Quality of life of visually impaired people in relation to gender

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Abstract

The aim of the research was to determine the quality of life of visually impaired respondents in relation to gender. The research included 99 patients with cataracts, glaucoma, strabismus and eye injuries with a residual vision of 50% (visual acuity ≤0.5). All were in the terminal phase of the disease. For the purpose of the research, a survey questionnaire was used, which, in addition to sociodemographic data, also consists of a vision questionnaire (NEI VFQ-25), version 2000. The vision questionnaire is used by the National Vision Institute. The difference in the quality of life of the respondents was determined in relation to gender and diagnosis. For all 25 questions divided into three areas that refer to the respondents' assessment of the following elements: general health, vision, eye pain, distance and near activities, a discriminant analysis was performed. The results of the research confirmed that vision impairment affects the quality of life of the patient, as well as that there is a difference between the male and female respondents in the applied measuring instrument system. The greatest influence of different degrees of visual impairment was evident in the area of reading and access to information, somewhat less in the area of orientation and movement, and the smallest in the area of the patients' emotional state. The age of the respondents ranged from 5 to 78 years. The majority of respondents were men 50 (50.50%). The average chronological age of male respondents is 47.50±21.56 years, and female respondents 50.12±20.85. In the total sample, 45.5% of respondents have cataracts, 29.3% have glaucoma, 11.1% have strabismus and 14.1% have an eye injury. 47.5% of respondents consider their health to be average, 44.4% consider it to be above average, while 8.1% of respondents consider it to be below average. A higher percentage of male respondents have glaucoma (38%) and injuries/trauma (20%) compared to female respondents. A higher percentage of female respondents (55.1%) state that their quality of life is above average, while the percentage of male respondents is 34%. Quality of life is average for 56% of male respondents and 38.8% of female respondents.

Key words: quality of life, visual impairment, discrimination analysis.

INTRODUCTION

Health-related quality of life (HRQOL) is a concept that can be described as the degree of influence of a medical condition or treatment on usual or expected physical, emotional and social well-being (Cella DF et al. 1995). In the definition of the World Health Organization (WHO), quality of life is defined as an individual's perception of his own position in life in the context of the culture and value system in which he lives, as well as in relation to his own goals, expectations, standards and interests. According to this interpretation, quality of life is a multidimensional concept that includes physical and psychosocial aspects, which include at least 5 components: physical health of the individual, psychological status, material independence/degree of independence, social relationships, as well as the relationship to significant characteristics of the external environment (WHO 1998). In the past decades, significant discoveries have been made in the field of prevention, diagnosis and therapy of diseases, which resulted in a significant increase in the average life expectancy in the human population. Life with visual impairment always brings with it some kind of handicap that prevents the affected person from maximally expressing themselves in all desired spheres of life. Therefore, in addition to the length of life, it is almost equally important what its quality will be. Considering that the majority of people single out health as the highest existential quality, and that with the development of medicine, the expected length of life has been extended, as well as the life expectancy of people with visual impairments, the value of assessing the quality of life related to health (KŽPZ) has also been recognized (Clancy CM et al 1998). According to Patrik and Erikson's definition, HCV is the value added to life expectancy, modified by impairments, functional status, perceptions, and social opportunities that are affected by illness, injury, treatment, and health policy (Patrick and Erikson 1993). Vision quality is an integral part of health-related quality of life (Brown GC, 1999). Visual impairment affects the quality of daily life activities, reduces independence and life satisfaction, causes a decline in physical and mental functioning and increases the risk of depression (Brenner et al., 1993, Stelmack, 2001). Objective clinical parameters, such as Snellen visual acuity and visual field assessment, cannot fully show the extent to which vision problems affect a person's daily life activities (Magnione et al., 1998). In recent years, a large number of instruments (questionnaires) that are used in ophthalmology have been developed (Khadka et al., 2013). Thanks to the use of measuring instruments that assess functioning, satisfaction, quality of life, it has been shown that clinical measures of effectiveness such as visual acuity are not the only outcomes that reflect the benefits of eye surgery. An improvement in the quality of life was also shown even in those cases where there was no significant improvement in visual acuity postoperatively, which indicates that the benefits of surgery may be underestimated if only visual acuity is observed (Desai et al., 1996, Javitt et al., 1993). In response to the need for an instrument that would measure quality of life related to vision in the mid-nineties, the "National Eye Institute" (NEI) from the United States of America enabled the development of a questionnaire: the National Eye Institute Visual Function Questionnaire (NEI VFQ), which in its first version had 51 questions (Magnione i sar., 1998). With the aim of facilitating the application and improving the quality of the obtained data, a shortened version of the NEI VFQ-25 was later developed (Magnione et al., 2001). In this study, the aim was to assess the quality of life of subjects with visual impairments in relation to gender structure.

