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

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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.
significant 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.[11] Patients with a cataract may experience a range of uncomforthng deficits, including visual acuity deterioration, contrast sensitivity loss, or glare. 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. Participants 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 (PK).

Statistical Analysis
For statistical purposes, “IBM The Statistical Package for the Social Sciences 25” was used. 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,
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

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

<table>
<thead>
<tr>
<th></th>
<th>Group 1 (n/%)</th>
<th>Group 2 (n/%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Depression subscale:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No depression</td>
<td>6 (30)</td>
<td>15 (75)</td>
</tr>
<tr>
<td>Mild depression symptoms</td>
<td>6 (30)</td>
<td>2 (10)</td>
</tr>
<tr>
<td>Moderate depression symptoms</td>
<td>2 (10)</td>
<td>2 (10)</td>
</tr>
<tr>
<td>Severe depression symptoms</td>
<td>6 (30)</td>
<td>1 (5)</td>
</tr>
<tr>
<td><strong>Anxiety subscale:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No anxiety</td>
<td>9 (45)</td>
<td>15 (75)</td>
</tr>
<tr>
<td>Mild anxiety symptoms</td>
<td>5 (25)</td>
<td>4 (20)</td>
</tr>
<tr>
<td>Moderate anxiety symptoms</td>
<td>2 (10)</td>
<td>1 (5)</td>
</tr>
<tr>
<td>Severe anxiety symptoms</td>
<td>4 (20)</td>
<td>0 (0)</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th></th>
<th>Group 1 (mean±SD)</th>
<th>Group 2 (mean±SD)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>68.25±6.39</td>
<td>69.95±6.80</td>
<td>0.421</td>
</tr>
<tr>
<td>Depression Subscale Score (median, min-max)</td>
<td>10 (4–17)</td>
<td>5 (1–15)</td>
<td>0.007</td>
</tr>
<tr>
<td>Anxiety Subscale Score (median, min-max)</td>
<td>9 (5–19)</td>
<td>4 (0–11)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

SD: Standard deviation, min-max: minimum-maximum
patients over 70 years had anxiety and depression symptoms associated with cataract. Palagyi et al.\textsuperscript{[21]} also reported that a high prevalence of depressive symptoms existed in older people diagnosed with senile cataracts. Similarly, McGwin et al.\textsuperscript{[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.\textsuperscript{[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.\textsuperscript{[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,\textsuperscript{[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 seeing 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.

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**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.


**Conflict of Interest:** None declared.

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**References**