Acta Biomed 2025; Vol. 96, N. 4: 16504 DOI: 10.23750/abm.v96i4.16504

Review

The relationship between visual impairment and depression in low vision patients: A systematic review

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Abstract. *Background and aim:* Visual impairment significantly impacts daily activities, quality of life, and future plans, often leading to psychological issues, including anxiety and depression. This study aims to explore the relationship between mental disorders, particularly depression, and visual impairment or low vision. *Methods:* A systematic literature search was conducted using online databases such as PubMed, ScienceDirect, Google Scholar, and Scopus. Search terms included combinations of keywords such as low vision, depression, psychiatric disorder, and their synonyms. The initial search yielded 362 publications, which were screened by title and abstract to identify studies that met the inclusion criteria. Nineteen articles were included in this review. *Results:* Low vision can affect visual function and psychosocial well-being, impairing the ability to perform daily activities. It is also closely associated with depression and other mental health issues. Individuals with low vision often experience a reduced quality of life and poorer mental health compared to those without visual impairments and may require specialist care to manage their condition. *Conclusions*: According to this systematic review, there is a significant correlation between depression and visual impairment. (www.actabiomedica.it)

Key words: low vision, depression, psychiatric disorder, mental health, visual impairment

Introduction

Visual impairment can significantly affect daily activities, quality of life, and future plans, and can lead to major psychological issues (1). Studies show that visual impairment is associated with worsened mental health, particularly depression, which is often underdiagnosed (2). Depression is linked to negative outcomes such as functional disability, increased healthcare costs, and elevated risks of illness and mortality. Early detection of depression in adults through primary healthcare screenings, followed by appropriate treatment, can reduce morbidity (3). Since 2009, the United States Preventive Services Task Force (USPSTF) has recommended regular depression screening for all adults (4). However, national depression screening rates remain low, with only 1.4% of all adult outpatient visits including screening (5). Visual complaints are the most common reason for general eye clinic visits (6). Studies have demonstrated that individuals with low vision are more likely to experience elevated levels of anxiety and depression (7). Therefore, healthcare providers should recognize the heightened prevalence of depression among patients with visual impairments, which may complicate the management of other coexisting conditions. Visual impairment is a known risk factor for depression, which is the most common mental health issue, affecting 18.2% of the general population, with prevalence among visually impaired patients ranging from 13.5% to 33% (8).

To better understand the association between visual impairment and depressive disorders, this

systematic review will examine the relationship between visual impairment, particularly low vision, and mental health disorders, with a focus on depression. The review will also analyze relevant literature from the past five years on this topic.

Materials and Methods

This systematic review was conducted and carried out in compliance with preferred reporting items for systematic review and meta-analysis (PRISMA) guidelines (9–11) and registered in the Prospective Register of Systematic Reviews (PROSPERO) under the registration number CRD42024607093. The selection of keywords and studies was guided by the Patients, Intervention, Comparison, and Outcome (PICO) framework. The PICO criteria for this review were as follows:

P (Participants): Patients with low vision
I (Intervention): Presence of depression
C (Comparison): Absence of depression
O (Outcome): Relationship between visual impairment and depression

Database search, study selection, and quality assessment

A comprehensive literature search was conducted using four online databases: PubMed, ScienceDirect, Google Scholar, and Scopus. Search terms incorporated combinations of the main keywords "Low Vision", "Depression", "Psychiatric Disorder", and relevant synonyms. The literature search for the online databases was initiated on February, 2024, and completed on July, 2024. Inclusion criteria for this review encompassed studies that specifically addressed mental disorders, particularly depression, in individuals with low vision. Non-English language studies, animal studies, inaccessible journals, and publications older than 5 years were excluded from this review. Two independent assessors (PPR and ATP) selected the studies. Any discrepancies between the two were resolved through discussion, and if needed, a third assessor (PS or SS) was consulted during the selection process. The final selection was based on consensus among all authors.