PATIENTS AND METHODS

99 patients were included in this research. Before conducting the research, the purpose and goal of the research was explained to the respondents verbally and in writing, through informed consent.

The answers were given during the ophthalmological examination. For the purpose of the research, a survey questionnaire was used, which, in addition to sociodemographic data, also consists of a vision questionnaire (NEI VFQ-25), version 2000. The vision questionnaire is used by the National Vision Institute, and on the first page of the questionnaire there is an instruction that no written permission is required for its use. The test was conducted in November 2023. The respondents are patients hospitalized at the Eye Diseases Clinic of the University Hospital Tuzla, i.e. those who go through specialist clinics. The criteria for inclusion in the study were: persons ≥5 years of age, visual acuity 0.7 or less in the better eye. Exclusion criteria were: existence of cognitive, auditory and movement disorders, as well as undergoing laser or incisional eye surgery in the last three months. All subjects underwent a detailed ophthalmological examination including best-corrected visual acuity, slit-lamp biomicroscope examination, applanation tonometry with a Goldman tonometer, fundus examination with indirect ophthalmoscopy on a biomicroscope.

RESULTS

On a sample of 99 patients, an assessment was made of the impact of ophthalmic diseases (cataract, glaucoma, strabismus, injuries) on the quality of life of the subjects in relation to gender, as well as on the general quality of life. Table 1 shows the average age of respondents by gender. The average chronological age of male respondents is 47.50±21.56 years, and of female respondents 50.12±20.85 years. The results of the t-test showed that there is no statistically significant difference in relation to the age and gender of the respondents (t= -0.61; p= 0.540).

Table 1. Average age of respondents by gender

Gender	N	AS	SD	SG	p*
Male	50	47.50	21.56	3.04	.540
Female	49	50.12	20.85	2.97	

*t= -0,61

Table 2 shows the distribution of respondents in relation to gender and cause of visual impairment. It can be seen from the table that a higher percentage of female respondents have cataracts (59.2%) and strabismus (12.2%) compared to male respondents. A higher percentage of male respondents have glaucoma (38%) and injuries/trauma (20%) compared to female respondents. The results of the chi-square test showed that there is a statistically significant difference in relation to gender and the cause of visual impairment. Looking at the obtained results, it can be concluded that at the level of statistical significance of 0.05, cataracts as a cause of visual impairment are more common in female subjects.

Table 2. Distribution of respondents in relation to gender and cause of visual impairment

Variables			Diagnosis			
			Cataract	Glaucoma	Strabismus	Injuries/traumas
Gender	Male	N	16	19	5	10
		%	32.0%	38.0%	10.0%	20.0%
	Female	N	29	10	6	4
		%	59.2%	20.4%	12.2%	8.2%
	Total	N	45	29	11	14
		%	45.5%	29.3%	11.1%	14.1%

χ2= 9,20; df= 3; p= 0,027

Table 3 shows the distribution of respondents according to quality of life and gender. A higher percentage of female respondents (55.1%) state that their quality of life is above average, while the

percentage of male respondents is 34%. The quality of life is average for 56% of male respondents and 38.8% of female respondents. The results of the chi-square test showed that there is no statistically significant difference in relation to the gender and quality of life of the respondents (χ2= 4.48; df= 2; p= 0.106).

