






DOI: 10.14744/eur.2023.46855
Eur Eye Res 2023;3(2):55-59

EUROPEAN
EYE
RESEARCH

ORIGINAL ARTICLE

Evaluation of existence of depression or anxiety symptoms in patients with bilateral cataract

 Pelin Kıyat,¹  Ömer Kartı,¹  Osman Hasan Tahsin Kılıç²

¹Department of Ophthalmology, İzmir Democracy University, Buca Seyfi Demirsoy Training and Research Hospital, İzmir, Türkiye

²Department of Psychiatry, İzmir Democracy University, Buca Seyfi Demirsoy Training and Research Hospital, İzmir, Türkiye

Abstract

Purpose: The purpose of this study was to evaluate if patients with bilateral cataract are more likely to have depression or anxiety symptoms when compared to age- and sex-matched volunteers who had already undergone bilateral uncomplicated cataract surgery in both eyes.

Methods: Twenty patients who were diagnosed to have senile cataract in both eyes were included in the study. Furthermore, twenty volunteers who had already undergone bilateral uncomplicated cataract surgery were included. Patients with bilateral cataract were defined as "Group 1," and volunteers with bilateral artificial monofocal intraocular lenses in the posterior chamber were defined as "Group 2." Both Group 1 and Group 2 completed the "Hospital Anxiety and Depression Scale (HADS)" questionnaire. The scale was used to determine the anxiety and depression symptoms.

Results: According to the HAD scale, in Group 1, 6 patients were detected as having mild depression symptoms, 2 moderate, and 6 severe. Furthermore, in Group 1, 5 patients were detected as having mild anxiety symptoms, 2 moderate, and 4 severe. In Group 1, high HAD scale scores were detected, which suggests a propensity toward depression and anxiety when compared to Group 2 ($P=0.007$, $P<0.001$, respectively).

Conclusion: In our study, in patients diagnosed with bilateral senile cataract, high scores were detected with the HAD scale. Ophthalmologists should be familiar with the possibility of tendency of senile cataract patients to depression or anxiety and consider screening these patients for these symptoms and consider referring for counseling. Furthermore, psychiatrists could ask their patients about their visual acuity condition and refer them to an ophthalmologist to plan a timely surgery for cataract.

Keywords: Anxiety; cataract; depression.

Cataract is characterized by clouding or opacification of the clear crystalline lens, which is responsible for focusing light to the retina of the eye, and can end with blindness, can affect all age groups, including infants, adults, and the elderly, and can be unilateral or bilateral in varying

severity.^[1] Senile cataract, called as age-related, is the most common type of cataract and a leading cause of visual impairment and even legal blindness throughout the world. Longer life expectancies and rise in aging population increase its prevalence.^[1-6] The disease may not have a signif-



Cite this article as: Kıyat P, Kartı O, Kılıç OHT. Evaluation of existence of depression or anxiety symptoms in patients with bilateral cataract. Eur Eye Res 2023;3:55-59.

Correspondence: Pelin Kıyat, M.D. İzmir Democracy University, Buca Seyfi Demirsoy Training and Research Hospital, İzmir, Türkiye

Phone: +90 232 452 52 52 **E-mail:** pelinkiyat@gmail.com

Submitted Date: 30.01.2023 **Revised Date:** 19.03.2023 **Accepted Date:** 24.03.2023

OPEN ACCESS This is an open access article under the CC BY-NC license (<http://creativecommons.org/licenses/by-nc/4.0/>).



icant effect on the patient's quality of life due to mild lens opacification at the beginning, but gradually opacification progresses over time, and after the fifth decade, as the lens becomes completely opaque, it prevents the patient from carrying out daily life activities.^[1] Patients with a cataract may experience a range of uncomfortable deficits, including visual acuity deterioration, contrast sensitivity loss, or glare.^[4] These problems might lead to real-world difficulties and cause decrease in the life quality.

