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Original research article

The impact of vision loss on quality of life, anxiety, and loneliness in older adults

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Abstract

Objectives: The aim of our research was to determine the impact of vision loss on quality of life, anxiety, and loneliness in older adults.
Methods: Empirical data was gathered through a series of questionnaires and a personal data form. The assessment tools included the UCLA Loneliness Scale, the State-Trait Anxiety Inventory-Y, and the World Health Organization Quality of Life – BREF questionnaire. The study involved a total of 149 older adults.
Results: Our research findings confirm that seniors with visual impairment experience a reduced quality of life across all studied areas compared to the general population. Women with visual impairment only showed a significantly lower quality of life in the domain of social functioning. Seniors with visual impairment reported moderate to high levels of loneliness, with women experiencing higher rates of loneliness. Additionally, seniors exhibited high levels of anxiety, and a correlation was confirmed between lower quality of life and increasing age. Furthermore, a significant correlation was found between quality of life in the physical health domain and both state and trait anxiety in seniors, as well as between environmental quality of life and current anxiety levels.
Conclusion: Visual impairment has a significant personal and global impact. The aging population is experiencing a significant increase in the prevalence of vision impairment, which adversely affects the quality of life, mental health, and social interactions of older adults.

Keywords: Anxiety; Loneliness; Older people; Quality of life; Vision Loss

Introduction

Visual impairment is one of the most widespread health issues. The World Health Organization (WHO, 2023) reports that around 2.2 billion people worldwide have some degree of visual impairment, with the majority being over the age of 50. More than two-thirds of all severely visually impaired individuals are aged 65 and older. In the Czech Republic (CR), there are over 100,000 blind and visually impaired people. The number of visually impaired individuals is increasing, particularly in older age groups, and there is an overall rising trend in the prevalence of visual impairment (Czech Statistical Office, 2019). The main age-related causes of vision deterioration include macular degeneration, cataracts, glaucoma, refractive errors, and diabetic retinopathy (Al-Namaeh, 2022). As vision is the most important sensory function of the human body, its impairment significantly affects individuals' daily lives, causes functional limitations, leads to additional health complications, and greatly reduces their quality of life (Kandel et al., 2022). Research shows that older adults with visual impairment often experience a decline in overall quality of life (Demmin and Silverstein, 2020). Cordeiro et al. (2021) emphasize that physiological changes in vision associated with aging can lead to significant communication problems and a loss of autonomy, ultimately affecting daily life activities and overall well-being. This correlates with the severity of their impairment – the more severe the impairment, the greater the impact on their health and overall well-being (Tseng et al., 2018). Additionally, national surveys indicate that loneliness is a significant issue among older adults, with visually impaired seniors being particularly vulnerable (Czech Statistical Office, 2019). However, data on the prevalence of anxiety among this population in the Czech Republic are not available, which highlights the importance of this study.

Among older adults with visual impairment, anxiety and loneliness are prevalent, further complicating their mental health. Research by Alma et al. (2011) reveals that visually impaired older individuals exhibit high levels of loneliness, with approximately 50% experiencing significant social isolation. This loneliness may be exacerbated by difficulties in engaging in social activities, as visual impairment often hinders participation in community life (Brunes et al., 2019a). Moreover, sensory impairments, including vision loss, have been shown to heighten feelings of loneliness and depression, emphasizing the need for comprehensive approaches to address these interconnected issues (Harithasan et al., 2019; Tareque et al., 2019). Blazer (2003) states that loneliness is a key factor with a

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significant impact on both physical and mental health. Brunes et al. (2019a) found that loneliness rates among individuals with visual impairment remain consistently higher than in the general population across all age groups.

