

# GENDER DIFFERENCES IN SELF-PERCEIVED QUALITY OF LIFE (QOL) AMONG PEOPLE WITH GLAUCOMA

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**Abstract:** *The number of aging people with significant visual impairment due to glaucoma is increasing. Visual impairments resulting from glaucoma have a negative impact on the quality of life (QoL). The adverse impacts of impaired vision manifests in the economic, social, and psychological aspects of life as well as in physical activity. In addition to being affected by visual impairment, self-perceived QoL may also be affected by sociodemographic factors such as gender, age, living conditions etc. Better understanding of the factors that affect the QoL of people with glaucoma is necessary for comprehensive and targeted action in affected areas of QoL.*

*The aim of this paper was to determine differences in self-perceived QoL between males and females with visual impairment due to glaucoma.*

*The study included 150 people with visual impairment due to glaucoma (N = 150), 92 females and 58 males. Visual acuity in the better eye of subjects was 50% or less (visual acuity  $\leq 0.5$ ) with an impaired visual field greater than 12 dB in mean defects, as measured with the Octopus Visual Field Analyser. The study used two questionnaires: The Impact of Vision Impairment Questionnaire (IVI) for measuring the self-perceived QoL and a self-constructed General Information Questionnaire for general sociodemographic data.*

*A discriminant analysis was performed on the collected data, using the Programme for Robust Discriminant Analysis (ROBDIS). Results of this research confirm the difference in self-perceived QoL between men and women in three measured areas: Reading and information accessibility, Mobility and Independence, and Emotional well-being. It has been established that in all three measured areas, men assess their QoL better than women and perceive less impact of visual impairment on QoL.*

**Key words:** *quality of life, glaucoma, gender differences*

## INTRODUCTION

Glaucoma is a chronic neurodegenerative disorder of the optic nerve that causes retinal ganglion cell deterioration and loss of optic nerve axons, leading to structural and functional deficits (Waisbourd, 2015). Optic nerve damage primarily results in peripheral visual field defects, which in advanced stages leads to central visual field loss, loss of fixation (Jampel, 2001) and decrease in visual acuity (Chan et al., 2015). Glaucoma is a progressive disease with symptoms that are difficult to recognise at early stages; it results in impairment of visual functions and irreversible blindness (Prado Vega, 2013, Severn et al., 2008). Disease prevalence increases dramatically with age (Ramulu, 2010).

Glaucoma patients are often frightened by the diagnosis, although only a minority of them actu-

ally go blind from disease in the Western world (Quigley & Vitale 1997; Blomdahl et al. 1997, quoted in Odberg et al., 2001). Due to the intractable nature of the disease, the patient usually spends, following diagnosis, the rest of their life attending an eye hospital and taking frequent (daily) ocular anti-hypertensive medication (Severn et al., 2008). The constant fear of going blind and the need for continuous therapy can physically and emotionally interfere with one's life (Cypel et al., 2004).

The components of good QoL differ among individuals. For many, however, having enough visual ability to do the things that they want to do is a high priority (Spaeth et al., 2006). Goldberg et al. (2009) have demonstrated, using the Glaucoma Quality of Life-15 (GQL-15) questionnaire, that across the spectrum of disease severity, patients with glaucoma experience difficulty in daily visual

functions, which translates into measurable deficits in glaucoma-QoL.

Nelson et al. (2003.) identified five factors (near vision, peripheral vision, dark adaptation and glare, personal care and household tasks, outdoor mobility) as the main groups of difficulties encountered by glaucoma patients. In 2008 Skalicky and Goldberg suggested that factors such as progressive peripheral field loss, impaired visual function, multiple medical treatments, and surgery may contribute to depression in glaucoma. Their study showed a trend of increasing depression with increasing severity of glaucoma, which was statistically significant in patients in their 70s. Viswanathan et al. (quoted in Nelson et al., 2003) noted a significant relationship between perceived visual disability and the severity in binocular field loss in groups of patients with early and moderate glaucomatous visual field loss; these groups were previously thought to be little affected in terms of QoL. Several other studies showed that glaucoma significantly affects general QoL or some specific aspects of QoL (Odberg et al. 2001, Iester and Zingirian, 2002, Freeman et al., 2008, McKean-Cowdin et al., 2008, Ramulu, 2009, Richman et al., 2010, Quaranta et al., 2016).