The initial search yielded 362 publications, which were screened by title and abstract to identify studies that met the inclusion criteria. Full articles of potentially relevant studies were then reviewed, with irrelevant studies excluded at this stage. Selected articles were evaluated according to the Oxford Centre for Evidence-Based Medicine's 2011 Level of Evidence (12). To further reduce bias and ensure the quality of the 19 selected publications, the Joanna Briggs Institute critical appraisal checklist (13,14), tailored to the type of research, was applied.

Data extraction and analysis

The authors conducted a database search and included 19 papers in this review, focusing on the association between visual impairment and depressive disorders in individuals with low vision. Figure 1 presents the flowchart of the article selection process. For each selected study, the authors extracted key information, including year of publication, country, study methods, sample age, sample size, and outcomes. The results and conclusions of each relevant study were then analyzed and synthesized into a comprehensive discussion, leading to conclusions about the association between visual impairment and depressive disorders.

Results

After conducting an identification and screening process based on specific criteria, we selected 19 studies relevant to this topic. Details regarding the year, location, methodology, and sample are presented in Table 1. In Table 2, we summarize the findings obtained from these 19 relevant studies.

The review and findings of 19 studies in Table 2 revealed a significant relationship between depression and visual impairment. Visual impairment may exert a detrimental effect on the mental health of individuals across various age groups, including young adults, working-age populations, and the elderly. Low vision can impair visual function, daily activities, and mental well-being.

Discussion

Many people consider sight to be their most valuable sense. When individuals experience visual