Functional limitations in daily life can lead to a loss of independence, resulting in serious psychological and social consequences (Swenor et al., 2020). People with visual impairments are also more vulnerable to developing depression and anxiety disorders (WHO, 2023). Studies confirm an increased risk of depression in this group (Carrière et al., 2013), with some evidence suggesting that anxiety prevalence may even be higher than that of depression (Yokoi et al., 2014). However, reported prevalence rates of anxiety symptoms and disorders among adults and seniors with eye diseases vary widely, ranging from 2.4% to 78% across different studies (Senra et al., 2022; Ulhaq et al., 2022). Older adults with visual impairments also report higher levels of anxiety symptoms compared to their peers with other comorbidities, such as diabetes and cardiovascular diseases. Additionally, research indicates that the fear of impending vision loss and the experience of living with a chronic degenerative condition can contribute to anxiety, even when current visual abilities remain unaffected (Demmin and Silverstein, 2020). Some evidence also suggests that the prevalence of anxiety symptoms may be linked to specific eye pathologies (Ulhaq et al., 2022). Treatment of anxiety in other chronic conditions has led to better physical and psychological outcomes (Tully et al., 2016), indicating that undiagnosed and untreated anxiety may significantly contribute to worsening overall health and mental well-being.

Aim

The aim of our research was to determine the associations between visual impairment and quality of life, anxiety, and loneliness in older adults.

Materials and methods

Study design

We adopted a cross-sectional survey design.

Setting and sample

We used a convenience sampling strategy to recruit participants.

The research group comprised 149 senior patients with vision disorders receiving care at an eye clinic in the Moravian-Silesian Region. Inclusion criteria for participation in the study included providing informed consent, meeting the ICD-10 diagnostic criteria for macular degeneration, cataracts, glaucoma, refractive errors, or diabetic retinopathy, and achieving an MMSE score of more than 24 points.

Patients who met these criteria were invited to participate during their visits to the eye clinic during regular office hours. The questionnaire was designed for patients with visual impairments and assessed the following areas:

- Feelings of loneliness, measured using the third version of the UCLA Loneliness Scale.
- Anxiety levels, assessed through the STAI (State-Trait Anxiety Inventory) questionnaire.
- Quality of life, evaluated using the WHOQOL-BREF (World Health Organization Quality of Life – BREF) questionnaire.

Following training for healthcare professionals, all eligible patients were contacted for participation between May 2023 and December 2023. If a patient was unable to complete the questionnaires independently due to severe visual impairment, they were assisted by a general nurse.

Instruments

The WHOQOL-BREF (World Health Organization Quality of Life – BREF) is a shortened version of the original WHOQOL-100 tool, developed by the WHO to assess quality of life. It consists of 26 items, with 24 covering four key domains: physical health, psychological health, social relationships, and environment. The remaining two items evaluate overall quality of life and general health status. Respondents rate their answers on a 1 to 5 scale, where higher scores indicate a better quality of life (Dragomirecká and Bartoňová, 2006). The reliability of the tool is supported by Cronbach's alpha values ranging from 0.70 to 0.90, indicating good to excellent internal consistency. The methodology by Dragomirecká was applied to convert raw domain scores into a 4–20 scale for analysis (Dragomirecká and Bartoňová, 2006). To compare the results with the general population, population norms from the WHOQOL User Manual were used (Dragomirecká and Bartoňová, 2006). The comparison was specifically made with a representative sample of the Prague senior population (60+ years) from a previous representative study (Dragomirecká and Bartoňová, 2006).

State Trait Anxiety Inventory (STAI)

The STAI (State-Trait Anxiety Inventory) (Spielberger et al., 1983) is one of the most widely used tools for assessing anxiety in both psychological research and clinical practice. It measures two key aspects of anxiety: state anxiety, which reflects temporary, situational anxiety levels, and trait anxiety, which represents a more stable, long-term characteristic of an individual's personality. The STAI consists of 40 items. The first part, STAI-Y1, measures state anxiety by assessing the intensity of current feelings and answering the question, "How do you feel right now?" Responses are rated on a scale: 1 – not at all, 2 – somewhat, 3 – moderately, 4 – very much. The second part, STAI-Y2, measures trait anxiety by evaluating how frequently respondents experience anxiety symptoms. It asks, "How do you generally feel?" with response options: 1 – almost never, 2 – sometimes, 3 – often, 4 – almost always.

Each subscale has a score range of 20–80, with higher scores indicating higher levels of anxiety. The inventory was introduced into the Czech environment in the 1980s, with the Slovak translation provided by Müllner et al. (1980). Since this version was in Slovak, a separate Czech translation was created. Cronbach's alpha values for both subscales range between 0.85 and 0.95, indicating high reliability.