Table 3. Distribution of respondents in relation to gender and quality of life

Variables			In general, would you say yes to your health?		
			Below average	Average	Above average
Gender	Male	N	5	28	17
		%	10.0%	56.0%	34.0%
	Female	N	3	19	27
		%	6.1%	38.8%	55.1%
Total		N	8	47	44
		%	8.1%	47.5%	44.4%

χ2= 4,48; df= 2; p= 0,106

Canonical discrimination analysis was applied with the aim of determining the differences between respondents in relation to gender, as well as insight into the hierarchy of those variables that contribute to the differentiation of groups. Discriminatory power was determined by Wilks' lambda, and statistical significance was determined by Fisher's (F) test. Table 5 shows the results of Wilks' lambda, which is 0.70 with statistical significance p = 0.056.

Table 5. Wilks' lambda

Funkcija	Wilks' Lambda	h^2	df	p
1	.169	29.70	18	**.056**

Given that Wilks' lambda is not statistically significant, but at the limit of significance, a discriminant analysis was used, and table 6 shows the results of descriptive statistics for the purpose of insight into arithmetic means and standard deviations for the observed groups of subjects.

On the basis of the obtained results, it can be concluded that the values of arithmetic averages for the 15 applied variables are higher in female subjects, that is, in women, difficulties and vision problems are more common. For male respondents, problems and difficulties with vision were recorded on the variables: "How many problems with vision do you have when going down the stairs or from the edges of the sidewalk at night or when the lighting is poor?", "Does your vision limit you in terms of time in performing work or other activities?", and "To what extent does pain and discomfort in the eye area (eg itching, burning) prevent you from doing what you would like to do?".

Table 6. Results of descriptive statistics for the applied sample of respondents

Variables	Male		Female
	AS	SD	AS
How much difficulty do you have with reading printed texts (eg books, newspapers)?	2,90	0,80	3,10
How much difficulty do you have doing activities or hobbies that require you to see well up close?	2,94	0,92	3,10
Because of your eyesight, how much difficulty do you have finding	3,00	0,87	3,15

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things on a crowded shelf?			
How much difficulty do you have with reading street and traffic signs or shop names?	2,96	0,87	3,46
How much vision difficulty do you have when going down stairs or curbs at night or when the lighting is poor?	3,18	0,81	3,02
How much difficulty do you have in noticing objects on the side while walking?	3,02	0,97	3,33
Because of your eyesight, how difficult is it for you to notice the reaction of other people to what you say?	1,98	0,88	2,27
How difficult is it for you, because of your eyesight, to choose and coordinate your own clothes?	2,06	0,83	2,15
How much difficulty do you have, because of your sight, with socializing with people in their homes, at parties, and in restaurants?	2,14	0,71	2,29
How much difficulty do you have, because of your sight, with socializing with people in their homes, at parties, and in restaurants?	2,84	1,11	3,08
How difficult is it for you, because of your eyesight, to go to the cinema, the theater, or to matches?	2,92	0,84	3,10
Are you accomplishing less than you would because of your vision?	2,76	1,07	2,81
Does your vision limit you in terms of time in performing work or other activities?	2,73	1,52	2,00
To what extent does pain and discomfort in the eye area (eg itching, burning) prevent you from doing what you would like to do?	2,76	1,09	2,58
I spend most of my time at home because of my eyesight.	3,31	0,77	3,35
I often feel frustrated with my vision.	3,51	0,98	3,60
I have much less control over what I do because of my sight.	2,49	0,96	2,65
Because of my eyesight, I have to depend too much on what others tell me.I need a lot of help from others because of my eyesight	2,04	0,84	2,13
I need a lot of help from others because of my eyesight			
	1,71	0,79	1,54

Based on the results presented in Table 7, it can be concluded that there is a statistically significant difference between male and female respondents on the variables: "How much difficulty do you have with reading street and traffic signs or shop names?", and "Does your vision limit you in time?" performing work or other activities?". By looking at the results of descriptive statistics, it can be seen that female respondents at the level of statistical significance of 0.05 have more problems with reading street and traffic signs compared to male respondents. At the significance level of 0.05, male respondents are limited by their sight in performing work or other activities compared to female respondents.

