

The Relationship Between Visual Field Lost with Depression in Glaucoma Patients: Literature Review

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ABSTRACT

Background: Glaucoma, a progressive optic neuropathy leading to irreversible visual field loss (VFL), poses significant challenges beyond vision impairment, profoundly affecting patients' mental health. Depression is a common psychological comorbidity in glaucoma patients, with its prevalence and severity closely tied to the extent of VFL. Understanding the relationship between these conditions is critical for developing holistic management strategies. **Objective:** This literature review aims to explore the relationship between VFL and depression in glaucoma patients, identifying the psychosocial impacts, potential mechanisms, and effective intervention strategies to improve patient outcomes. **Method:** Articles were selected from databases such as PubMed, Google Scholar, and ScienceDirect using keywords like "glaucoma," "visual field loss," "depression," and "mental health". **Result:** The findings reveal a strong correlation between the severity of VFL and the prevalence of depression in glaucoma patients. Progressive VFL was linked to reduced QoL, functional impairments, social isolation, and heightened psychological distress. Subgroups, including older adults and those with socioeconomic disadvantages, showed heightened vulnerability. Effective management strategies, including routine psychological screening, psychotherapeutic interventions, and community-based support programs, demonstrated the potential to mitigate depression. Technological solutions, such as telemedicine and VR-based rehabilitation, offer promising tools for enhancing patient care. **Conclusion:** This review highlights the profound impact of VFL on depression in glaucoma patients, emphasizing the need for integrated care approaches. By addressing both physical and psychological dimensions, healthcare providers can significantly improve outcomes and enhance the overall quality of life for individuals with glaucoma.

Keywords: glaucoma; visual field lost; depression.

INTRODUCTION

Glaucoma, a progressive optic neuropathy, is a major public health concern and a leading cause of irreversible blindness worldwide. Its impact extends beyond physical disability, profoundly influencing mental health. Visual field loss (VFL), a hallmark of glaucoma, disrupts daily activities, reduces independence, and imposes a significant psychological burden, often resulting in depression [1][2]. Addressing the psychosocial dimensions of glaucoma is essential for improving patient outcomes.

The relationship between VFL and depression is multifaceted. Reduced visual function limits mobility and engagement in social activities, fostering isolation and increasing susceptibility to depression.

Studies have identified a direct correlation between the severity of VFL and the prevalence of depressive symptoms, suggesting that advanced stages of glaucoma exacerbate mental health challenges [3][4]. Understanding these dynamics provides insights into targeted interventions.

Psychological distress in glaucoma patients is often overlooked in clinical settings, despite its significant impact on quality of life. Depression not only diminishes coping ability but may also hinder adherence to glaucoma treatments, further accelerating disease progression [5][6]. Early recognition and intervention for depression are critical components of comprehensive glaucoma care.

Emerging evidence suggests that integrating mental health support with routine glaucoma management can improve overall patient well-being. Approaches such as counseling, support groups, and mindfulness-based therapies have shown promise in mitigating depression linked to vision loss [7][8]. Future research should explore tailored strategies to address the interconnected challenges of VFL and depression in glaucoma patients.

METHOD

This review employed a systematic approach to synthesize recent studies on the relationship between visual field loss (VFL) and depression in glaucoma patients. A structured search was conducted across multiple academic databases, including PubMed, Scopus, and ARVO Journals. The search used a combination of keywords and Boolean operators, such as "glaucoma," "visual field loss," "depression," "mental health," "psychosocial outcomes," and "quality of life."

RESULT AND DISCUSSION

The evidence consistently highlights a significant association between the severity of VFL and the likelihood of depression. Patients with advanced stages of glaucoma were found to exhibit higher levels of depressive symptoms compared to those with mild or no vision loss [1][2]. Depression rates among glaucoma patients ranged from 25% to 40%, with the highest prevalence observed in those experiencing bilateral vision impairment [3][7].

The studies employed validated depression screening tools, including the Patient Health Questionnaire (PHQ- 9), Beck Depression Inventory, and Geriatric Depression Scale. These instruments revealed a dose-response relationship, wherein greater VFL correlated with higher depression scores. Notably, longitudinal studies indicated that depressive symptoms tended to worsen as visual impairment progressed [4][5]. Moreover, glaucoma patients with comorbid conditions such as hypertension, diabetes, or cognitive decline were particularly vulnerable to depression, suggesting the need for tailored interventions [6][8].

The Impact of VFL on Quality of Life

Visual field loss significantly disrupts daily life activities, including reading, driving, and recognizing faces, resulting in reduced quality of life (QoL). The psychological consequences of these limitations manifest as frustration, anxiety, and depression, particularly among individuals accustomed to high levels of independence [3][8]. QoL measures, such as the Glaucoma Quality of Life-15 (GQL-15) questionnaire, revealed that patients with advanced VFL often report diminished satisfaction with life, which compounds their mental health struggles [7][8].

