ORIGINAL ARTICLE

Quality of Life Assessment of Glaucoma Patients Based on Glaucoma Symptom Scale and Glaucoma Quality of Life-15 Score at M. Djamil Hospital Padang

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ABSTRACT

Objective : To determine the Quality of Life glaucoma patients using Glaucoma Symptom Scale(GSS) and Glaucoma Quality Of Life-15 Score (GQL-15)
Method : This was a cross sectional study. Subjects were patients diagnosed with primary glaucoma, aged >18 years, and able to fully comprehend the quiz on their regular visits. One hundred glaucoma patients were evaluated for their symptoms using Glaucoma Symptom Scale (GSS), and their ability to perform daily activities using the Glaucoma Quality of Life-15 Questionnaire (GQL-15). We analyze the correlation between the age, sex, visual acuity, medical and surgical treatment to the patients' quality of life.
Results: Data shows that there were significant differences between the visual GSS and the GQL-15 score among respondents with unilateral blindness, bilateral blindness, and no blindness, which is patients with bilateral blindness have the worsen quality of life. The other GSS and GQL-15 statistical test showed no significant result.
Conclusion: Quality of life assesment in glaucoma patient is an essential part to provide the most suitable and convenient treatment both in terms of vision and also improving their quality of life. GSS and GQL-15 were the suitable instrument to asses and determine the Quality of Life glaucoma patient in clinical practice.

Key words: Glaucoma Quality of Life, Glaucoma Symptom Scale (GSS), The Glaucoma Quality of Life-15 Questionnaire (GQL-15).

The global burden due to glaucoma is still high and will continue to increase. Currently glaucoma is number 2 cause of blindness almost all over the world, and the cause of permanent blindness (irreversible) in the world. Data from the WHO in 2010, estimated 39 million people worldwide suffer from blindness, and glaucoma accounted for 3.2 million. In 2020, an estimated 79 million people worldwide will suffer from glaucoma, either open-angle or angle-closure, and 11.2 million of them will be blind. Blindness will cause dependence of someone to get help from other people in their daily activities.[1,2,3,4]

Symptoms experienced by patients with glaucoma vary depending on the type of

glaucoma, whether acute or chronic. Primary open angle glaucoma is the most common form of glaucoma, estimated at least 90% of all cases of glaucoma. Glaucoma can show no symptoms so the patient does not feel anything such as loss of vision, but the nerve is slowly damaged. When patients realize their vision problems, usually severe damage has occurred on at least one eye, therefore chronic glaucoma is often referred to as "Thief of Sight". [3,4,5]

Glaucoma treatment depends on the type of glaucoma. It is important to remember that the primary glaucoma requires longlife medical treatment. In the early stages, patients are usually given medication in the form of topical and oral medication, that should be used continuosly to control eye pressure. When medication cannot resolved the problem, then a laser or surgery is needed.[5,6]

Quality of life is difficult to judge by a doctor, but very important for the patient. Quality of life is determined based on patient satisfaction in physical, psychological and social life. Patients with glaucoma may have a disrupted quality of their lives due to various reasons, such as loss of visual function, difficulty in the daily routines, lifelong treatment with side effects, expensive cost of treatment, anxiety, and fear associated with a diagnosis of chronic sight-threatening disease. Therefore, a comprehensive assessment of the impact of disease and treatment in patients are very important.[7,8,9,10]

METHOD

This was a cross sectional study. Data was obtained from lead interview, filled out by the patients who have been diagnosed as primary glaucoma in Glaucoma Subdivision, Dr. M. Djamil Hospital Padang in 5 months (June 2016 - October 2016). Data was evaluated to know the patient's Quality Of Life. Ethical approval from the Ethics Committee of ministry of health (305/KEP/FK/2016) was obtained as suggested by the Helsinki Declaration

Samples were taken by quota sampling technique, with 100 samples. The inclusion criteria were patients over 18 years-old, diagnosed as primary glaucoma, have a complete medical record, cooperative and disposed to join the study. The exclusion criteria were patient with primary glaucoma with other problems. (ex. significant cataract, diabetes mellitus, age related macula edema, etc).