Besides the unfavorable effect of cataract on the patient's quality of life due to vision loss, it may also effect on the development or deterioration of some psychiatric diseases such as dementia, depression, and anxiety that are common in the elderly population. The psychiatric diseases can be easily underdiagnosed or accepted as a natural part of aging due to comorbid diseases and can lead to compromise in the life quality in elderly population.^[7,8] The relationship between dementia and cataract has been shown in many studies, and the researchers have suggested that the risk of dementia development is reduced after cataract surgery.^[7] On the other hand, studies examining the effect of cataract on depression and anxiety in elderly population are limited, but these report a significant relationship.^[8] The presence and severity of anxiety and depression are evaluated with various scales in studies. The Hospital Anxiety and Depression Scale (HADS) is a useful instrument for evaluating anxiety and depression in older people.^[9] The scale contains 14 items: half of them assess anxiety, and the other half assess depression-related symptoms. The anxiety subscale specificity is 0.78, and the sensitivity is 0.9. The depression subscale specificity is 0.79, and the sensitivity is 0.83.^[10] Furthermore, there are published articles in our study's country and language that evaluate the validity and reliability of the HAD scale. In a study by Kucukelci, it was reported that the HAD scale can be considered reliable, valid, and usable.^[11]

In this study, our aim was to evaluate if patients with bilateral cataract are more likely to have depression or anxiety symptoms when compared to age- and sex-matched volunteers who had already undergone bilateral uncomplicated cataract surgery in both eyes.

Materials and Methods

The study was approved by Buca Seyfi Demirsoy Training and Research Hospital Medicine Ethics Committee (date: August 31, 2022; number: 2022/108 103) and adheres to the tenets of the Declaration of Helsinki. Twenty patients over the age of 60 years, who were diagnosed with senile cataracts in both eyes, were included in the study. Partici-

pants with any systemic chronic disease or taking any medication which could impact the psychological evaluation or ophthalmological examination, patients with previous ophthalmologic surgery history, patients with any corneal or retinal pathology, and patients with glaucoma were excluded. The comprehensive ophthalmological examination, including visual acuity determination (in decimal) and anterior and posterior segment evaluation with slit-lamp examination, was performed on both eyes. Furthermore, twenty age–sex-matched volunteers, who had already undergone bilateral uncomplicated cataract surgery, were included in the study. All of these volunteers had bilateral artificial monofocal intraocular lenses in the posterior chamber. Volunteers with complicated cataract surgery, volunteers taking any medication which could impact the psychological evaluation or ophthalmological examination, volunteers with any systemic chronic disease, volunteers with any kind of intraocular lenses except monofocal lenses or any placement except posterior chamber, volunteers with any ophthalmologic surgery history except cataract surgery, and volunteers with any glaucoma, corneal, or retinal pathology were excluded. Patients with bilateral cataract were defined as “Group 1,” and volunteers with bilateral artificial monofocal intraocular lenses in the posterior chamber were defined as “Group 2.” All patients and volunteers completed the HADS questionnaire, which determines anxiety and depression symptoms based on 14 items: half of which assess anxiety and the other half assess depression. The score can be evaluated as follows: 0–7 (no depression or anxiety); 8–10 (mild depression or anxiety); 11–14 (moderate depression or anxiety); and 15–21 (severe depression or anxiety).^[9]

The questionnaire was performed to all participants by the same researcher (P.K).

Statistical Analysis

For statistical purposes, “IBM The Statistical Package for the Social Sciences 25” was used. (Inc., Chicago, IL, USA). The distribution of data was evaluated with the Kolmogorov–Smirnov test. Categorical variables were expressed as frequency and percentage, numeric variables like age were expressed as mean and standard deviation, and numeric variables like HAD scale results were expressed as median and min-max. Data were analyzed using the Mann-Whitney U-test for nonparametric values. $P=0.05$ was considered statistically significant.