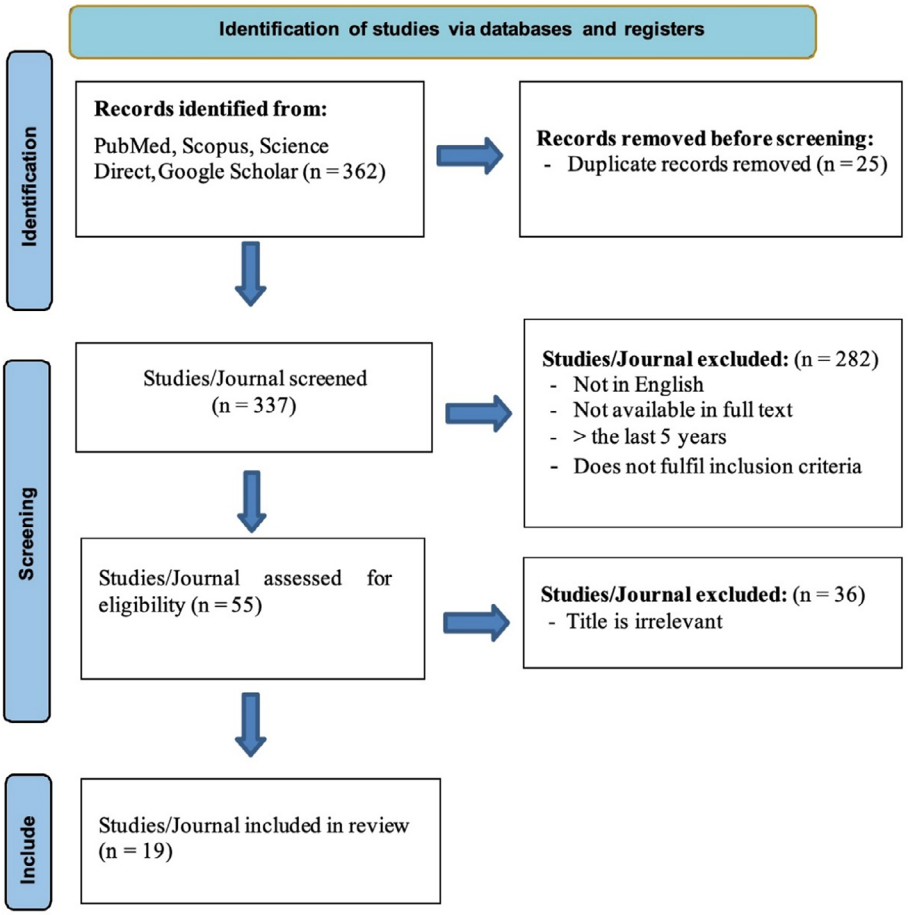

Figure 1. PRISMA Flowchart of Study Selection for the Systematic Review

impairment, they frequently undergo psychological distress while adjusting to maximize their remaining vision (34). The literature establishes a clear link between visual impairment and mental health issues such as stress, depressive episodes, anxiety disorders, fear, and social isolation. Visual impairment contributes to the reduced quality of life observed in blind patients. Consequently, the decline in quality of life and overall health associated with visual impairment may increase the risk of suicide in these patients (2). Additionally, visual impairment often restricts mobility and limits social interactions, making it challenging for individuals to work or engage in activities they previously enjoyed. This can lead to social isolation, feelings of solitude, and a lack of social support (35). In general, the association between mental wellness and vision impairment is likely bidirectional (36). Studies have shown that poor vision can lead to depressive symptoms, and in turn, depressive symptoms can impair functional vision (2). Depression, for example, can increase the risk of eye illness through harmful behaviors, including poor dietary choices, smoking, illicit drug use, and non-compliance with prescribed medications (37,38). Mydriasis (pupil dilatation) and an increased risk of angle-closure glaucoma are known adverse effects of depression medications, such as tricyclic antidepressants (TCAs) and selective serotonin reuptake inhibitors (SSRIs), further impacting vision (39). Furthermore, neurotransmitter dysfunction (e.g., GABA, dopamine) in individuals with depression may affect the visual system, involving visual function (e.g., diminished retinal sensitivity) and visual processing

Table 1. Basic Characteristics of Included Studies

Author, Year	Research Sites	Research Methods	Age (Years)	Sample Size
Choi, Lee and Lee, 2018 (15)	South Korea	Case-control	0–60+	5,846 (cases) and 23,384 (controls)
Nollett, Ryan, et al., 2019 (16)	South Wales and London	Cross-sectional	≥18	990
Cosh et al., 2019 (17)	France	Prospective cohort	≥65	9,036
Nollett, Bartlett, et al., 2019 (18)	England	Cross-sectional	-	167
Choi et al., 2019 (19)	South Korea	Case-control	≥18	125 (cases) and 71 (controls)
Kohda et al., 2019 (20)	Japan	Cross-sectional	15–63	81
Abou-Hanna et al., 2020 (21)	India, China, Russia, Ghana, Mexico, and South Africa	Cross-sectional	≥50	22,495
Brunes and Heir, 2020 (22)	Norway	Cross-sectional	18–66+	736
van Munster et al., 2021 (23)	Netherlands	Case series	33–91	16
Bartlett et al., 2021 (24)	England	Mixed methods (non-randomized controlled)	38.5–52	40
Parravano et al., 2021(25)	Various high-income countries	Meta-analysis	Majority ≥65	6,992
Elsman et al., 2022 (26)	Netherlands	Semi-structured interview	-	10
Onyebueke, Okeke and Asimadu, 2022 (27)	Nigeria	Cross-sectional	18–70+	400
Gascoyne et al., 2022 (28)	Nigeria	Cross-sectional	≥50	3,926
Virgili et al., 2022 (29)	Various high-income countries	Systematic review	Varies by study	218–48,583,771 in 31 studies
Munaw and Tegegn, 2022 (30)	Ethiopia	Comparative cross-sectional	18–66+	206 (cases) and 206 (controls)
Li et al., 2022 (31)	Varies by study	Systematic review	Varies by study	60–662,641 in 36 studies
van Munster et al., 2023 (32)	England, Australia and the Netherlands	Cross-sectional	-	316
Tantirattanakulchai et al., 2023 (33)	Thailand	Cross-sectional	18–96	284

(e.g., reduced contrast sensitivity) (36). While mental health issues can occasionally contribute to vision loss, evidence suggests that mental health issues more often arise as a result of visual impairment. The emotional distress and functional challenges associated with vision loss can lead to various psychological issues, particularly affecting mood and psychological well-being. Furthermore, awareness of one's visual impairment can exacerbate these psychological effects. In individuals with visual impairment, depression may worsen due to social exclusion or difficulties in pursuing and maintaining employment. These factors are likely interconnected, compounding the overall impact on mental health (36). Anxiety and depression are highly comorbid, with anxiety often preceding depression (40,41). However, research on anxiety in older adults with