The Salisbury Eye Evaluation study (Freeman et al., 2008) concluded that individuals with bilateral glaucoma reported more difficulty on the Activities of Daily Vision Scale than those without glaucoma. This finding, in conjunction with findings demonstrating decreased mobility in patients with bilateral glaucoma, points to the fact that glaucoma affects self-reported difficulty with a variety of visual tasks.

Most of the studies investigating influence of glaucoma on QoL are based primarily on visual acuity and visual field affect (on QoL) and are useful to classify glaucoma stage, but they do not describe the effect on a person's daily activities (Quaranta et al., 2016). Only a few studies have investigated influences of gender and glaucoma. Esteban et al. (2008) evaluated gender differences in QoL among visually impaired elderly in Spain. Their findings suggest that health-related QoL was worse among women than men. However, we should be aware that this study encompassed a variety of visual impairments. Impact of visual impairment on Physical Component Score was greater in women, but the Mental Component Score did not

vary significantly. Odberg et al. (2001) evaluated the feelings and experiences of patients living with glaucoma in Norway. In this study women were more dissatisfied than men concerning visual tasks, treatment, information and care. Hoevenaars et al. (2006) found no statistically significant difference between genders in glaucoma patients' knowledge, need for information or expectations of treatment.

When discussing visual impairments and their impact on QoL, we should focus on activities or areas that are important to individuals with glaucoma as well as likely to be affected by the disease (Ramulu, 2009). As Ramulu (2009) stated in his review of glaucoma and disability, subjects gave the greatest importance to tasks involving central and near vision (e.g. reading), with high scores also given to mobility outside the home (e.g. driving and walking outside).

## AIM AND HYPOTHESIS OF THE RESEARCH

The purpose of this study was to investigate gender differences in self-perceived QoL of people with glaucoma. Although some studies outside Croatia (Esteban, 2008; Odberg, 2001) indicate that women perceive their QoL worse than men, the authors felt it was necessary to see whether or not that conclusion is valid in Croatia, where, generally speaking, women take the dominant role in household chores and rarely can rely on their male spouse to help in those activities. As stated in Cypel et al. (2004), in patients with glaucoma who live in developing countries, QoL seems to be affected much more than in patients in developed countries. In spite of the fact that Croatia is part of the EU, its medical and social system greatly differ from those of other countries in the EU and rest of the world (such as Norway, UK, Germany, USA, and Asian countries). Those differences have a serious impact on rehabilitation of patients with glaucoma, so we cannot generalise the results from their studies to our patients.

H1-1 There is a difference between women and men with glaucoma in mobility and independence.

H1-2 There is a difference between women and men with glaucoma in reading and accessing information.

H1-3 There is a difference between women and men with glaucoma in emotional well-being.