The STAI-Y1 scale, measuring state anxiety, had an average score of 48.51 (SD = 5.26). The STAI-Y2 scale, measuring trait anxiety, had an average score of 48.71 (SD = 5.27).

Recommendations for cut-offs are rare and less clear than for the other questionnaires. STAI scores are classified as no or low anxiety: 20–37, moderate anxiety: 38–44, and high anxiety: 45–80. Despite this categorization, many authors use two-level cut-off points to define low or moderate/high levels of state and trait anxiety. In our study, we used three-level cut-off points to distinguish low, moderate, and high levels of state and trait anxiety, as described in the literature (Freidl et al., 2022; Kayikcioglu et al. 2017).

UCLA Loneliness Scale, Version 3

To assess the level of loneliness experienced, the third version of the UCLA Loneliness Scale (Russell, 1996) was selected

(α ranging from 0.89 to 0.94). This unidimensional scale consists of 20 items, where respondents rate how often they experience the described feelings on a four-point scale. Respondents answer using a Likert-type scale: 1 = "never", 2 = "rarely", 3 = "sometimes", and 4 = "always". A higher total score indicates a higher degree of loneliness. Scores on this scale range from 20 to 80, with the following classifications: score <35: low level of loneliness, score ≥35: moderate level of loneliness, score ≥ 50: moderately high level of loneliness, score ≥65: severely high level of loneliness. When categorizing, we based our analysis on these two studies (Kusaslan Avci 2018; Perry, 1990).

Data analysis

The data were processed using the statistical software SPSS, version 29. Descriptive statistics were used for the basic data analysis, including absolute (*N*) and relative frequency (%), arithmetic mean, and standard deviation (SD). A single-sample *t*-test was used to compare the differences in seniors' quality of life in our research and population norms. Differences between groups (gender and marital status) were evaluated using the Wilcoxon test for two independent samples. The relationship between the analyzed aspects (quality of life and loneliness, anxiety, age, length of disease) was assessed using Spearman's correlation coefficient. For all statistical level analyses, the significance level was set at $p < 0.05$.

Table 1. Sociodemographic characteristics of the older individual with visual loss

Number	*N* = 149	%
Gender		
Man	63	42
Women	86	58
Education		
Basic	22	15
Apprenticed	53	36
High school	48	32
University	26	17
Marital status		
Single	4	3
Married	71	47
Divorced	31	21
Widowed	43	29
Average age	70.1	
Length of disease	12.3	
Up to 5 years	25	17
5–10 years	48	32
More than 10 years	61	41
More than 20 years	15	10

Results

Participant characteristics

The population consisted of 149 persons with visual impairment, 63 men and 86 women. The mean age of the older people was 73.24 years (SD = 6.41; min. 65; max. 92) and the mean length of the disease was 12.3 years (SD = 5.6). The sociodemographic characteristics of the population are shown in Table 1.

Assessment of quality of life

When evaluating individual domains (as shown in Table 2), the surveyed seniors with visual impairment rated the area of mental health the best. The lowest values were achieved in the area of social relationships. Compared to the population norm, seniors with visual impairment achieved lower quality of life in all monitored domains (Table 2). The comparison was specifically made with a representative sample of the Prague senior population (60+ years) from a previous representative study (Dragomirecká and Bartoňová, 2006).

When comparing men and women from the monitored group, differences are evident in all domains of quality of life. Women evaluate their overall quality of life and satisfaction with their health better. Men evaluate the domain of mental health, social relationships, and environment better. Women achieved higher values in the domain of physical health. Women and men achieve the highest value in the domain of psychological health. Both men and women achieved the lowest value in the domain of social relationships. Significant relationships were found only in the domain of social relationships. We found a statistically significant difference in the loneliness scale, where women achieved a worse score than men ($p = 0.038$) – Table 3.