Table 2. Summary of Study Results

Author, Year	Findings
Choi, Lee and Lee, 2018 (15)	After adjusting for factors such as age, gender, income, region of residence, hypertension, diabetes, and dyslipidemia, visual impairment was found to increase the risk of depression.
Nollett, Ryan, et al., 2019 (16)	In this population, younger age, non-white ethnicity, and poorer visual function were key risk factors for experiencing significant depressive symptoms.
Cosh et al., 2019 (17)	In elderly individuals, visual impairment was primarily correlated with the affective dimension of depression.
Nollett, Bartlett, et al., 2019 (18)	Most practitioners do not routinely screen patients with low vision for depression-related symptoms due to a lack of expertise and confidence in addressing mental health.
Choi et al., 2019 (19)	Patients with low vision reported poorer vision-related mental health and quality of life compared to those without visual impairment, with some requiring specialist examinations. The negative effects of low vision were more pronounced in individuals with acquired rather than congenital low vision.
Kohda et al., 2019 (20)	Women showed higher depression and anxiety scores than men. Social support from close relatives was strongly associated with better mental health (OR = 3.97), indicative that effective social assistance from household members can improve mental health of visually impaired patients fourfold.
Abou-Hanna et al., 2020 (21)	Respondents with depression had poorer visual acuity than those without depression.
Brunes and Heir, 2020 (22)	Depression prevalence varied by age and gender, with rates ranging from 11.1%–22.8% in women and 9.4%–16.5% in men. Depression was more prevalent in younger age groups. Additionally, depression was independently associated with vision impairment in the elderly, suggesting that difficulty adapting to new circumstances increases the risk of depression.
van Munster et al., 2021 (23)	Participants emphasized challenges in addressing mental health issues, such as a focus on practical support for their visual impairment, lack of awareness about mental health issues, and misconception of depression or anxiety symptoms. Furthermore, many found it difficult to simultaneously communicate their vision impairment and mental health issues.
Bartlett et al., 2021 (24)	Among 148 practitioners who assessed patients with low vision prior to and following training, 28 (18.9%) identified depression risk in their patients before training, which increased to 65 (43.9%) post-training.
Parravano et al., 2021(25)	Depression was prevalent in 25% of visually impaired patients, particularly among those over 65 years old.
Elsman et al., 2022 (26)	The Patient Health Questionnaire-4 (PHQ-4) was found to be an effective screening tool for quickly diagnosing depression and anxiety.
Onyebueke, Okeke and Asimadu, 2022 (27)	There was a strong correlation between depression and visual social functioning, although other unaddressed factors may have influenced this relationship.
Gascoyne et al., 2022 (28)	Individuals with severe visual impairment had significantly higher anxiety and depression symptoms than those without impairment (OR = 2.72; 95% CI 1.86–3.99). Men with severe vision impairment and blindness reported higher levels of anxiety and depression than women.
Virgili et al., 2022 (29)	Visual impairment and depression were found to commonly co-occur in the general population, particularly among the elderly.
Munaw and Tegegn, 2022 (30)	Participants with visual impairment lasting two years or more in both eyes were nearly nine times more likely to experience emotional distress compared to those impaired for less than two years. Prolonged vision loss may lead to a loss of hope in recovery, increasing depression and anxiety.
Li et al., 2022 (31)	In pediatric populations, visual impairment was correlated with higher rates of depression and anxiety. More randomized controlled trials are needed to assess the effect of public health policies for myopia treatment on children's mental health.
van Munster et al., 2023 (32)	Eye healthcare practitioners with more experience and those who perceived greater barriers to managing depression were less likely to engage in conversations about depression with low-vision patients.
Tantirattanakulchai et al., 2023 (33)	Depressive symptoms in low vision individuals were significantly exacerbated by the COVID-19 pandemic.