## METHOD

### Participants

We included 150 glaucoma patients in this study (N=150). All of them were patients in the Glaucoma Ward, University Department of Ophthalmology, Clinical Hospital Centre "Sestre Milosrdnice". The study was conducted on a convenience sample of hospital patients in the period from September 2013 to December 2014 using the interview method. Each interview lasted for at least 20 to a maximum of 45 minutes. Prior to the interview, the subjects were informed about the purpose, goal and content of the study. The subjects were enrolled in the study after they provided oral consent. The Ethics Committee of the hospital approved the study. Inclusion criteria were visual acuity and advanced stage of glaucoma. The best corrected visual acuity in the better-seeing eye was less than 50% ( $\leq 0.5$ ) in all patients in the study. Most patients had near-normal vision, 68 of them had visual acuity (VA) of 0.5, 15 of them had visual acuity of 0.4, and 17 had visual acuity of 0.3. Moderate low vision was found in 14 patients, who had visual acuity of 0.2. Severe low vision (0.1) was found in 15 patients, who had visual acuity of 0.1, and 21 of them had no visual perception. All of them were in advanced stage of the disease, which the European Glaucoma Society defines as visual field defect with mean defect worse than 12 dB, when measured with the Octopus Visual Field Analyser. Mean age of patients was 74 years. Participants were divided into 5 age groups: 40-49 years (N=9), 50-59 years (N=5), 60-69 years (N=29), 70-79 years (N=47) and 80 years and older (N=60). Almost two-thirds of participants were women (N=92), and one-third were men (N=58).

### Instruments

To gather information about the effect of visual impairment on QoL, we used the Impact of Vision Impairment (IVI) questionnaire (Cochrane et al., 2008, Cochrane et al., 2011, Finger et al., 2014), which is a vision-specific QoL instrument. This questionnaire consists of 28 variables. Answers are scored on a four-point scale: 0 ("a lot", meaning

that visual impairment affects performance a lot), 1 ("a fair amount"), 2 ("a little"), 3 ("not at all", meaning that visual impairment has no effect on performance), and 4 ("don't do this for other reasons"). This questionnaire measures the effect of visual impairment on QoL in three areas: reading and accessing information, mobility and independence, and emotional well-being. In the original instrument, internal consistency reliability of the three-factor model was estimated by Cronbach's  $\alpha$ , which ranged between 0.89 and 0.91 (Lamoureux et al., 2007). We calculated the same reliability measure for the Croatian adaptation of the instrument, and Cronbach's  $\alpha$  values ranged from 0.72 to 0.82.

### Data analysis

For each manifest IVI questionnaire variable, we calculated the following basic statistical parameters separately for women and men: arithmetic mean, standard deviation, lowest and highest scores and median. Also, we tested normality of distributions for each variable separately for women and men, using the Kolmogorov-Smirnov and Shapiro-Wilk tests. In order to test the hypotheses, we used discriminant analysis. The differences between women and men in three areas (orientation and mobility, reading and accessing information, emotional well-being) were tested. Since distributions of all manifest IVI questionnaire variables differed significantly from the normal distribution (Gaussian curve), we needed to process data from each dependent variable using discriminant analysis in the robust discriminant analysis programme ROBDIS (Nikolić, 1991; Mejovšek, 2013).

The differences between female and male patients for all quantitative variables were tested using the Mann-Whitney U non-parametric test in SPSS (Pallant, 2013; Petz et al, 2012).

## RESULTS

### Differences between men and women in mobility and independence

Differences between women and men with glaucoma in mobility and independence were tested using robust discriminant analysis, and the results are presented in Table 1.

**Table 1.** Robust discriminant analysis results

Discriminant		Centroid		Standard deviation		F	Significance
Function	Value	Men	Women	Men	Women	Value	P
1	0.315	0.48	-0.30	1.48	1.64	13.27	0.001

From the results presented in Table 1, we can conclude that there was a statistically significant difference in mobility and independence between persons with visual impairment regarding gender ( $p < 0.01$ ). The discriminant function was 0.315, and the test difference between centroids (arithmetic means on the discriminant function F) was 13.27. The distance between centroids was 0.78 standard deviations. Women with visual impairment had lower results (-0.30 standard deviations) across the whole domain of mobility and independence than men (0.48 standard deviations). Based on the results mentioned above, we can accept the hypothesis H1-1 and conclude that a statistically significant difference in mobility and independence exists between men and women. To determine the variables of mobility and independence responsible for creating this discriminant function, we must analyze Table 2, which presents the structure of this discriminant function.

