitations, dependency on others, mental health symptoms, driving difficulties, limitations with peripheral and colour vision, and ocular pain. For each subscale, the scores were ranged between 0-100 points where higher results indicated a better quality of life. For the WHOQOL-BREF, the total scores of the questions were calculated where higher scores indicated better results.

MS Excel was used for data entry, cleaning, and coding while SPSS version 26 was used for data analysis. Frequency and percent were used for the description of categorical variables while mean, standard deviation, maximum and minimum were used for description of ongoing variables. ANOVA test was used to find the correlation between scores of both tools with the status of vision. All statements were considered significant if p value is lower than 0.05. The study was conducted after receiving ethical approval from the Imam Mohammed Ibn Saud Islamic University, College of Medicine. All patients had to provide consent before participating in the questionnaire.

Results

In the study, we collected 392 responses to our questionnaire from patients who were diagnosed with open angle glaucoma. Among the patients, 31.6 % reported having excellent vision (with glasses or lenses among users) while 32.1 % reported good vision, 26.8 % reported fair vision while poor and very poor vision were reported in 6.9 % and 2.6 % of the participants. No patients reported blindness (Figure 1).

The National Eye Institute Visual Function Questionnaire-25 (NEI VFQ-25) was completed by patients with open angle glaucoma to assess the quality of life according to 12 main topics. For each domain, the range was between 0 % and 100 % where 100 % reported the highest and 0 % reported the lowest possible score. The highest scores were reported in colour vision (76.47% (SD=27.28)), followed by social functioning (74.32% (SD=25.21)), general vision (73.55% (SD=16.72)), general health (71.4 % (SD=18.64), and distance activities (71.46 % (SD=23.53)). The poorest quality of life because of open angle glaucoma was reported considering role difficulties (65.53% (SD=27.58)), ocular pain (66.01% (SD=23.54)) and mental health (66.06% (SD=23.84)). The total VFQ-25 score of the sample was 69.68% (SD=21.08) (Table 1).