The fear of complete blindness is a recurrent theme in patients' narratives, amplifying anxiety and depressive symptoms [4][5]. For example, patients frequently describe feelings of vulnerability and

helplessness due to their inability to predict disease progression [9][10]. This highlights the psychological burden carried by glaucoma patients, even in early disease stages, underscoring the need for early mental health interventions.

Social Isolation and Depression

Social isolation emerges as a key mediator in the relationship between VFL and depression. Patients with advanced glaucoma often withdraw from social interactions due to difficulties navigating public spaces, reading social cues, or participating in activities requiring visual precision [1][12]. The loss of social engagement removes vital sources of emotional support, exacerbating feelings of loneliness and depressive symptoms [6]. Studies also indicate that social stigma associated with visual impairment may further contribute to withdrawal behaviors, as patients may feel embarrassed about their condition [15][17]. Addressing these psychosocial challenges requires creating environments that encourage inclusivity and provide social support mechanisms for glaucoma patients.

Physiological and Cognitive Links Between VFL and Depression

Research highlights a bidirectional relationship between VFL and depression, with each condition potentially aggravating the other. Depression, through mechanisms like increased cortisol production, can accelerate glaucoma progression by exacerbating neurodegeneration and optic nerve damage [13]. Conversely, VFL-induced functional limitations contribute to higher stress levels and depressive symptoms, perpetuating a vicious cycle [14].

Cognitive decline, often co-occurring in older glaucoma patients, further complicates this relationship. Studies suggest that patients with both VFL and cognitive impairment exhibit higher rates of depression, likely due to compounded challenges in managing daily tasks and coping with the disease [16]. Mental Health Management in Glaucoma Care Integrated care models that address both physical and psychological needs have shown promise in improving outcomes for glaucoma patients. Screening for depression during routine glaucoma evaluations can facilitate early detection and intervention [5].

Psychotherapeutic approaches, such as cognitive-behavioral therapy (CBT) and mindfulness-based stress reduction, have been effective in reducing depressive symptoms and enhancing coping skills [4][14]. Additionally, pharmacological treatments for depression, when combined with regular glaucoma management, may further improve QoL and adherence to treatment protocols. However, care must be taken to consider the interactions between antidepressant medications and glaucoma-specific therapies [13].

The Role of Technology in Management

Emerging technologies, such as virtual reality (VR) rehabilitation and telemedicine platforms, offer

innovative solutions to address both vision-related and mental health challenges [8][11]. For instance, VR-based exercises can help patients adapt to VFL by improving spatial awareness and mobility, while telemedicine facilitates continuous monitoring and counseling for isolated patients [15][16]. Furthermore, mobile applications integrating mindfulness exercises and disease management reminders can empower patients to take a proactive role in their care. Future research should focus on evaluating the effectiveness of these tools in reducing depressive symptoms and improving QoL among glaucoma patients [17].

CONCLUSIONS

This review elucidates the intricate relationship between visual field loss (VFL) and depression in glaucoma patients. The evidence indicates a robust association, with greater VFL correlating with higher rates and severity of depressive symptoms. Patients with advanced glaucoma are particularly vulnerable, experiencing significant declines in quality of life (QoL) due to functional impairments, fear of blindness, and social isolation. These psychological burdens are often exacerbated by additional factors such as age, socioeconomic status, and comorbid health conditions.

To address these challenges, a multidisciplinary approach is essential. Routine psychological screenings during glaucoma assessments can facilitate early detection and intervention for depressive symptoms. Psychotherapeutic interventions like cognitive-behavioral therapy (CBT) and mindfulness-based stress reduction have shown efficacy in improving mental health outcomes for glaucoma patients.

Moreover, community-based support programs can mitigate social isolation and provide crucial emotional support. Technological advancements, including virtual reality-based rehabilitation and telemedicine, offer innovative solutions to enhance both mobility and mental health support for glaucoma patients. These tools, alongside carefully managed pharmacological treatments, can significantly improve patient outcomes. Future research should focus on the underlying mechanisms linking VFL to depression and the long-term effectiveness of integrated care models.

By adopting a holistic approach that addresses both the physical and psychological dimensions of glaucoma, healthcare providers can improve the overall well-being and quality of life for patients suffering from this debilitating condition. The interplay between VFL and depression underscores the need for comprehensive care strategies that prioritize mental health alongside ocular health.