Results

The average age of Group 1 and 2 was 68.25 ± 6.39 (range,

Table 1. The number of patients in both groups according to the severity of symptoms in the HAD scale

	Group 1 (n/%)	Group 2 (n/%)
Depression subscale:		
No depression	6 (30)	15 (75)
Mild depression symptoms	6 (30)	2 (10)
Moderate depression symptoms	2 (10)	2 (10)
Severe depression symptoms	6 (30)	1 (5)
Anxiety subscale:		
No anxiety	9 (45)	15 (75)
Mild anxiety symptoms	5 (25)	4 (20)
Moderate anxiety symptoms	2 (10)	1 (5)
Severe anxiety symptoms	4 (20)	0 (0)

60–81) years and 69.95 ± 6.80 (range, 61–82) years, respectively ($P=0.421$). There were 9 (45%) men and 11 (55%) women in Group 1, and also there were 9 (45%) men and 11 (55%) women in Group 2. The average visual acuity in decimal was 0.20 ± 0.12 (range, 0.05–0.40) in Group 1 and 1.0 ± 0.0 (range, 1.0–1.0) in Group 2.

According to the HAD scale, among 20 patients in Group 1, 6 patients were detected as having mild depression symptoms, 2 moderate, and 6 severe. Furthermore, among 20 patients, 5 patients were detected as having mild anxiety symptoms, 2 moderate, and 4 severe.

According to the HAD scale, among 20 volunteers in Group 2, 2 of them were detected as having mild depression symptoms, 2 were moderate, and 1 was severe. Furthermore, among 20 volunteers in Group 2, 4 were detected as having mild anxiety symptoms and 1 was moderate. There was no volunteer in Group 2 with severe anxiety symptoms (Table 1).

In Group 1, the median score of depression subscale was 10 (4–17), and the median score of anxiety subscale was 9 (5–19). In Group 2, the median score of depression subscale

Table 2. The comparison of Depression and Anxiety HAD Scale results between Group 1 and Group 2

	Group 1	Group 2	P-value
Age (mean±SD)	68.25 ± 6.39	69.95 ± 6.80	0.421
Depression Subscale Score (median, min-max)	10 (4–17)	5 (1–15)	0.007
Anxiety Subscale Score (median, min-max)	9 (5–19)	4 (0–11)	<0.001

SD: Standard deviation, min-max: minimum-maximum

was 5 (1–15), and the median score of anxiety subscale was 4 (0–11) ($P=0.007$, $P<0.001$, respectively) (Table 2).

Discussion

Depression and anxiety are the third non-fatal leading contributor to the global disease burden based on the Global Burden of Disease Study and associated with functional impairment, increased dementia risk, and even increased mortality.^[12,13] These disorders can be underdiagnosed due to the wrong perception of accepting these pathologies as an inevitable part of aging or as an unavoidable complication of other illnesses; eventually they lead to aggravated reduction in older patients' life quality.^[8]

Several studies have reported that depressive symptoms are common in patient with eye disorder, with a pooled prevalence of 25% (range: 5.4–57%). However, the diagnosis of depression cannot be made by ophthalmologic outpatient clinics, and this may cause reduction in patients' treatment compliance and their life quality.^[14,15] Although several studies that vision impairment itself can potentially be the cause for depression and anxiety in older population,^[15,16] the exact relationship between cataracts, depression, and anxiety remains unclear. However, visual impairment due to senile cataracts is likely to negatively impact patient's daily activities, including their physical and intellectual activities, such as reading or communicating with other people, causing individual isolation, and potentially leading to depression.^[16] Although cataract surgery is a safe procedure which is usually successful, the fear of surgery can be one of the factors leading to anxiety among patients. On the other hand, the effect of cataract surgery on depressive symptoms is also a matter of debate. Some studies have shown beneficial effects, while others have concluded that there is no significant effect.^[17–20]

In our study, when compared to the volunteers, in bilateral senile cataract patients, we found statistically significantly higher scores in depression subscale and anxiety subscale in the HADS questionnaire ($P=0.007$, $P<0.001$, respectively). As conclusion, in patients who are 60 years or older, diagnosed with bilateral senile cataracts, statistically significant high HAD scale scores were detected, which suggests a propensity toward depression and anxiety when compared to age- and sex-matched volunteers with previous uncomplicated cataract surgery. Previous studies had similar findings. In a study by Wang et al.,^[16] Chinese over 60 years old diagnosed with senile cataracts were found to have more depressive symptoms than those without cataracts. Another study by Eramudugolla et al.^[17] found that

patients over 70 years had anxiety and depression symptoms associated with cataract. Palagyi et al.^[21] also reported that a high prevalence of depressive symptoms existed in older people diagnosed with senile cataracts. Similarly, McGwin et al.^[19] reported a higher depressive score in cataract patients compared to non-cataract ones (7.6 vs. 5.3). In a study by Zhang et al.,^[22] the rates of anxiety and depression in cataract-affected people were 18%, compared to the rates of 7% and 5.2% for anxiety and depression for healthy persons. The progressive nature of the disease, decrease in visual acuity, and fear of being blind may also explain the high levels of depression and anxiety in both our and previous studies.