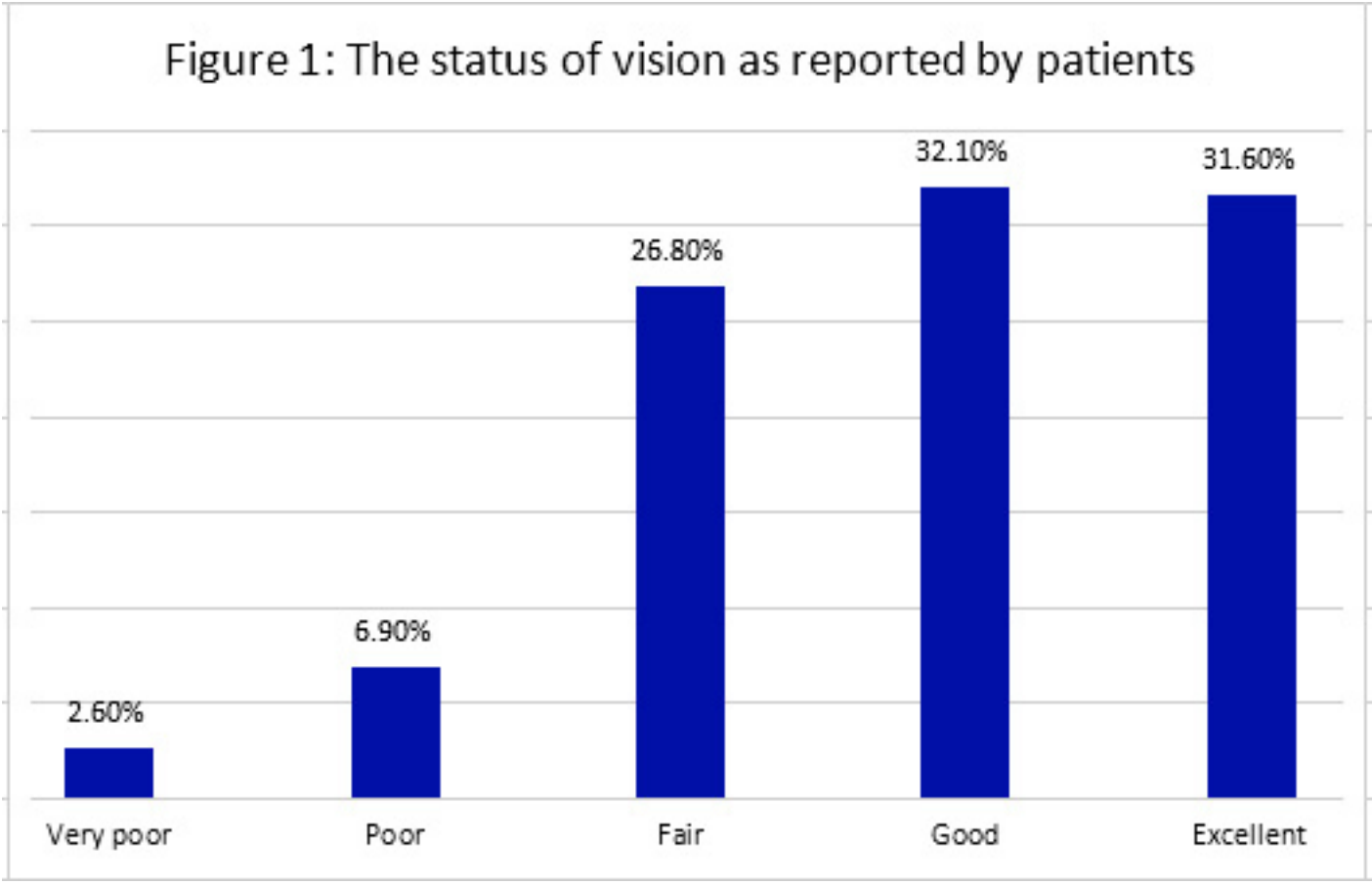

Table 1: National Eye Institute Visual Function Questionnaire-25 (NEI VFQ-25) subscales and total scores

	Mean	Standard Deviation	Minimum	Maximum
General health	71.40	18.64	15.00	100.00
General vision	73.55	16.72	25.00	100.00
Ocular pain	66.01	23.54	.00	100.00
Near activities	69.46	23.43	.00	100.00
Distance activities	71.46	23.53	4.20	100.00
Social functioning	74.32	25.21	.00	100.00
Mental health	66.06	23.84	.00	100.00
Role difficulties	65.63	27.58	.00	100.00
Dependency	69.77	26.65	.00	100.00
Driving	67.93	23.86	8.30	100.00
Colour vision	76.47	27.28	.00	100.00
Peripheral vision	69.83	25.98	.00	100.00
Total	69.68	21.08	6.00	100.00

Also the World Health Organization Quality of Life abbreviated version questionnaire (WHOQOL-BREF) tool was used to assess the quality of life. Because of the presence of two scoring systems used by different studies (one scored between 4-20 and the other scored between 0-100), in the current study, we assessed both scores. The highest quality of life was reported in physical health (61.04% (SD=18.39) while the worst scores were reported regarding environmental domain (58.4% (SD=18.14) while psychological and social relationships domains had scores of 58.4% (SD=18.56), and 59.87% (SD=21.58) respectively. In total, the mean total score was 3.38 (SD=0.72) out of score of 5 (Table 2)

Table 2: World Health Organization Quality of Life (WHOQOL-BREF) abbreviated version questionnaire scores

		Mean	Standard Deviation	Minimum	Maximum
Domain 1: Physical health	Scores (4-20)	13.75	2.94	4.00	20.00
	Scores (0-100)	61.04	18.39	.00	100.00
Domain 2: Psychological	Scores (4-20)	13.32	2.97	4.00	20.00
	Scores (0-100)	58.40	18.56	.00	100.00
Domain3:Social relationships	Scores (4-20)	13.57	3.44	4.00	20.00
	Scores (0-100)	59.87	21.58	.00	100.00
Domain 4: Environment	Scores (4-20)	13.32	2.90	4.00	20.00
	Scores (0-100)	58.40	18.14	.00	100.00
Total	Score (1-5)	3.38	.72	1.00	5.00