Table 7. Univariate analysis of variance

Variables	Wilks' Lambda	F	df1	df2	p
How much difficulty do you have with reading printed texts (eg books, newspapers)?	0,98	1,46	1	95	,230
How much difficulty do you have engaging in activities or hobbies that require you to do well	0,99	0,72	1	95	,398
Because of your eyesight, how much difficulty do you have finding things on a crowded shelf?	0,99	0,79	1	95	,376
How much difficulty do you have with reading street and traffic signs or shop names?	0,93	7,37	1	95	**,008**
How much vision difficulty do you have when going down stairs or curbs at night or when the lighting is poor?	0,99	0,89	1	95	,347
How much difficulty do you have in noticing objects on the side while walking?	0,97	2,91	1	95	,092
Because of your eyesight, how difficult is it for you to notice the reaction of other people to what you say?	0,97	2,56	1	95	,113
How difficult is it for you, because of your eyesight, to choose and coordinate your own clothes?	1,00	0,28	1	95	,598

How much difficulty do you have, because of your sight, with socializing with people in their homes, at parties, and in restaurants?	0,99	1,02	1	95	,315
How much difficulty do you have, because of your sight, with socializing with people in their homes, at parties, and in restaurants?	0,99	1,37	1	95	,245
How difficult is it for you, because of your eyesight, to go to the cinema, the theater, or to matches?	0,99	0,99	1	95	,322
Are you accomplishing less than you would because of your vision?	1,00	0,07	1	95	,792
Does your vision limit you in terms of time in performing work or other activities?	0,94	6,23	1	95	**,014**
To what extent does pain and discomfort in the eye area (eg itching, burning) prevent you from doing what you would like to do?	0,99	0,65	1	95	,422
I spend most of my time at home because of my eyesight.	1,00	0,10	1	95	,748
I often feel frustrated with my vision.	1,00	0,24	1	95	,623
I have much less control over what I do because of my sight.	0,99	0,60	1	95	,440
Because of my eyesight, I have to depend too much on what others tell me.	.99	.22	1	95	.63
I need a lot of help from others because of my eyesight	.98	1.22	1	95	.27

Table 8. shows the standardized and non-standardized discrimination functions that represent combinations of weights in the eigenvector. The interpretation of discrimination coefficients or weights is similar to that in multiple regression analysis. Table 8 gives an index of the importance of each predictor, as do the beta coefficients in the multiple regression analysis. Results on the variables "How much difficulty do you have with reading street and traffic signs or store names?", "How much difficulty do you have with your vision when going down stairs or from the edges of the sidewalk at night or when the lighting is poor?" and "Does your sight limit you in terms of time in performing work or other activities?" are the strongest predictors that stand out the most with high coefficients predicting the distribution of male and female respondents.

Table 8. Canonical discrimination of function coefficients

Variables	Standard coefficient of the isolated function	Function
How much difficulty do you have with reading printed texts (eg books, newspapers)?	-0,29	-0,19
How much difficulty do you have engaging in activities or hobbies that require you to do well	-0,19	-0,14
Because of your eyesight, how much difficulty do you have finding things on a crowded shelf?	0,04	-0,14
How much difficulty do you have with reading street and traffic signs or shop names?	-0,42	-0,43
How much vision difficulty do you have when going down stairs or curbs at night or when the lighting is poor?	0,93	0,15
How much difficulty do you have in noticing objects on the side while walking?	-0,37	-0,27
Because of your eyesight, how difficult is it for you to notice the reaction of other people to what you say?	-0,26	-0,25
How difficult is it for you, because of your eyesight, to choose and coordinate your own clothes?	0,34	-0,08
How much difficulty do you have, because of your sight, with socializing with people in their homes, at parties, and in restaurants?	-0,11	-0,16
How much difficulty do you have, because of your sight, with socializing with people in their homes, at parties, and in	0,01	-0,19

restaurants?		
How difficult is it for you, because of your eyesight, to go to the cinema, the theater, or to matches?	-0,34	-0,16
Are you accomplishing less than you would because of your vision?	-0,11	-0,04
Does your vision limit you in terms of time in performing work or other activities?	0,74	0,40
To what extent does pain and discomfort in the eye area (eg itching, burning) prevent you from doing what you would like to do?	0,13	0,13
I spend most of my time at home because of my eyesight.	-0,04	-0,05
I often feel frustrated with my vision.	0,13	-0,08
I have much less control over what I do because of my sight.	-0,09	-0,12
Because of my eyesight, I have to depend too much on what others tell me.	-0,30	-0,08
I need a lot of help from others because of my eyesight	0,29	0,18