Table 2. Mean scores of WHOQOL-BREF domains and global assessment items in seniors with visual impairment and in the general population

Domains	Seniors with visual loss (*N* = 149)			Representative Prague senior population (*N* = 325)*			*p*-value
	Mean (SD)	Min	Max	Mean (SD)	Min	Max	
Dom 1 – physical health	12.16 (1.80)	7.42	16.57	13.71 (3.00)	5.14	20.00	**<0.001**
Dom 2 – mental health	12.48 (1.76)	8.00	17.33	13.95 (2.38)	6.67	20.00	**<0.001**
Dom 3 – social relationships	11.27 (2.71)	4.00	20.00	13.96 (2.38)	4.00	20.00	**<0.001**
Dom 4 – environment	12.17 (1.87)	7.00	17.33	13.58 (2.25)	6.00	18.5	**<0.001**
Q1 Overall quality of life	3.08 (0.72)	1.00	5.00	3.82 (0.72)	1.00	5.00	**<0.001**
Q2 Health satisfaction	2.97 (0.73)	1.00	5.00	3.68 (0.85)	1.00	5.00	**<0.001**

Note: * Dragomirecká and Bartoňová (2006)

Table 3. Quality of life, loneliness, and anxiety by gender in seniors

Domains	Man (N = 63) $\bar{x}$ (SD)	Woman (N = 86) $\bar{x}$ (SD)	p-value
Dom 1 – physical health	12.12 (1.57)	12.19 (1.98)	0.819
Dom 2 – mental health	12.67 (1.66)	12.33 (1.82)	0.233
Dom 3 – social relationships	11.83 (2.66)	10.85 (2.69)	**0.029**
Dom 4 – environment	12.23 (1.75)	12.12 (1.96)	0.739
Q1 Overall quality of life	3.01 (0.72)	3.12 (0.71)	0.352
Q2 Health satisfaction	2.88 (0.82)	3.03 (0.65)	0.248
UCLA	52.12 (7.01)	53.51 (6.69)	**0.038**
STAY-Y1	48.32 (4.57)	48.65 (6.06)	0.720
STAY-Y2	48.82 (4.69)	48.63 (5.70)	0.836

Note: N – number of respondents, $\bar{x}$ – mean, SD – standard deviation, UCLA – UCLA Loneliness Scale, STAY-Y1 – State Trait Anxiety Inventory – state of anxiety, STAY-Y2 – State Trait Anxiety Inventory – trait anxiety

Regarding marital status, the results showed that QoL scores in single, divorced, or widowed patients were lower than in married patients. Significant relationships were found in the domains of physical health, psychological health, and social functioning. Married patients also rated better quality of life in other items, but the differences were not statistically significant (Table 4).

Table 4. Quality of life, loneliness, and anxiety by marital status in seniors

Domains	Lives with a partner (N = 71) $\bar{x}$ (SD)	Lives without a partner (N = 78) $\bar{x}$ (SD)	p-value
Dom 1 – physical health	12.62 (1.66)	11.74 (1.84)	**0.003**
Dom 2 – mental health	12.90 (1.69)	12.09 (1.76)	**0.005**
Dom 3 – social relationships	11.85 (2.58)	10.74 (2.77)	**0.013**
Dom 4 – environment	12.47 (1.79)	11.90 (1.93)	0.066
Q1 Overall quality of life	3.15 (0.77)	3.01 (0.68)	0.235
Q2 Health satisfaction	3.13 (0.76)	2.83 (0.69)	0.015
UCLA	52.35 (7.42)	52.66 (6.45)	0.786
STAY-Y1	47.83 (5.06)	49.14 (5.79)	0.072
STAY-Y2	48.00 (5.07)	49.38 (5.43)	0.057

Note: N – number of respondents, $\bar{x}$ – mean, SD – standard deviation, UCLA – UCLA Loneliness Scale, STAY-Y1 – State Trait Anxiety Inventory – state of anxiety, STAY-Y2 – State Trait Anxiety Inventory – trait anxiety

Relationship between quality of life and selected aspects

Our study also examined the relationship between quality of life, as measured by the WHOQOL-BREF, and factors such as age, anxiety, and loneliness. Spearman correlation coefficient analysis revealed statistically significant correlations between WHOQOL-BREF domains and age. Additionally, a strong association was confirmed between lower quality of life in the physical health domain and both current and persistent anxiety in seniors, as well as between the environment domain and current anxiety levels. Further details on these associations are presented in Table 5.