**Table 2.** Structure of the discriminant function for mobility and independence in people with visual impairment

Variable	Discriminant coefficient	Correlation with discriminant function
IVI2	0.02	0.25
IVI4	0.26	0.37
<b>IVI10</b>	<b>0.37</b>	<b>0.62</b>
IVI11	0.02	0.47
IVI12	0.23	0.53
IVI13	0.13	0.56
<b>IVI16</b>	<b>0.52</b>	<b>0.63</b>
IVI17	0.04	0.43
<b>IVI18</b>	<b>0.37</b>	<b>0.73</b>
<b>IVI19</b>	<b>0.51</b>	<b>0.66</b>
IVI20	0.24	0.58

Based on analysis of the results presented in Table 2, we can conclude that the following variables significantly influenced the creation of the discriminant function: IVI16 (*General safety at home*), with a discriminant coefficient of 0.52

and a correlation with the discriminant function of 0.63; IVI19 (*During the past month, how often has your eyesight stopped you from doing the things you want to do?*), with a discriminant coefficient of 0.51 and a correlation with the discriminant function of 0.66; IVI10 (*How much has your eyesight interfered with getting about outdoors?*), with a discriminant coefficient of 0.37 and a correlation with the discriminant function of 0.62. The variable IVI18 (*General safety when out of your home*) also participated in creation of the discriminant function, with a discriminant coefficient of 0.37 and a correlation of 0.73. All the other variables had less influence on creating the discriminant function.

Since variables for men and women did not show a normal distribution for determining the difference between men and women on each manifest variable of *Mobility and independence in persons with visual impairment*, we used the non-parametric Mann-Whitney test. The results of this test are presented in Table 3.

From the analysis of Table 3 we can see that there was a statistically significant difference between men and women in variable IVI10 (*How much has your eyesight interfered with getting about outdoors?*), since the difference ( $Z = -2.084$ ) was significant at the level of  $p < 0.037$ , which is less than 0.05. Middle rank and median values indicate that men had better results (mid-range: 69.99; median: 0) than women (mid-range: 84.23; median: 1). On the variable IVI16 (*General safety at home*), a statistically significant difference was also found ( $Z = -2.219$ ) at the level of significance  $p < 0.026$ . Middle rank and median values indicate that men had better results (mid-range: 84.84; median: 3) than women (mid-range: 69.61; median: 2). There was also a statistically significant difference on variable IVI19 (*During past month how often has your eye-sight stopped you doing the things you want to do?*), since the difference ( $Z = -2.652$ ) was significant at the level of  $p < 0.008$ . Middle

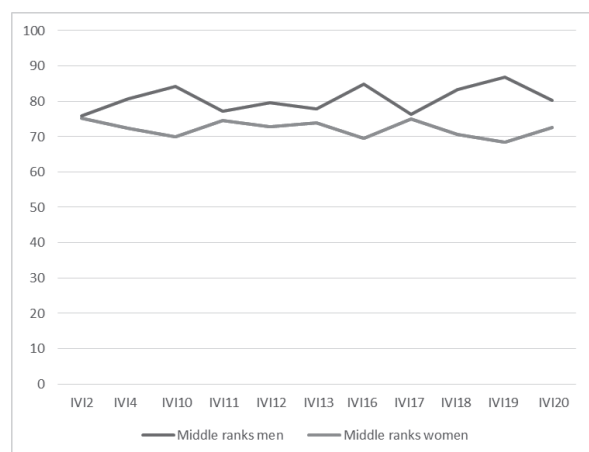
**Table 3.** Differences between men and women on each variable of mobility and independence in people with visual impairment, calculated using the Mann-Whitney test