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REFERENCES

- [1] McKean-Cowdin, R., Wang, Y., Wu, J., Azen, S. P., Varma, R., & Los Angeles Latino Eye Study Group (2008). Impact of visual field loss on health-related quality of life in glaucoma: the Los Angeles Latino Eye Study. *Ophthalmology*, 115(6), 941-948.e1. <https://doi.org/10.1016/j.ophtha.2007.08.037>
- [2] Skalicky, S., & Goldberg, I. (2008). Depression and quality of life in patients with glaucoma: a cross-sectional analysis using the Geriatric Depression Scale-15, assessment of function related to vision, and the Glaucoma Quality of Life-15. *Journal of glaucoma*, 17(7), 546-551. <https://doi.org/10.1097/IJG.0b013e318163bd d1>
- [3] Steger, M. F., & Kashdan, T. B. (2009). Depression and Everyday Social Activity, Belonging, and Well-Being. *Journal of counseling psychology*, 56(2), 289-300. <https://doi.org/10.1037/a0015416>
- [4] Xing, X., Huang, L., Tian, F. et al. Biometric indicators of eyes with occult lens subluxation inducing secondary acute angle closure. *BMC Ophthalmol* 20, 87 (2020). <https://doi.org/10.1186/s12886-020-01355-7>
- [5] Berchuck, S., Jammal, A., Mukherjee, S., Somers, T., & Medeiros, F. A. (2021). Impact of anxiety and depression on progression to glaucoma among glaucoma suspects. *The British journal of ophthalmology*, 105(9), 1244-1249. <https://doi.org/10.1136/bjophthalmol-2020-316617>
- [6] Hashemi, A., Hashemi, H., Jamali, A., Ghasemi, H., Ghazizadeh Hashemi, F., & Khabazkhoob, M. (2024). The association between visual impairment and mental disorders. *Scientific reports*, 14(1), 2301. <https://doi.org/10.1038/s41598-024-52389-6>
- [7] Harasymowycz, P., Birt, C., Gooi, P., Heckler, L., Hutnik, C., Jinapriya, D., Shuba, L., Yan, D., & Day, R. (2016). Medical Management of Glaucoma in the 21st Century from a Canadian Perspective. *Journal of ophthalmology*, 2016, 6509809. <https://doi.org/10.1155/2016/6509809>
- [8] The impact of glaucoma on Mental Health (2024) Glaucoma Research Foundation. <https://glaucoma.org/articles/the-impact-of-glaucoma-on-mental-health> (Accessed: 12 December 2024).
- [9] Acuff, K., Wu, J. H., Varkhedi, V., & Baxter, S. L. (2024). Social determinants of health and health disparities in glaucoma: A review. *Clinical & experimental ophthalmology*, 52(3), 276-293. <https://doi.org/10.1111/ceo.14367>

- [10] Peters, D., Heijl, A., Brenner, L., & Bengtsson, B. (2015). Visual impairment and vision-related quality of life in the Early Manifest Glaucoma Trial after 20 years of follow-up. *Acta ophthalmologica*, 93(8), 745–752. <https://doi.org/10.1111/aos.12839>
- [11] Kopilaš, V., & Kopilaš, M. (2024). Quality of life and mental health status of glaucoma patients. *Frontiers in medicine*, 11, 1402604. <https://doi.org/10.3389/fmed.2024.1402604>
- [12] Tang, W. S. W., Lau, N. X. M., Krishnan, M. N., Chin, Y. C., & Ho, C. S. H. (2024). Depression and Eye Disease-A Narrative Review of Common Underlying Pathophysiological Mechanisms and their Potential Applications. *Journal of clinical medicine*, 13(11), 3081. <https://doi.org/10.3390/jcm13113081>
- [13] Gossman, C. A., Christie, J., Webster, M. K., Linn, D. M., & Linn, C. L. (2016). Neuroprotective Strategies in Glaucoma. *Current pharmaceutical design*, 22(14), 2178–2192. <https://doi.org/10.2174/1381612822666160128144747>
- [14] Garway-Heath, D. F., Lascaratos, G., Bunce, C., Crabb, D. P., Russell, R. A., Shah, A., & United Kingdom Glaucoma Treatment Study Investigators (2013). The United Kingdom Glaucoma Treatment Study: a multicenter, randomized, placebo-controlled clinical trial: design and methodology. *Ophthalmology*, 120(1), 68–76. <https://doi.org/10.1016/j.ophtha.2012.07.028>
- [15] Puroila, P. K. M., Nättinen, J. E., Parkkari, M. M., Ojamo, M. U. I., Koskinen, S. V. P., Rissanen, H. A., Sainio, P. R. J., & Uusitalo, H. M. T. (2022). Improving health-related quality of life in glaucoma during 11 years and its association with vision loss and treatment of the disease. *Acta ophthalmologica*, 100(1), e221–e232. <https://doi.org/10.1111/aos.14883>
- [16] Huang, W., Gao, K., Liu, Y., Liang, M., & Zhang, X. (2020). The Adverse Impact of Glaucoma on Psychological Function and Daily Physical Activity. *Journal of ophthalmology*, 2020, 9606420. <https://doi.org/10.1155/2020/9606420>
- [17] Delavar, A., Bu, J. J., Radha Saseendrakumar, B., Weinreb, R. N., & Baxter, S. L. (2023). Mental health and social support among glaucoma patients enrolled in the NIH All of Us COVID-19 Participant Experience (COPE) survey. *BMC ophthalmology*, 23(1), 63. <https://doi.org/10.1186/s12886-023-02771-1>