Table 5. Correlation between domains of quality of life and selected factors (*r*)

Domains	UCLA	STAY-Y1	STAY-Y2	Age	Length of disease
Dom 1 – physical health	–0.046	–0.224*	–0.233*	–0.411**	–0.005
Dom 2 – mental health	0.033	–0.060	–0.105	–0.337**	0.033
Dom 3 – social relationships	0.026	0.004	–0.132	–0.264**	–0.061
Dom 4 – environment	–0.013	–0.223*	–0.117	–0.359**	0.014
Q1 Overall quality of life	–0.010	–0.074	–0.098	–0.245*	–0.095
Q2 Health satisfaction	–0.006	–0.204*	–0.253*	0.034	0.081

Note: * $p < 0.05$, ** $p < 0.001$

Discussion

Vision impairment represents a significant public health issue among older adults worldwide, posing a substantial burden on affected individuals and society as a whole. Research has demonstrated that vision deterioration has serious consequences, impacting psychosocial functioning, significantly reducing quality of life, increasing disability rates, and negatively affecting overall health (Swenor et al., 2020). The findings of our study confirm that seniors with visual impairment experience a reduced quality of life in all studied areas compared to the representative sample of the senior population (60+ years) from a previous study (Dragomirecká and Bartoňová, 2006). Similar conclusions have been reported in previous research investigating the link between visual impairment and quality of life in older adults, consistently highlighting a decline in quality of life within this group (Bonsaksen et al., 2023; Smith et al., 2019; Tseng et al., 2018). Likewise, the study by Li et al. (2011) found associations between age-related vision deterioration, visual impairment, and reduced quality of life. Gender differences in quality of life are well-documented, with women with visual impairments often exhibiting lower quality of life than men (Khorrami-Nejad et al., 2016). However, our study found that women only had significantly lower quality of life in the domain of social functioning – no significant differences were observed in other domains. A Swedish study reached similar conclusions, reporting no overall differences in quality of life between men and women (Havstam Johansson et al., 2020). Gender contributes to vision-related quality of life through differences in the prevalence of eye diseases, coping strategies, and socioeconomic factors. Women tend to be more active in seeking social support, using problem-solving strategies and maintaining a positive attitude, which may help them cope better with vision loss. However, loneliness is more common, particularly as a result of longer life expectancy, which increases the likelihood of widowhood and social isolation. Men may have more difficulty adapting to poor vision, leading to greater frustration and lower quality of life. In addition, traditional gender roles influence economic situations, with women increasingly facing financial insecurity in old age, which may limit their access to healthcare and support. Another factor is emotional vulnerability to social exclusion – women rely more on a strong social network, and frailty in old age can negatively affect their psychological well-being. While women are generally more likely to seek medical and psychological help, they may also face barriers in accessing specialist services for the visually impaired. Regarding marital status, people who were married reported a higher quality of life compared to people without a partner. The same results are reported by Bonsaksen et al. (2023). Higher quality of life for married people could be due to having more social support networks that made it easier for them to endure problems. Further research is needed to better understand this issue, to help identify vulnerable groups and effectively allocate resources to support community health care and social support.

With advancing age, vision deterioration of varying intensity becomes one of the most common health issues (Coyle et al., 2017; Trujillo Tanner et al., 2022). It is often accompanied by other health complications that can lead to loss of independence and mobility, limiting participation in social and recreational activities and increasing the risk of social isolation. These factors, along with the loss of close relationships due to retirement or bereavement, can further heighten vulnerability to loneliness (Liu et al., 2022). Given these concerns, research has paid particular attention to the impact of visual impairments on loneliness among older adults. Loneliness is commonly defined as a discrepancy between desired and achieved levels of social relationships (Perlman and Peplau, 1981). This discrepancy may be related to the number of relationships, frequency of contact, or the quality and intimacy of those connections. Studies confirm that loneliness levels are significantly higher among the oldest seniors compared to the general population (Rabiee et al., 2021). Our study produced similar findings, with an average loneliness score of 49.5 ± 4.28, indicating a moderate to moderately high level of loneliness, with women exhibiting higher loneliness scores. Research suggests that individuals with visual impairments may be at greater risk of loneliness (Heppe et al., 2020). Brunes et al. (2019b) found that one in six adults with visual impairments suffered from moderate to severe loneliness, indicating that loneliness prevalence remains consistently higher among individuals with visual impairments than in the general population across all age groups. Similarly, research by Chu and Chan (2022) showed that participants experienced moderate to moderately high levels of loneliness, with prevalence rates ranging from 49.1% to 31.2%.