Variable	Middle rank in men	Middle rank in women	Median in men	Median in women	Z	Significance Asymp. Sig. p
IVI2	75.83	75.29	1.00	1.00	-0.078	0.938
IVI4	80.59	72.29	2.00	2.00	-1.198	0.231
<b>IVI10</b>	<b>84.23</b>	<b>69.99</b>	<b>1.00</b>	<b>0.00</b>	<b>-2.084</b>	<b>0.037</b>
IVI11	77.09	74.49	0.00	0.00	-0.395	0.693
IVI12	79.64	72.89	1.00	0.00	-1.002	0.316
IVI13	77.92	73.97	0.50	0.00	-0.592	0.554
<b>IVI16</b>	<b>84.84</b>	<b>69.61</b>	<b>3.00</b>	<b>2.00</b>	<b>-2.219</b>	<b>0.026</b>
IVI17	76.25	75.03	1.00	1.00	-0.175	0.861
IVI18	83.27	70.60	1.00	0.00	-1.853	0.064
<b>IVI19</b>	<b>86.80</b>	<b>68.38</b>	<b>1.00</b>	<b>1.00</b>	<b>-2.652</b>	<b>0.008</b>
IVI20	80.16	72.57	2.00	1.00	-1.087	0.277

**Table 4.** Robust discriminant analysis results

Discriminant		Centroid		Standard deviation		F	Significance
Function	Value	Men	Women	Men	Women	Value	P
1	0.058	0.20	-0.13	1.34	1.46	5.94	0.015

rank and median values indicate that men had better results (mid-range: 86.80; median: 1) than women (mid-range: 68.38; median: 1). All results of middle ranks for men and women are presented in Figure 1.

**Fig. 1.** Middle ranks of the results between men and women on each variable of orientation and mobility in people with visual impairment

### Differences between men and women in reading and accessing information

We used robust discriminant analysis in order to test the hypothesis *H1-2 - There is a difference*

between women and men with glaucoma in reading and accessing information. The results are presented in Table 4.

From the results presented in Table 4, we can conclude that there is a statistically significant difference in reading and accessing information between persons with visual impairment regarding their gender ( $p < 0.015$ ), since significance is less than 0.05. The discriminant function was 0.058, and the test difference between centroids (arithmetic means on the discriminant function F) was 5.94. The distance between centroids was 0.33 standard deviations. Men with visual impairment had higher results (0.20 standard deviations) across the whole area of reading and accessing information than women (-0.27 standard deviations). Based on the results mentioned above, we can accept the hypothesis *H1-2* and conclude that a statistically significant difference in reading and accessing information exists between men and women with visual impairment.

To determine the variables of reading and accessing information responsible for creating this discriminant function, we analysed Table 5, which presents the structure of this discriminant function.

**Table 5.** Structure of the discriminant function for reading and accessing information by people with visual impairment

Variable	Discriminant coefficient	Correlation with discriminant function
IVI1	0.12	0.31
<b>IVI3</b>	<b>0.61</b>	<b>0.72</b>
IVI5	-0.02	0.29
IVI6	0.21	0.51
IVI7	0.29	0.54
<b>IVI8</b>	<b>0.50</b>	<b>0.66</b>
IVI9	-0.10	0.50
<b>IVI14</b>	<b>0.42</b>	<b>0.69</b>
IVI15	0.23	0.51

Based on the analysis of results presented in Table 5, we can conclude that the following variables significantly influenced the creation of the discriminant function: IVI3 (*In the past month, how much has your eyesight interfered with the shopping?*), with a discriminant coefficient of 0.61 and a correlation with the discriminant function of 0.72; IVI8 (*In the past month, how much has your eyesight interfered with the reading labels or instruction on medicines?*), with a discriminant coefficient of 0.50 and a correlation with the discriminant function of 0.66; IVI14 (*In the past month, how much has your eyesight interfered with the reading ordinary size print?*), with a discriminant coefficient of 0.42 and a correlation with the discriminant function of 0.69. All the other variables had less influence on creating the discriminant function.

In order to determine the differences between men and women at each manifest variable of reading and accessing information by people with

visual impairment, we used the non-parametric Mann-Whitney test, since the variables for men and women did not show a normal distribution. The results of the test are presented in Table 6.