In a study by Ahn et al.,^[23] a neurobiological perspective was proposed. They reported that patients with cataracts have decreased light input due to the opacity of their lens. This decreased light input might have a negative impact on the suprachiasmatic nucleus in the hypothalamus, which is responsible for the sleep cycle and some serotonergic functions. In the same study, it was suggested that cataracts cause shortened sleep duration and reduced sleep quality, which may trigger depressive or anxiety symptoms. In Wang et al.'s study,^[16] the reduction in visual acuity was not the only factor which was related to depressive or anxiety-related symptoms. They reported that other factors due to the cataract formation, such as halos, light adaptation, and contrast changes, could possibly play a role in developing depressive or anxiety-related symptoms. The lack of seeking treatment in depressive adults than the adults with normal mental health might lead these patients to have severe visual impairment due to cataract when they finally seek an ophthalmologist. For this reason, it may be beneficial to channel resources toward these patients and consult them to appropriate evaluation to prevent underdiagnosis and support timely evaluation.

Our study has some limitations. The main limitation was the small sample size. The cataract grades, socioeconomic status of the patients, and the duration of patients' symptoms were not recorded, and we were not able to compare the eyes according to this information. Furthermore, it was preferably appropriate to report the comparisons of the HAD scale results in patients with cataracts and also after their uncomplicated cataract surgery. However, in our study, we have age- and sex-matched two different groups.

Conclusion

The higher rates of depressive and anxiety symptoms in patients with senile cataract make the detection of vision impairment essential. Ophthalmologists should be aware of

the tendency among senile cataract patients to depression or anxiety and consider screening these patients for these symptoms and consider referring for counseling. The findings also emphasize the necessity of timely cataract surgery to prevent the risk of these psychological symptoms. In addition, psychiatrists could ask their patients about their visual acuity condition and refer them to an ophthalmologist to plan a timely surgery for cataract.

This study was presented in 1. International the Atlantic Congress of Medical Science and Research – 6-7 August, 2022.

Ethics Committee Approval: This study was approved by Buca Seyfi Demirsoy Training and Research Hospital Medicine Ethics Committee August 31, 2022 date; number 2022/108 103).

Peer-review: Externally peer-reviewed.

Authorship Contributions: Concept: P.K., Ö.K., O.H.T.K.; Design: P.K., Ö.K., O.H.T.K.; Supervision: Ö.K.; Resource: P.K., O.H.T.K.; Materials: P.K.; Data Collection and/or Processing: P.K.; Analysis and/or Interpretation: P.K.; Literature Search: P.K.; Writing: P.K.; Critical Reviews: P.K., Ö.K., O.H.T.K.

Conflict of Interest: None declared.

Financial Disclosure: The authors declared that this study received no financial support.