We used two instruments to determine the quality of patients and their ability to perform daily activities, The Glaucoma Symptom Scale (GSS) and The Glaucoma Quality of Life questionnaire. This questionnaire has been validated beforehand. The validation of questionnaire was conducted by the Medical Education Program, Faculty of Medicine. Assessment of significant similarities between the original and the translated questionnaires was carried out by one opthalmology resident of Andalas University. The format of the questionnaire was also modified from its original form to make interviewer easier in filling the questionnaire.

The Glaucoma Symptom Scale (GSS) scores ten symptoms commonly experienced by glaucoma patients on a five-point rating scale. Questions are divided into those assessing non-visual symptoms, including stinging and foreign-body sensation, and those assessing visual symptoms which include difficulty seeing in daylight and blurry vision; it does not assess specific task performance.

Table 1. Characteristic of respondents

Characteristic	Frequency (n)	Percentage (%)
Gender		
Male	64	64,0
Female	36	36,0
Age		
<20	11	11,0
21-40	18	18,0
41-60	30	30,0
61-80	38	38,0
>81	3	3,0
Visual Function		
Unilateral blindness	50	50,0
Bilateral blindness	12	12,0
Not blind	38	38,0
Amount of drugs		
1 glaucoma drug	36	36,0
> 1 drug	45	45,0
No drug	19	19,0
Surgery		
Surgery	42	42,0
No Surgery	58	58,0

The Glaucoma Quality of Life (GQL-15) questionnaire asks 15 rating-scored questions to assess the degree of functional disability caused by glaucoma. They include six questions relating to actions demanding functional peripheral vision, six relating to dark adaptation and glare, two relating to central and near vision and one relating to outdoor mobility The higher the scores cumulatively means the worse the quality of life.[7]

Then we related the questionnaire with the parameter like age, category of visual function (unilateral and bilateral blindness), amount of drugs and surgery performed. Visual acuity standard we used in this study is based on WHO categories to determine wheather patients were blind (visual acuity <3/60) or not blind (with visual acuity > 3/60).

RESULT

Respondents in our study were 64% men while women were 36%. The youngest age in respondents who participated in this study was 18 years old while the oldest was 82 years old. The largest age group in this study mostly in the range 61-80 years, as 40% (Table 1).

Most of the respondents experienced unilaterally blindness as 50%, bilateral blindness were 12%, and no blindness 38%. In this study, most respondents were using more than one medicines, as 45%, and our respondent mostly had not undergone the surgery, which is found as 58% (Table 1).

Table 2 shows that males had the highest non visual GSS score and GQL 15 score, while women had the highest visual GSS score. With T Test, there is no statistically significant differences between the GSS non-visual, visual scores, and GQL-15 based on gender

Table 2. Distribution of Gender Against the Quality of Life Score (GSS and GQL-15)

QoL	Sex	Mean	SD	P
Non Visual	♂	8,39	6,08	0,93*
	♀	8,29	5,25	
Visual	♂	8,87	4,21	0,94*
	♀	8,94	5,33	
GQL 15	♂	40,09	17,06	0,39*
	♀	36,75	19,67	

**T Test*

Table 3. Distribution of Age Group Against the Quality of Life Score (GSS and GQL-15)

QoL	Age	Mean	SD	P
Non Visual	<20	8,54	7,77	0,68*
	21-40	9,22	6,08	
	41-60	7,66	5,07	
	61-80	8,73	5,66	
	>81	4,66	5,03	
Visual	<20	10,09	5,26	0,35*
	21-40	8,00	4,86	
	41-60	10,00	5,61	
	61-80	8,28	3,41	
	>81	6,66	1,52	
GQL-15	<20	30,54	17,09	0,28*
	21-40	35,94	17,95	
	41-60	42,16	20,20	
	61-80	40,78	16,59	
	>81	29,33	9,291	

** One Way Anova Test*

Table 4. Distribution of Visual Function Against the Quality of Life Score (GSS and GQL-15)

QoL	Visual Function	Mean	SD	P
Non Visual	Unilateral blindness	9,40	5,81	0,18*
	Bilateral blindness	7,91	6,66	
	Not blind	7,13	5,28	
Visual	Unilateral blindness	9,78	4,72	0,00*
	Bilateral blindness	11,75	4,47	
	Not blind	6,84	3,72	
GQL 15	Unilateral blindness	40,54	15,39	0,00*
	Bilateral blindness	67,50	10,34	
	Not blind	27,60	11,22	

** One Way Anova Test*

In the age group, respondents among 21-40 years old had the highest non-visual GSS score, while respondents <20 years old had the highest visual GSS score. Respondents among 41-60 years old had the highest GQL 15 score. We did the statistical test using One Way Anova Test, but the result showed no statistically significant differences.