As shown in Table 3, there is a significant difference between patients with better vision compared with those with poor vision in all domains of both tools. Patients reporting excellent vision reported a higher quality of life in the physical health domain (66.88% vs 53.3% compared to those with very poor vision), in the psychological domain (61.81% vs 53.9 %), in the social relationships domain (65.22% vs 50.00%) and environmental domain (64.15% vs 48.10 %). Considering the total score, we found that the patients who reported excellent had a total score of 3.53 which is significantly higher than those who reported good vision (3.46), fair vision (3.21), poor vision (3.11) and very poor vision (3.10) (P=0.000). Considering the domain of VFQ-25, better vision was significantly associated with better scores in all domains where a total VFQ-25 for those with excellent vision was 75.61% which is significantly higher than reported by those with good vision (72.81 %), fair vision (65.57 %), poor vision (52.55 %) and very poor vision (46.04 %) (P=0.000) (Table 3).

	Vision										
	Very poor		Poor		Fair		Good		Excellent		
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Domain 1: Physical health	53.30	28.28	50.81	15.23	55.70	14.58	62.54	17.03	66.88	20.11	.000*
Domain 2: Psychological	53.90	26.47	50.07	14.02	55.07	15.47	59.96	19.49	61.81	19.32	0.001*
Domain 3: Social relationships	50.00	32.56	50.96	18.89	54.88	17.54	61.47	22.44	65.22	21.84	.000*
Domain 4: Environment	48.10	25.00	51.07	14.70	53.68	13.92	59.05	18.54	64.15	19.19	.000*
Total	3.10	1.20	3.11	.51	3.21	.55	3.46	.73	3.53	.77	.000*
General health	52.00	22.79	51.85	19.17	62.76	15.15	73.06	16.02	82.86	14.84	.000*
General vision	42.50	13.18	47.78	9.74	63.33	8.34	75.67	10.28	88.15	12.52	.000*
Ocular pain	43.75	33.46	49.07	20.49	62.74	18.51	69.44	21.54	70.77	26.14	.000*
Near activities	46.25	35.66	51.79	17.64	63.64	18.10	73.76	19.46	75.75	26.91	.000*
Distance activities	50.92	35.22	52.25	17.95	66.91	19.82	75.80	20.85	76.73	25.42	.000*
Social functioning	47.50	37.28	57.71	21.55	69.05	22.87	80.13	22.38	78.67	25.95	.000*
Mental health	42.53	32.78	52.57	17.95	63.42	19.87	67.28	23.33	71.90	25.44	.000*
Role difficulties	43.14	37.44	50.48	17.76	64.84	21.76	67.33	26.97	69.67	31.58	.000*
Dependency	48.14	35.96	56.28	23.64	68.35	21.33	71.45	25.91	73.95	29.64	.000*
Driving	37.50	42.22	56.25	22.93	65.12	19.76	72.60	19.83	68.86	27.91	.000*
Colour vision	52.50	41.58	62.96	24.39	70.95	23.03	82.54	24.75	79.84	29.68	.000*
Peripheral vision	40.00	31.62	52.78	23.34	67.38	21.12	71.03	25.38	76.81	27.08	.000*
Total	46.06	30.39	52.55	14.35	65.57	16.44	72.81	18.37	75.61	23.68	.000*

Table 3: The relationship between the state of vision and quality of life

Discussion

Patients-reported outcomes of some conditions which include their quality of life (QoL) are considered an important measurement to evaluate the burden of disease and assess the evaluation of any therapeutic interventions [7]. The NEI-VFQ-25 is one of the most commonly used questionnaires that are used to assess the vision-related quality of life in patients with different ocular disorders including glaucoma [8]. This condition is associated with a negative impact on the overall score and the different subdomains of the NEI-VFQ-25, and this effect is correlated with the severity of loss of the glaucomatous visual field [9–12]. In the current study, the average overall score for quality of life using BEI-VFQ-25 was 69.68 points. In the study of conducted among patients with glaucoma Picanço A et al. reported a quality of life of 77.62 points [8]. Another study, conducted by Pinheiro et al. reported a quality of life for patients with glaucoma of 73.13 [13], and a study, Los Angeles Latino Eye, reported a score of 76.45 among patients with glaucoma [14]. Moreover, a study by Kalyani et al., a cross-sectional study in 2018 of 200 patients attending a tertiary care hospital in western India's glaucoma clinic, assessed the impact of primary glaucoma of varying severity and duration on psychosocial functioning and quality of life using the National Eye Institute Visual Function Questionnaire (NEIVFQ)-25. The average NEIVFQ-25 composite score was 74.4 ± 18.6 [15]. Furthermore, another cross-sectional study was conducted in Brazil in 2018 to evaluate the impact of visual acuity, visual field damage, and other factors affecting the quality of life of 49 Brazilian patients with glaucoma. Results were based on the presence of reproducible standard automated perimetry defects in at least one eye at the time of evaluation where the results showed that the standard deviation of the sample was 63.79±15.59 [1]. Additionally, the study of the Early Manifest Glaucoma Trial showed an average of 88.8 [16], and the study by Onakoya et al. reported an average quality of life among patients with glaucoma of 85.2 points [17].