Research on the relationship between anxiety and visual impairment in older adults has produced mixed findings. Some studies suggest that the prevalence of clinically significant anxiety disorders among seniors with visual impairments is higher than in the general population, ranging from 8.7% to 15.6% (Eramudugolla et al., 2013; Heesterbeek et al., 2017). Anxiety is therefore widespread among visually impaired patients and represents an additional factor that contributes to disability and reduced quality of life. In our study, seniors with visual impairments scored an average of 48 points in both state and trait anxiety measures, indicating a high level of anxiety. On the other hand, some studies have not found an increased level of anxiety among visually impaired seniors (Evans et al., 2007; Kempen and Zijlstra, 2014; van der Aa, 2015). While anxiety may not be as strongly linked to vision loss as depression, it remains a significant concern for many individuals and can emerge even before severe visual impairment occurs. It is also important to recognize that additional factors may contribute to anxiety and require further investigation, such as declining visual acuity or reduced night vision, even in the absence of an eye disease (Demmin and Silvertein, 2020). Previous literature has highlighted the potentially negative and disabling impact of comorbid mental health issues on the quality of life of patients with eye diseases (Bian et al., 2020; Senra et al., 2022; WHO, 2017). Given that the WHO (2017) ranks anxiety disorders as the sixth leading contributor to global disability, it is particularly important to address this issue among seniors with visual impairments. Prior research has shown that anxiety and depression in these patients are often overlooked and therefore inadequately treated (Senra et al., 2017).

The results show that both internal and external factors influence the well-being of older adults with visual impairment. Internally, resilience, coping mechanisms, and pre-existing mental health conditions play a crucial role in how individuals adapt to vision loss. The ability to maintain a positive self-concept and utilize problem-solving strategies can mitigate some of the negative impacts of visual impairment on quality of life (Brunes et al., 2019b). Externally, social support, access to health care, and environmental changes significantly shape the experiences of older adults with visual impairment. Research suggests that individuals with strong social networks experience lower levels of loneliness and anxiety compared to those with limited opportunities for interaction (Chu and

Chan, 2022). Additionally, access to rehabilitation programs and assistive technologies can enhance autonomy and improve overall life satisfaction (Swenor et al., 2020). These findings underscore the importance of a holistic approach when designing interventions for this population.

Limitations of the study

This study has several limitations. The most significant is the small sample size, which may affect the generalizability of the findings. As a cross-sectional study, it provides only a snapshot in time, which limits insight into dynamic changes in quality of life, anxiety, and loneliness over time. Reliance on self-report scales may lead to response bias. The use of the WHOQOL-BREF has additional limitations, including subjectivity of assessment, simplification of the concept of quality of life, limited comparability, and low variability of responses. Nevertheless, this tool remains useful for assessing quality of life in both clinical and research settings.

Conclusion

Vision impairment has a significant impact on individuals and society as a whole. Our results show that age-related vision impairment is associated with reduced quality of life, loneliness, and increased levels of anxiety. Given the substantial impact of vision impairment on mental health and daily functioning, it is essential to implement targeted interventions that address both psychological and practical challenges. We propose the following recommendations for healthcare professionals working with visually impaired older adults: incorporating screening for anxiety and loneliness into ophthalmological examinations, offering early interventions, ensuring access to rehabilitation services and assistive devices, supporting peer groups and community activities, and recommending environmental modifications. These measures will help improve patients' quality of life and well-being.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy and ethical restrictions.

Ethical considerations

The study respects the Declaration of Helsinki from 1975 (and its revisions from 2004 and 2008). It was conducted with the approval of the eye clinic management. All participants voluntarily agreed to be included in the research file and to complete the questionnaire.

Conflict of interest

The authors have no conflict of interest to declare.

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