Respondents with unilateral blindness had the highest GSS non-visual score, and

One-Way Anova test suggested no significant difference.

Respondents with bilateral blindness had the highest GSS visual score and GQL-15 score.

Using One Way Anova Test, it can be concluded there is a statistically significant difference between the GSS visual and GQL -15 score among patients with unilateral blindness, bilateral blindness, and not-blind with the p value 0,00.

Respondents who use only one drug have highest GSS non visual score, GSS visual score and the GQL15 score. By using One Way Anova Test, it found that there was no statistically significant differences.

Table 5. Distribution of Amount of Drugs Against the Quality of Life Score (GSS and GQL-15)

QoL	Amount of drug	Mean	SD	P
Non Visual	1 drug	9,25	6,57	0,50*
	> 1 drug	7,97	5,78	
	No drug	7,57	3,77	
Visual	1 drug	9,75	5,38	0,39*
	> 1 drug	8,40	4,42	
	No drug	8,47	3,37	
GQL 15	1 drug	41,77	18,42	0,48*
	> 1 drug	37,13	18,31	
	No drug	37,42	16,89	

* *One Way Anova Test*

Table 6. Distribution of Surgery Performs Against the Quality of Life Score (GSS and GQL-15)

GSS	Surgery	Mean	SD	P
Non Visual	Surgery	6,71	4,34	0,01*
	No Surgery	9,55	6,38	
Visual	Surgery	9,30	4,45	0,45*
	No Surgery	8,60	4,77	
GQL 15	Surgery	41,09	18,22	0,29*
	No Surgery	37,24	17,90	

**T Test*

Most respondents in this study were that of no-surgery. Using T Test, we concluded there were statistically significant differences in GSS non-visual score between respondents who perform operation and no-operation with p-value 0,01.

DISCUSSION

In this study, most respondents are male (63%) while women are 37%. This result is similar with Rudnicka's study (2006) about The prevalence of Primary Open Angle Glaucoma (POAG) by age, gender and race, in which men were 1.37 times more likely to suffer from POAG than women. Based on Glaucoma Epidemiological data in Asia, there is no difference predisposed upon POAG in men or women. However, in Angle Closure Glaucoma (PACG), women more often suffer because of the structure of the anterior chamber which is shallower than men. [5,10,11]

The largest age group of respondents are around 61-80 years old (40%), the youngest age is 18 and the oldest 81 years old. These results are consistent with the literature where advanced age is a risk factor for glaucoma, POAG, PACG or secondary glaucoma. Epidemiological Studies stated that glaucoma is a major factor causing a decrease in visual function and blindness in 2% of adults aged over 40 years, where the prevalence will increase significantly with increasing age. [10,11]

Visual acuity of respondents are grouped into two corresponding blindness according to WHO criteria, blind with visual acuity <3/60 and not blind with visual acuity >3/60. In this study, respondents mostly experienced unilateral blindness, as found in 50 people (50%); where as bilateral blindness in 12 people (12%) and not blinded 38 people (38%). HA Quigley and Broman AT in 2006 study about the number of people with glaucoma worldwide in 2010, and predict that more than 8.4 million people will suffer from bilateral blindness due to primary glaucoma in 2010 and will increase to 11.1 million people in 2020. [2,4]

The problems faced by people with glaucoma associated with visual impairment include difficulty driving at night, adaptation to darkness, glare, stereopsis problems, daily activity (read the newspapers, especially on the state of dimness, identification of other people's faces, problems in contrast sensitivity, reduced capability to measure distance, and the increased accident or a fall. [7,8]