References

1. Nizami AA, Gulani AC. Cataract. In: StatPearls. Treasure Island, FL: StatPearls Publishing; 2022. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK539699>. Accessed Jul 05, 2022.
2. Ang MJ, Afshari NA. Cataract and systemic disease: A review. *Clin Exp Ophthalmol* 2021;49:118–27. [\[CrossRef\]](#)
3. Liu YC, Wilkins M, Kim T, Malyugin B, Mehta JS. Cataracts. *Lancet* 2017;390:600–12. [\[CrossRef\]](#)
4. Lamoureux EL, Fenwick E, Pesudovs K, Tan D. The impact of cataract surgery on quality of life. *Curr Opin Ophthalmol* 2011;22:19–27. [\[CrossRef\]](#)
5. Delbarre M, Froussart-Maille F. Signs, symptoms, and clinical forms of cataract in adults. *J Fr Ophtalmol* 2020;43:653-9.
6. Duerksen R, Limburg H, Carron JE, Foster A. Cataract blindness in Paraguay—results of a national survey. *Ophthalmic Epidemiol* 2003;10:349–57. [\[CrossRef\]](#)
7. Lee CS, Gibbons LE, Lee AY, Yanagihara RT, Blazes MS, Lee ML, et al. Association between cataract extraction and development of dementia. *JAMA Intern Med* 2022;182:134–41. [\[CrossRef\]](#)
8. Mitsonis CI, Mitropoulos PA, Dimopoulos NP, Mitsonis MI, Andriotis NM, Gitsa OE, et al. Anxiety and depression in cataract surgery: A pilot study in the elderly. *Psychol Rep* 2006;99:257–65. [\[CrossRef\]](#)
9. Zigmond AS, Snaith RP. The hospital anxiety and depression scale. *Acta Psychiatr Scand* 1983;67:361–70. [\[CrossRef\]](#)

10. Bjelland I, Dahl AA, Haug TT, Neckelmann D. The validity of the hospital anxiety and depression scale. An updated literature review. *J Psychosom Res* 2002;52:69–77. [\[CrossRef\]](#)
11. Küçükkelçi DT. A study on the hospital anxiety and depression scale (HADS). *Life Skills J Psychol* 2019;3:85–91. [\[CrossRef\]](#)
12. GBD 2017 Disease and Injury Incidence and Prevalence Collaborators. Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990–2017: A systematic analysis for the Global Burden of Disease Study 2017. *Lancet* 2018;392:1789–858. [\[CrossRef\]](#)
13. Alexopoulos GS. Depression in the elderly. *Lancet* 2005;365:1961–70. [\[CrossRef\]](#)
14. Rabins PV. Depressive symptoms in ophthalmology patients. *JAMA Ophthalmol* 2016;134:1015. [\[CrossRef\]](#)
15. Zheng Y, Wu X, Lin X, Lin H. The prevalence of depression and depressive symptoms among eye disease patients: A systematic review and meta-analysis. *Sci Rep* 2017;7:46453. [\[CrossRef\]](#)
16. Wang H, Sun HP, Wang P, Xu Y, Pan CW. Cataract and depressive symptoms among older Chinese adults. *Optom Vis Sci* 2016;93:1479–84. [\[CrossRef\]](#)
17. Eramudugolla R, Wood J, Anstey KJ. Co-morbidity of depression and anxiety in common age-related eye diseases: A population-based study of 662 adults. *Front Aging Neurosci* 2013;5:56. [\[CrossRef\]](#)
18. Chen PW, Liu PP, Lin SM, Wang JH, Huang HK, Loh CH. Cataract and the increased risk of depression in general population: A 16-year nationwide population-based longitudinal study. *Sci Rep* 2020;10:13421. [\[CrossRef\]](#)
19. McGwin G Jr., Li J, McNeal S, Owsley C. The impact of cataract surgery on depression among older adults. *Ophthalmic Epidemiol* 2003;10:303–13. [\[CrossRef\]](#)
20. Freeman EE, Gresset J, Djafari F, Aubin MJ, Couture S, Bruen R, et al. Cataract-related vision loss and depression in a cohort of patients awaiting cataract surgery. *Can J Ophthalmol* 2009;44:171–6. [\[CrossRef\]](#)
21. Palagyi A, Rogers K, Meuleners L, McCluskey P, White A, Ng JQ, et al. Depressive symptoms in older adults awaiting cataract surgery. *Clin Exp Ophthalmol* 2016;44:789–96. [\[CrossRef\]](#)
22. Zhang D, Fan Z, Gao X, Huang W, Yang Q, Li Z, et al. Illness uncertainty, anxiety and depression in Chinese patients with glaucoma or cataract. *Sci Rep* 2018;8:11671. [\[CrossRef\]](#)
23. Ahn IY, Lee SJ, Han YS, Park CS, Kim BJ, Lee CS, et al. Effects of emotional stability on insomnia through anxiety in patients with cataracts. *Psychiatry Investig* 2019;16:93–6. [\[CrossRef\]](#)