We found no statistically significant differences on any manifest individual variables for reading and accessing information by persons with visual impairment, since the significances ( $p > 0.05$ ) are higher than 0.05. This means that there were no significant differences between men and women. All results of middle ranks for men and women are presented in Figure 2.



**Fig. 2.** Middle ranks of the results between men and women on each variable of reading and accessing information by people with visual impairment

### Differences between men and women in emotional well-being

We used robust discriminant analysis to test the hypothesis H1-3 - *There is a difference between women and men with glaucoma in emotional well-being*. The results are presented in Table 7.

**Table 6.** Differences between men and women on each variable of reading and accessing information by people with visual impairment, calculated using the Mann-Whitney test

Variable	Middle rank in men	Middle rank in women	Median in men	Median in women	Z	Significance Asymp. Sig. p
IVI1	76.33	74.98	1.00	1.00	-0.198	0.843
IVI3	81.14	71.95	1.00	1.00	-1.337	0.181
IVI5	75.06	75.78	0.50	1.00	-0.106	0.916
IVI6	77.21	74.42	2.00	2.00	-0.398	0.691
IVI7	77.66	74.14	2.00	2.00	-0.507	0.612
IVI8	79.69	72.86	2.00	1.00	-0.976	0.329
IVI9	74.16	76.34	2.00	2.00	-0.311	0.756
IVI14	78.07	73.88	0.00	0.00	-0.642	0.521
IVI15	77.34	74.34	1.00	1.00	-0.440	0.660

**Table 7.** Robust discriminant analysis results

Discriminant		Centroid		Standard deviation		F	Significance
Function	Value	Men	Women	Men	Women	Value	P
1	0.087	-0.25	0.16	1.10	1.38	12.42	0.001

**Table 9.** Differences between men and women on each variable of emotional well-being in people with visual impairment, calculated using the Mann-Whitney test

Variable	Middle rank in men	Middle rank in women	Median in men	Median in women	Z	Significance Asymp. Sig. p
IVI21	78.72	73.47	3.00	3.00	-0.955	0.339
IVI22	70.78	78.48	1.00	2.00	-1.107	0.268
IVI23	76.67	74.76	2.00	2.00	-0.273	0.785
IVI24	80.53	72.33	1.00	0.50	-1.199	0.231
IVI25	76.64	74.78	0.00	0.00	-0.295	0.768
IVI26	77.18	74.44	0.00	0.00	-0.426	0.670
IVI27	79.88	72.74	2.00	1.00	-1.018	0.309
IVI28	78.02	73.91	1.00	0.00	-0.614	0.539

The results presented in Table 7 confirmed the initial assumption of a statistically significant difference in emotional well-being between men and women ( $p < 0.01$ ), since significance is less than 0.05. The discriminant function was 0.087, and the test difference between centroids (arithmetic means on the discriminant function F) was 12.42. The distance between centroids was 0.41 standard deviations. Men achieved higher results (-0.25 standard deviations) across the whole area of well-being than women (0.16 standard deviations). These data imply that we can accept the hypothesis H1-3 and conclude that there is a statistically significant difference in emotional well-being between men and women.

In order to determine the variables of emotional well-being responsible for creating this discriminant function, we analysed Table 8, which presents the structure of this discriminant function.

**Table 8.** Structure of the discriminant function for emotional well-being

Variable	Discriminant coefficient	Correlation with discriminant function
IVI21	-0.41	-0.42
IVI22	0.46	-0.16
IVI23	-0.12	-0.55
IVI24	-0.48	-0.72
IVI25	-0.17	-0.68
IVI26	-0.34	-0.72
IVI27	-0.45	-0.73
IVI28	-0.17	-0.57