Table 9 shows the latent structure of the canonical coefficients, which reveals the correlations between each variable in the model and the discrimination function. In fact, it can be said that these are the factor loadings of the variables on the discrimination function. When interpreting the results, those variables with a correlation higher than 0.30 are taken. The variable "How much difficulty do you have with reading printed texts (eg books, newspapers)?" has the highest discrimination coefficients and correlations of variables with the discrimination factor. "How much difficulty do you have with reading street and traffic signs or store names?", "How much difficulty do you have in noticing objects on the side while walking?", "How difficult is it for you, because of your eyesight, to choose and coordinate your own clothes?", "How difficult is it for you, because of your eyesight, to go to the cinema, theater , or to matches?", "Does your vision limit you in terms of time in performing work or other activities?", "Because of my vision, I have to depend too much on what others tell me", "I need a lot of help from others, because of my vision".

From the mentioned variables, it can be seen that the discriminating factor is defined by variables related to near and far vision problems, and to the dependence of others, and this latent structure can be called the structure of social dependence and problems with near and far vision.

Table 9. Latent structure of canonical coefficients

Variables	Function
How much difficulty do you have with reading printed texts (eg books, newspapers)?	-0,35
How much difficulty do you have engaging in activities or hobbies that require you to do well	-0,20
Because of your eyesight, how much difficulty do you have finding things on a crowded shelf?	0,05
How much difficulty do you have with reading street and traffic signs or shop names?	-0,46
How much vision difficulty do you have when going down stairs or curbs at night or when the lighting is poor?	1,10
How much difficulty do you have in noticing objects on the side while walking?	-0,41
Because of your eyesight, how difficult is it for you to notice the reaction of other people to what you say?	-0,29
How difficult is it for you, because of your eyesight, to choose and coordinate your own clothes?	0,43
How much difficulty do you have, because of your sight, with socializing with people in their homes, at parties, and in restaurants?	-0,15
How much difficulty do you have, because of your sight, with socializing with people in their homes, at parties, and in restaurants?	0,01
How difficult is it for you, because of your eyesight, to go to the cinema, the theater, or to matches?	-0,38
Are you accomplishing less than you would because of your vision?	-0,10
Does your vision limit you in terms of time in performing work or other activities?	0,51
To what extent does pain and discomfort in the eye area (eg itching, burning) prevent you from doing what you would like to do?	0,12
I spend most of my time at home because of my eyesight.	-0,05
I often feel frustrated with my vision.	0,14
I have much less control over what I do because of my sight.	-0,09

Because of my eyesight, I have to depend too much on what others tell me.	-0,35
I need a lot of help from others because of my eyesight	0,38

By looking at the results of the centroids shown in table 10, it can be concluded that they are more pronounced in one group of respondents and less pronounced in the other, which means that the arithmetic means of the respondents are so far apart that it can be said that there is a difference between male and female respondents difference on the applied measuring instrument system.

Table 10. Centroids of groups

Respondents	Function
	1
Male	0.63
Female	-0.64

DISCUSSION AND CONCLUSION

The results of this study show that, according to traditional psychometric methods, the translated version of the NEI VFQ-25 questionnaire is a valid and reliable instrument for assessing quality of life related to vision in our population.Ophthalmological diseases examined in this research have a significant negative impact on the quality of life of subjects of both sexes related to vision, affecting various aspects of daily functioning, not only those closely related to central and peripheral vision. There is also a possible connection with the quality of life related to the general health of both male and female respondents, but to determine the true degree of this connection, further research is needed. Operative procedures for cataracts, glaucoma, strabismus and eye injuries significantly improve the quality of life related to vision. In accordance with the benefits resulting from surgery, it is necessary to ensure easier access to ophthalmological examination for all persons with the aim of timely referral to the patient for a timely and timely surgical procedure.

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