visual impairment remains limited (42). The mental health effects of visual impairment vary by age and are dependent primarily on visual acuity. Older individuals generally experience the lowest visual acuity, along with decreased physical well-being and personal satisfaction due to low vision (43). Visual impairment in the pediatric population affects children's overall development, including motor, intellectual, and psychosocial aspects, limiting their social interactions and reducing their quality of life (44). Vision is essential for learning and serves as a form of nonverbal communication in social interactions. Vision in older children is strongly associated not only with academic achievement but also with other aspects of life, such as physical activity, independence, and social interactions (44). Meer et al. found that children with eye diseases, including impaired vision, are more likely to develop psychiatric conditions such as schizophrenia, bipolar disorder, anxiety, and depressive symptoms. Children and adolescents with at least one of five eye conditions were more likely to receive a psychiatric diagnosis, with ORs ranging from 1.26 to 1.54 (45). The role of age in depression in the general population remains unclear, with some studies suggesting that age is a risk factor (46–48), while others propose it as a protective factor (49,50). Younger individuals with visual impairment have been identified as independent predictors of depressive symptoms and are closely associated with specific types of visual impairment (51). Visual impairment predicts a higher risk of depressive symptoms (52), with up to 43% of visually impaired individuals experiencing major depressive episodes, though only a subset receives appropriate treatment (53). Understanding the mediation pathways between visual impairment and depression is essential. Even after adjusting for demographic and socioeconomic factors, studies demonstrate a strong link between visual impairment and depression. Additionally, visual impairment is associated with fewer close friends, limited interactions with neighbors and colleagues, and lower levels of group engagement (54). This review found that decreased support from friends and relatives was associated with worse depressive symptoms, confirming prior research that showed greater social involvement correlates with fewer depression symptoms. Visual impairment is also linked to limitations in daily activities and functional constraints. Social support plays a key role in moderating the relationship between vision loss and depression-related symptoms (54). Vision rehabilitation is essential for improving psychosocial functioning. Access to low-vision services has been associated with reduced levels of depression, improved emotional health, and enhanced overall quality of life among patients with low vision. Integrating mental health services with vision rehabilitation can further promote emotional well-being (55).

Conclusion

Most existing clinical research indicates a significant link between depression and visual impairment. However, many studies face limitations, such as small sample sizes and cross-sectional designs, which affect the robustness of their findings. Additionally, further exploration is needed to differentiate between general depression and vision-related distress.

Acknowledgements: This research was supported by Department of Ophthalmology, Faculty of Medicine, Hasanuddin University, Makassar, South Sulawesi, Indonesia.

Funding: This research received no external funding.

Ethic Committee: no patients were involved in this study.

Conflict of Interest: Each author declares that he or she has no commercial associations (e.g., consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article.

Authors Contribution: PPR (Concept, Design, Resources, Materials, Data Collection and Processing, Analysis and Interpretation, Literature Search, Writing Manuscript). ATP (Concept, Design, Supervision, Analysis and Interpretation, Literature Search), PS (Concept, Design, Supervision, Analysis and Interpretation, Literature Search), and SS (Concept, Design, Analysis and Interpretation, Critical Review). All authors read and approved the final version of the manuscript.

Data Availability Statement: The data presented in this study are available on request from the corresponding author.