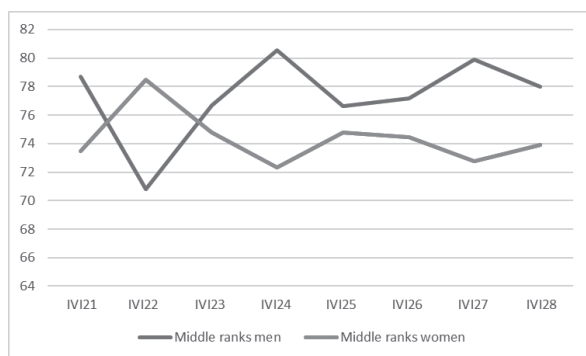
Based on the analysis of data from Table 8, we can conclude that the following variables significantly influenced creating the discriminant function: IVI24 (*Have you felt sad or low because of your eyesight?*), with a discriminant coefficient of 0.48 and a correlation with the discriminant function of -0.72; IVI22 (*Have you felt frustrated or annoyed because of your eyesight?*), with a discriminant coefficient of 0.46 and a correlation with the discriminant function of -0.16; IVI27 (*Have you felt like a nuisance or a burden because of your eyesight?*), with a discriminant coefficient of -0.45 and a correlation with the discriminant function of -0.73; IVI21 (*Have you felt embarrassed because of your eyesight?*), with a discriminant coefficient of -0.41 and a correlation with the discriminant function of -0.72. All the other variables had less influence on creating the discriminant function.

Since all variables that created the discriminant function had a negative orientation (except the variable IVI22), we can conclude that men had better results in the domain of emotional well-being. This statement was based on the interpretation of the discriminant function structure, and it refutes the previous statement formulated before the interpretation of the discriminant function structure.

Since variables for men and women had no normal distribution for determining the difference between men and women on each manifest variable of *emotional well-being in people with visual*

impairment, we used the non-parametric Mann-Whitney test. The results of this test are presented in Table 9.

We found no statistically significant differences on any manifest individual variables of emotional well-being in people with visual impairment, since the significances ( $p > 0.05$ ) are higher than 0.05. This means that there were no significant differences between men and women on individual variables of the IVI questionnaire. All results of the middle ranks for men and women are presented in Figure 3.



**Fig. 3.** Middle ranks of the results between men and women on each variable of emotional well-being in people with visual impairment

## DISCUSSION

The statistically significant differences between men and women in mobility and independence were influenced most by the variables *General safety at home*; *During past month how often has your eye-sight stopped you doing the things you want to do?*; *How much has your eyesight interfered with getting around outdoors?*; and *General safety when out of your home*. We can relate this finding to Wang et al. (1999), who found that visual impairment significantly and negatively affects the independence of elderly people, particularly older women. Also, Nourhashémi et al. (2001) confirmed that women with disability (...) are frailer because they had more associated disorders, poorer cognitive function and more frequent falls. Given the older population in our study (mean age of patients, 74 years), we can assume that women experience a greater impact of visual impairment on QoL due to cultural features; they take a dominant role in

the care of the household. The care of the household includes bill payment (mobility to post office), basic food supply (mobility to the grocery store) and housekeeping. A reduction in household activities (cessation of mobility with a car, retirement, or reduced leisure activities outside the home) is likely to have a smaller impact on the mobility-related activities of men than on the mobility-related activities of women.

Analysing the results in reading and access to information, we can again cite the respective roles that women and men at that age assume in families, where women traditionally take on the role of family and household caregivers. The variable of shopping is associated with differences in mobility. Household care often requires reading labels (medications) and instructions (detergents, receipts) and, given the culturally assumed roles, it is logical that the inability to perform these tasks significantly affects women.

Consequently, the emotional well-being results are expected and confirmed by this study. Constant confrontation with everyday life tasks that are performed under conditions of impaired vision affects the emotional state of women as measured in the variables *Have you felt sad or low because of your eyesight?*, *Have you felt frustrated or annoyed because of your eyesight?*, *Have you felt like a nuisance or a burden because of your eyesight?* and *Have you felt embarrassed because of your eyesight?*