The treatment of glaucoma include the use of drugs that should be a daily routine, difficulty to take medication in work hours or activity, drug side effects both locally or systemically, and also the cost of treatment. in patients with glaucoma). In this study, 45% of respondents using one type of anti-glaucoma drugs, 36% of respondents use more than one type of drug, and 19% of respondents did not use the drug. Types of glaucoma medications are varies the types of beta blockers, carbonic anhydrase inhibitors, and also prostaglandin analog both topical and oral. Tsai et al conducted research using questionnaire reported the side effects of eye drops that complain by the patient, such as hyperemia, burning, foreign body sensation, and blurred vision, that may affect the social and environmental aspects of their life. The discomfort by side effect of the therapy can impact on their quality of life.[12,13,14]

Respondents with the history of filtration surgery in this study is approximately 42% and not-operated is 58%. The data similar to Jampel et al study in 2002, in which 79% of the study used anti-glaucoma eye drops to lower intraocular pressure while about 50% had an intraocular surgery, either cataract or glaucoma surgery.[7]

Quality of life in patients with glaucoma is very rarely measured in clinical practice, because of the difficulty of finding the right time when the damage from glaucoma significantly affect the quality of life of patients. Measuring tool in the form of a questionnaire to measure quality of life should be ideal and easy to use, as it does not use complex mathematical calculations, and solely contains a simple set of questions albeit specific for glaucoma. [1,4,15,16]

The Glaucoma Symptom Scale (GSS) is one of the instruments for assessing quality of life for patients with glaucoma, consisting of 10 questions relating to the common symptoms experienced by patients with glaucoma. The GSS Questionnaires was originally used by Brian L Lee et al in 1998, who conducted study to asses the specific symptoms of glaucoma and compared with patients without glaucoma. This questionnaire adaptation and modification from the checklist of symptoms from Ocular Hypertension Tratment Study (OHTS). GSS score has been validated for American language, to measure the specific complaint of ocular and visual function in glaucoma patients, and then adapted to various languages. This questionnaire is reliable, consistent, and fairly easy to use. Questions consist of 10 questions, divided into 6 symptoms of non-visual complaints such as burning, pain, watery, dry, itching, eye fatigue, and a feeling something in the eye; in addition, 4 visual symptoms like blurry eyes, difficulty of seeing in the dom or bright light, and seeing halo. [7,12,13,16]

In this study, we performed statistical tests to see the relationships between GSS score of visual and non-visual to compare the age, sex, visual function, amount of drugs and the surgery. Statistical test result that there are significant differences between the visual GSS score among respondents with visual function abnormalities. This results are consistent with studies conducted by Brian L Lee et al (1998) who look at the specific glaucoma symptoms, and compared with patients without glaucoma in Los Angeles and have the result there was a significant relationship between glaucoma patients with GSS visual score and no significant relationship with non-visual GSS score. Glaucoma Symptomps scale is an efficient instrument, although it can't be differentiated whether this measures were exactly the glaucoma symptoms or due to treatment of glaucoma. The use of GSS questionnaire can help to provide the quality of life data experienced by glaucoma patients.[16]

Second questionnaire that we used in this study was Glaucoma Quality of Life- 15 Questionnaire (GQL-15), which consists of 15 questions with minimum value of 0 and a maximum value of 75. A high total score means worse quality of life. We found the lowest score was 15 and the highest was 75. Statistical tests were performed to know the relationship GQL-15 score with age, sex, visual function, amount of drug and surgery and the result there was significant difference between the GQL-15 scores among patients with visual function complain, while the results of the GQL-15 score compare to age, gender, amount of drug and the surgery had no significant differences.[7,15]

Results of this study showed the decrease in quality of life due to glaucoma. It also describe the type of activity that would be impaired by glaucoma patients and the symptoms due to therapy. The results of this study would be useful to patient to understand of their limitations of activity, adaptation to their living environment, and increase the obedience of the treatment.

We concluded that visual imparment due to glaucoma had the impact to the quality of life, because visual loss would interfere their daily activities and the GSS and GQL-15 were the suitable instrument to asses and determine the quality of life glaucoma patient in clinical practice.

This study could not be separated from various limitations. Examination of the visual field, contrast sensitivity, and the glare examination were not done. The other weaknesses of this study were the influence of educational level, occupation, regiments of therapy, the side effects of treatment, psychological and socio-economic effects were not discussed, therefore it need further research to provide more complete information on visual impairment and other factors that may cause a decline in the quality of life in patients with glaucoma.

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