References

1. Boagey H, K. Jolly J, E. Ferrey A. Psychological Impact of Vision Loss. J Ment Health Clin Psychol. 2022;6(3):25-31. doi:10.29245/2578-2959/2021/3.1256
2. Mark JR, Kulinich AG, Scher LM, et al. Vision Loss and Psychopathology. Pan Am J Ophthal. 2021;3(1):7. doi:10.4103/pajo.pajo_65_20
3. Chen YL, Wu MS, Wang SH, et al. Effectiveness of health checkup with depression screening on depression treatment and outcomes in middle-aged and older adults: a target trial emulation study. Lancet Reg Health West Pac. 2024;43. doi:10.1016/j.lanwpc.2023.100978
4. Siu AL, US Preventive Services Task Force (USPSTF), Bibbins-Domingo K, et al. Screening for Depression in Adults: US Preventive Services Task Force Recommendation Statement. JAMA. 2016;315(4):380-387. doi:10.1001/jama.2015.18392
5. Bhattacharjee S, Goldstone L, Vadiei N, et al. Depression Screening Patterns, Predictors, and Trends Among Adults Without a Depression Diagnosis in Ambulatory Settings in the United States. Psychiatric Serv. 2018;69(10):1098-1100. doi:10.1176/appi.ps.201700439
6. C Okosa M. Psychological Effects of Eye Diseases: A Tertiary Eye Center Study. J Psychiatry Psychiatr Disord. 2021;05(04). doi:10.26502/jppd.2572-519X0139
7. Taipale J, Mikhailova A, Ojamo M, et al. Low vision status and declining vision decrease Health-Related Quality of Life: Results from a nationwide 11-year follow-up study. Qual Life Res. 2019;28(12):3225-3236. doi:10.1007/s11136-019-02260-3
8. Court H, McLean G, Guthrie B, et al. Visual impairment is associated with physical and mental comorbidities in older adults: a cross-sectional study. BMC Med. 2014;12(1):181. doi:10.1186/s12916-014-0181-7
9. Page MJ, McKenzie JE, Bossuyt PM, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. Syst Rev. 2021;10(1):89. doi:10.1186/s13643-021-01626-4
10. Warsinggih, Aryanti C, Uwuratuw JA, et al. Anastomosis selection in liver transplantation for recipients with unusable recipient hepatic arteries: a bayesian network meta-analysis. BMC Surg. 2024;24(1):96. doi:10.1186/s12893-024-02385-4
11. Grimaldy G, Prasetyo E, Manuhutu YN, et al. Relationship of Hyperbaric Oxygen Therapy with Glasgow Coma Scale (GCS) Dynamics in Traumatic Brain Injury Patients. Indonesia Surg J. 2024;2(1):1-9. https://inasj.org/index.php/inasj/article/view/8
12. Howick J, Chalmers I, Glasziou P, et al. The Oxford 2011 Levels of Evidence. 2011. https://www.cebm.ox.ac.uk/resources/levels-of-evidence/ocebm-levels-of-evidence
13. Moola S, Munn Z, Tufanaru C, et al. Chapter 7: Systematic reviews of etiology and risk. In: JBI Manual for Evidence Synthesis. JBI; 2020. doi:10.46658/JBIMES-20-08
14. Oley MH, Oley MC, Sukarno V, et al. Advances in Three-Dimensional Printing for Craniomaxillofacial Trauma Reconstruction: A Systematic Review. J Craniofac Surg. 2024;35(7):1926-1933. doi:10.1097/SCS.0000000000010451
15. Choi HG, Lee MJ, Lee SM. Visual impairment and risk of depression: A longitudinal follow-up study using a national sample cohort. Sci Rep. 2018;8(1):2083. doi:10.1038/s41598-018-20374-5
16. Nollett C, Ryan B, Bray N, et al. Depressive symptoms in people with vision impairment: a cross-sectional study to identify who is most at risk. BMJ Open. 2019;9(1):e026163. doi:10.1136/bmjopen-2018-026163
17. Cosh S, Carriere I, Nael V, et al. The association of vision loss and dimensions of depression over 12 years in older adults: Findings from the Three City study. J Affect Disord. 2019;243:477-484. doi:10.1016/j.jad.2018.09.071
18. Nollett C, Bartlett R, Man R, et al. How do community-based eye care practitioners approach depression in patients with low vision? A mixed methods study. BMC Psychiatry. 2019;19(1):426. doi:10.1186/s12888-019-2387-x
19. Choi SU, Chun YS, Lee JK, et al. Comparison of vision-related quality of life and mental health between congenital and acquired low-vision patients. Eye. 2019;33(10):1540-1546. doi:10.1038/s41433-019-0439-6
20. Kohda Y, Monma T, Yamane M, et al. Mental Health Status and Related Factors Among Visually Impaired Athletes. J Clin Med Res. 2019;11(11):729-739. doi:10.14740/jocmr3984
21. Abou-Hanna JJ, Leggett AN, Andrews CA, et al. Vision impairment and depression among older adults in low- and middle-income countries. Int J Geriatr Psychiatry. 2021;36(1):64-75. doi:10.1002/gps.5394
22. Brunes A, Heir T. Visual impairment and depression: Age-specific prevalence, associations with vision loss, and relation to life satisfaction. World J Psychiatry. 2020;10(6):139-149. doi:10.5498/wjp.v10.i6.139
23. van Munster EPJ, van der Aa HPA, Verstraten P, et al. Barriers and facilitators to recognize and discuss depression and anxiety experienced by adults with vision impairment or blindness: a qualitative study. BMC Health Serv Res. 2021;21(1):749. doi:10.1186/s12913-021-06682-z
24. Bartlett R, Acton JH, Ryan B, et al. Training results in increased practitioner confidence and identification of depression in people with low vision: a mixed methods study. Ophthalmic Physiol Opt. 2021;41(2):316-330. doi:https://doi.org/10.1111/opo.12788
25. Parravano M, Petri D, Maurutto E, et al. Association Between Visual Impairment and Depression in Patients Attending Eye Clinics: A Meta-analysis. JAMA Ophthalmol. 2021;139(7):753-761. doi:10.1001/jamaophthalmol.2021.1557
26. Elsman EBM, van Munster EPJ, van Nassau F, et al. Perspectives on Implementing the Patient Health Questionnaire-4 in Low-Vision Service Organizations to Screen for Depression and Anxiety. Transl Vis Sci Technol. 2022;11(1):16. doi:10.1167/tvst.11.1.16