The results of our research suggest that gender should be taken into account when evaluating, creating and implementing individual programmes in overall psychosocial rehabilitation. Rehabilitation programmes should focus primarily on psycho-emotional support for people with glaucoma in terms of better education of vulnerable groups, providing additional information, and preventing advanced glaucoma stages and conditions. Also in the rehabilitation of glaucoma persons, there is a need for improvements in orientation and movement training (encouraging rehabilitation through recreational activities to improve overall health status and personal independence) and literacy (adaptation of materials, approaches and methods to the needs of the elderly population). Many studies (Iester and Zingirian, 2002, Freeman



et al., 2008, McKean-Cowdin et al., 2008, Ramulu, 2009, Richman et al., 2010) collected gender data as part of a sociodemographic questionnaire, but they did not compare gender differences, making it difficult to compare those studies to our own.

## CONCLUSION

From the medical point of view, the goal in glaucoma management is maintenance of QoL through the preservation of vision. An understanding of how glaucoma impacts an individual's QoL is central to glaucoma management (Goldberg et al., 2009). From educational and rehabilitation points of view, the most important thing when working with glaucoma patients is to achieve the highest possible level of independent living.

Results of the present study are consistent with results from Esteban et al. (2008) and Odberg et al. (2001). The present study has limitations regarding the sample size and the fact that data were collected at only one institution.

Based on the results of this research we should reconsider, modify and improve our rehabilitation programmes directed at glaucoma (and elderly) patients, so that we can meet their needs in mobility and independence, reading and accessing information and general well-being. Further research is needed so that we can better understand the differences between male and female patients with glaucoma as well as the impact of visual impairment on QoL.

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## RAZLIKE S OBZIROM NA SPOL U SAMOPROCijenjenoj KVALITETI ŽIVOTA OSOBA S GLAUKOMOM

**Sažetak:** Broj osoba starije životne dobi kod kojih se uslijed glaukoma pojavljuju značajna oštećenja vida u stalnom je porastu. Slabovidnost i sljepoća nastale kao rezultat glaukopskih bolesti imaju negativan utjecaj na kvalitetu života oboljelih osoba. Taj nepovoljan utjecaj oštećenog vida manifestira se u ekonomskim, socijalnim, psihološkim aspektima života kao i u području tjelesnih aktivnosti. Na lošiju samoprocijenjenu kvalitetu života osim samog oštećenja vida mogu nepovoljno utjecati i neki sociodemografski faktori poput spola, dobi, životnih uvjeta itd. Bolji uvid u faktore koji utječu na kvalitetu života ovih osoba omogućava ciljano djelovanje u rizičnim područjima usmjereno na poboljšanje kvalitete njihova života.

Ovim radom željelo se utvrditi eventualne razlike u samoprocijenjenoj kvaliteti života između muškaraca i žena s oštećenjem vida uslijed glaukoma.

Ispitivanjem je obuhvaćeno 150 ( $N=150$ ) osoba oštećenog vida uslijed glaukoma (92 muškarca i 58 žena). Kod svih ispitanika utvrđena je vidna oštrina na boljem oku od 50% i manja ( $OV \leq 0.5$ ) s oštećenjem vidnog polja većim od 12dB u Mean Defects (MD) mjerenim Octopus Visual Field Analyzer-om. U istraživanju su korištena dva upitnika: za mjerenje samoprocijenjene kvalitete života korišten je IVI (The Impact of Vision Impairment Questionnaire) i upitnik vlastite izrade o općim sociodemografskim podacima.

U obradi prikupljenih podataka primjenjena je diskriminacijska analiza, model ROBDIS (robustna diskriminacijska analiza).

Rezultati istraživanja potvrđuju razliku u samoprocijenjenoj kvaliteti života između muškaraca i žena u tri mjerena područja: čitanju i pristupu informacijama, orijentaciji i kretanju i emocionalnom području. Utvrđeno je također da u sva tri mjerena područja muškarci svoju kvalitetu života procjenjuju boljom te da iskazuju manji utjecaj oštećenja vida na kvalitetu svog života.

**Glavne riječi:** kvaliteta života, glaukom, spol