The current study reported that the most severe impacts to quality of life due to open angle were regarding role difficulties (65.53 (SD=27.58)), ocular pain (66.01 (SD=23.54)) and mental health (66.06 (SD=23.84)), while participants reported better averages for colour vision (76.47 (SD=27.28)), social functioning (74.32 (SD=25.21)), general vision (73.55 (SD=16.72)), general health (71.4 (SD=18.64), and distance activities (71.46 (SD=23.53)). This is similar to the results of Picanco A et al. who reported the lowest averages for the subdomains 'eye pain', 'mental health' and 'general sight', and better averages for 'color vision' and 'social aspects' [8]. In another cross-sectional study conducted by Wu et al., the authors commented that the worst scores were reported in general health, general vision, and limitations to role while the highest scores reported impacts to colour vision, social functioning, and driving [18]. Moreover, Labiris et al. reported that general health, mental health, and general vision showed the lowest scores while social functioning, central vision, and peripheral vision showed the highest scores [19].

In comparison with the results for other ocular conditions or within the normal population, many studies revealed that the total scores of the general population were significantly higher when compared with patients with primary open angle glaucoma which indicated they enjoyed a better quality of life [20–24]. In a study by Mangione et al., the overall scores were significantly lower in patients with different chronic eye conditions including primary open angle glaucoma (80.2 (SD=12.5)) than reported in a reference sample of participants with no evidence of an underlying of eye condition (88.1 (SD=15.3)) however, it was higher than reported in patients with age-related macular degeneration (AMD) (67.1 (SD=13.4)) [23].

In the current study, we used the WHOQOL-BREF questionnaire to assess the social impact of eye disease among patients with primary open angle glaucoma. The results of our study showed a total score of 3.38 (67.6 on scale of 0-100) where the worst scores were reported regarding environmental domain (58.4 (SD=18.14)). In a previous study, conducted in southern India, the authors reported that patients with glaucoma had lower mean scores than patients without any visual impairment (62.6 vs 84.4 respectively) and patients with other eye diseases including 78.1 with refractive errors, 74.4 with cataracts and 72.7 with retinal disease [25].

The current study confirmed that deteriorating vision and a diagnosis of primary open angle glaucoma were associated with lower scores using both tools. These lower scores indicated a poorer quality of life for those patients. In the study by Picanco et al, the authors reported that generally, responses from patients with mild defects showed higher medians in the NEI-VFQ-25 which indicated a better QoL when compared with patients who had moderate or severe defects in their vision [8]. In another study, the authors showed that there is a significant correlation between the NEI-VFQ-25 values and low visual acuity in the best eye, worse perimetric mean deviation and crystalline opacities [16]. In study by Kalyani et al., the authors reported that the mean scores for mild, moderate, and severe glaucoma groups were 87.0 (SD 7.2), 75.9 (SD 8.1), and 47.0 (SD 13.7), respectively indicating that the quality of life was reduced for patients with severe glaucoma [15].

In conclusion, the current study confirmed findings from previous studies which had shown that open angle glaucoma had a significant negative impact on the quality of life of patients with this diagnosis. These reductions in the quality of life mostly occurred in the environmental domains, ocular pain, and mental health. More severe cases of glaucoma were associated with an increasingly negative impact on the quality of life. Further investigation is required to assess the demographic factors of patients to exclude the impact on non-modified factors.

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