27. Onyebueke G, Okeke S, Asimadu IN. Burden and Severity of Depression in Nigeria: Relationship and Association with Visual Impairment. Open J Psychiatr. 2022;12(04):311-320. doi:10.4236/ojpsych.2022.124023
28. Gascoyne B, Jolley E, Penzin S, et al. Vision impairment and self-reported anxiety and depression in older adults in Nigeria: evidence from a cross-sectional survey in Kogi State. Int Health. 2022;14(Supplement_1):i9-i16. doi:10.1093/inthealth/ihab070
29. Virgili G, Parravano M, Petri D, et al. The Association between Vision Impairment and Depression: A Systematic Review of Population-Based Studies. J Clin Med. 2022;11(9). doi:10.3390/jcm11092412
30. Munaw MB, Tegegn MT. Visual impairment and psychological distress among adults attending the University of Gondar tertiary eye care and training center, Northwest Ethiopia: A comparative cross-sectional study. PLoS One. 2022;17(2):e0264113. doi:10.1371/journal.pone.0264113
31. Li D, Chan VF, Virgili G, et al. Impact of Vision Impairment and Ocular Morbidity and Their Treatment on Depression and Anxiety in Children: A Systematic Review. Ophthalmology. 2022;129(10):1152-1170. doi:10.1016/j.ophtha.2022.05.020
32. van Munster EPJ, van Nispen RMA, Nollett CL, et al. Discussing depression in patients with visual impairment differs across countries: Validation of a prediction model in healthcare providers. Acta Ophthalmol. 2023;101(7):766-774. doi:https://doi.org/10.1111/aos.15663
33. Tantirattanakulchai P, Hounnaklang N, Pongsachareonnont PF, et al. Impact of COVID-19 on Depressive Symptoms Among Patients with Low Vision and Blindness. Clin Ophthalmol. 2023;Volume 17:789-796. doi:10.2147/OPTH.S401714
34. Dickens P, Miller D, Ramaesh K. Psychological complexities of visual restoration. BMJ Case Rep. 2021;14(1):e237603. doi:10.1136/bcr-2020-237603
35. Mamtani NH, Mamtani HG, Chaturvedi SK. Psychiatric aspects of ophthalmic disorders: A narrative review. Indian J Ophthalmol. 2023;71(5). https://journals.lww.com/ijo/fulltext/2023/05000/psychiatric_aspects_of_ophthalmic_disorders__a.22.aspx
36. Demmin DL, Silverstein SM. Visual Impairment and Mental Health: Unmet Needs and Treatment Options. Clin Ophthalmol. 2020;14:4229-4251. doi:10.2147/OPTH.S258783
37. Kunugi H. Depression and lifestyle: Focusing on nutrition, exercise, and their possible relevance to molecular mechanisms. Psychiatry Clin Neurosci. 2023;77(8):420-433. doi:10.1111/pcn.13551
38. Jung Y, Han K, Wang S min, et al. Effect of depressive symptom and depressive disorder on glaucoma incidence in elderly. Sci Rep. 2021;11(1):5888. doi:10.1038/s41598-021-85380-6
39. Constable PA, Al-Dasooqi D, Bruce R, et al. A Review of Ocular Complications Associated with Medications Used for Anxiety, Depression, and Stress. Clin Optom (Auckl). 2022;Volume 14:13-25. doi:10.2147/OPTO.S355091
40. Kalin NH. The Critical Relationship Between Anxiety and Depression. Am J Psychiatry. 2020;177(5):365-367. doi:10.1176/appi.ajp.2020.20030305
41. Garber J, Weersing VR. Comorbidity of anxiety and depression in youth: Implications for treatment and prevention. Clin Psychol: Sci Pract. 2010;17(4):293-306. doi:10.1111/j.1468-2850.2010.01221.x
42. Cosh S, Naël V, Carrière I, et al. Bidirectional associations of vision and hearing loss with anxiety: prospective findings from the Three-City Study. Age Ageing. 2018;47(4):582-589. doi:10.1093/ageing/afy062
43. Ali M, Sharif MO, Naseema N. Psychological impacts of visual impairments in different working age groups. J Xi'an Shiyou University. 2022;18(12). Accessed October 24, 2024. https://www.xisdxjxsu.asia/V18I12-66.pdf
44. Lupón M, Armayones M, Cardona G. Quality of life among parents of children with visual impairment: A literature review. Res Dev Disabil. 2018;83:120-131. doi:https://doi.org/10.1016/j.ridd.2018.08.013
45. Meer EA, Lee YH, Repka MX, et al. Association of Mood Disorders, Substance Abuse, and Anxiety Disorders in Children and Teens With Serious Structural Eye Diseases. Am J Ophthalmol. 2022;240:135-142. doi:10.1016/j.ajo.2022.03.016
46. Singh RP, Sharma P. Depression Among Geriatrics: Prevalence And Risk Factors. Nat J Res Community Med. 2019;8(2):117. doi:10.26727/NJRCM.2019.8.2.117-120
47. Zhao KX, Huang CQ, Xiao Q, et al. Age and risk for depression among the elderly: a meta-analysis of the published literature. CNS Spectr. 2012;17(3):142-154. doi:10.1017/S1092852912000533
48. Moghadam MRSF, Etemadi S, Jandari S, et al. Depression in an over-55 years old community-dwelling elderly healthy population: from prevalence to social-economic state, lifestyle and Nutrients – A population-based study. Res sq. 2022. doi:10.21203/rs.3.rs-1531230/v1
49. Maier A, Riedel-Heller SG, Pabst A, et al. Risk factors and protective factors of depression in older people 65+. A systematic review. PLoS One. 2021;16(5):e0251326. doi:10.1371/journal.pone.0251326
50. Szymkowicz SM, Gerlach AR, Homiack D, et al. Biological factors influencing depression in later life: role of aging processes and treatment implications. Transl Psychiatry. 2023;13(1):160. doi:10.1038/s41398-023-02464-9
51. Barua A, Kademane K, Das B, et al. Visual impairment and depression. J Geriatr Care Res. 2014;1:8-10.
52. Amilon A, Siren A. The link between vision impairment and depressive symptomatology in late life: does having a partner matter? Eur J Ageing. 2022;19(3):521-532. doi:10.1007/s10433-021-00653-3

53. Holloway EE. Preventing depression in low vision patients: Implementation and scale-up of an early psychological intervention for depressive symptoms. Invest Ophthalmol Vis Sci. 2018;59(9):1200.
54. Gong X, Ni Z, Wu B. The mediating roles of functional limitations and social support on the relationship between vision impairment and depressive symptoms in older adults. Ageing Soc. 2020;40(3):465-479. doi:10.1017/S0144686X18001010
55. Shah P, Schwartz SG, Gartner S, et al. Low vision services: a practical guide for the clinician. Ther Adv Ophthalmol. 2018;10. doi:10.1177/2515841418776264

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Received: 12 October 2024
Accepted: 12 November 2024
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