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# Exploring depression, comorbidities and quality of life in geriatric patients: a study utilizing the geriatric depression scale and WHOQOL-OLD questionnaire

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## Abstract

**Background** The increasing prevalence of depression among older adults is a growing concern. Chronic health conditions, cognitive impairments, and hospitalizations amplify emotional distress and depression levels in this population. Assessing the quality of life is crucial for the well-being of older adults.

**Aims** Our study aimed to examine how comorbidities affect depression and quality of life in geriatric patients in both outpatient and hospital settings.

**Methods** 100 patients (50 from internal medicine outpatient clinic and 50 from internal medicine ward) were included in the study according to inclusion and exclusion criteria. Patients were classified into different age groups (65–74 years, 75–84 years and ≥ 85 years). Data on patients' location of application, age, sex, living alone or with family status, number of comorbid diseases, types of accompanying diseases were recorded and WHOQOL-OLD and Geriatric Depression Scale (GDS) questionnaires were administered. Results were evaluated using SPSS.

**Results** The WHOQOL-OLD questionnaire score was higher in the 65–74 age group compared to other groups, but there was no significant difference between outpatient group and hospitalized group. Patients with comorbid diseases had lower WHOQOL-OLD questionnaire scores compared to those without comorbid diseases. In the 75–84 and ≥ 85 age groups, the GDS scores were higher compared to the 65–74 age group. In hospitalized group, GDS scores were higher than outpatient clinic group. In patients with comorbid diseases, GDS scores were higher than the ones without comorbid diseases.

**Discussion** Our findings indicate that quality of life is higher among those aged 65–74, with lower incidence of depression compared to other age groups. Hospitalization correlates with higher depression rates but not quality of life. As number of comorbid diseases increases in older adults, the frequency of depression rises and the quality of life declines.

**Conclusions** Early detection and intervention for depression are crucial for enhancing older adults' well-being.

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**Keywords** Geriatric patients, Depression, Quality of Life, Geriatric Depression Scale, WHOQOL-OLD Questionnaire

## Introduction

The aging process typically begins between the ages of 60 and 65 [1]. As people get older, they may experience a range of physical and mental challenges, with older adults being particularly vulnerable to mental health issues and late-life depression [2]. Although depression has a high prevalence among the older adults, it is frequently undetected due to underlying physical health issues and cognitive impairments [3]. Chronic conditions like cardiovascular diseases, diabetes, and polypharmacy are more common in older people, and are considered risk factors and complications of depression [4–7].

When coupled with frequent hospitalizations, reduced life expectancy, personal losses, financial difficulties, and loss of independence, these challenges can significantly amplify emotions, anxiety, and level of depression, particularly in hospitalized older patients [8, 9]. The prevalence of depression is increasing among older adults with chronic illnesses who are hospitalized, with around 17.1% of individuals over the age of 75 displaying symptoms of depression [10].

Quality of life, as defined by the World Health Organization, refers to individuals' perceptions of their life circumstances in relation to sociocultural perspectives, including their standards, goals, concerns and expectations [11]. This multifaceted concept encompasses a person's physical health, mental well-being, autonomy, social relationships, personal beliefs, and interactions with their environment. Various tools have been developed to measure quality of life, as the WHOQOL-OLD questionnaire being one of them [12].

In this study, it was aimed to explore the impact of the number of diseases on depression and quality of life in geriatric patients receiving care in both outpatient and hospital settings within the internal medicine department.

## Materials and methods

### Patient selection and data Collection

A total of 100 patients (50 from our internal medicine outpatient clinic and 50 from our internal medicine ward) were included in the study according to the inclusion and exclusion criteria.

### Inclusion criteria

Patients had to read and sign the consent form to participate in the study and be  $\geq 65$  years old.

### Exclusion criteria

Patients with a history of active or previous cancer, dementia, or any other neurological/psychiatric disease,

or severe chronic disease (end-stage organ failure) were excluded.

After obtaining informed consent, we recorded each patient's age, sex, living environment, and the number and type of comorbid diseases. The WHOQOL-OLD and Geriatric Depression Scale (GDS) questionnaires were administered face-to-face. The results of the questionnaires were evaluated for different age groups (65–74 years, 75–84 years, and  $\geq 85$  years).

### Measurements

WHOQOL-OLD, a 24-item quality of life (QOL) measure, was developed by the WHOQOL Group as an add-on module to their QOL measures (WHOQOL-100 and WHOQOL-BREF), specifically for use with older adults was used to evaluate the quality of life. The questionnaire has 6 parts: sensory abilities, autonomy, past-present-future activities, social participation, death, dying, and intimacy. Every part has four items, each item is rated from 1 points to 5 points, with a higher score indicating a better quality of life [12].

'Sensory abilities' questions explore the impact of changes in vision, hearing, smell, taste, appetite, and touch on quality of life about sensory function. The 'Autonomy' facet also examines aspects such as independence in control of life and future, and the ability to make choices freely. The category of Past, Present, and Future Activities includes past achievements and overall satisfaction with life, reflections on the past, feelings, and thoughts about the future. Social Participation evaluates thoughts on time management and involvement in important social activities as well as relationships with others and social support. Furthermore, attitudes toward death being acceptable and inevitable, as well as perceptions of death, are explored in the Death and Dying category.

The GDS was used to identify depression in patients. The GDS is a depression scale specifically designed for the older adults population, created by Yesavage et al. in 1983 [13]. The main goal of developing this scale, which consists of 30 self-reporting items that assess how an individual has been feeling over the past week, was to make it easy for older patients to answer. The scale includes binary questions with answers in the form of "YES" or "NO" to avoid symptoms that may not be related to depression in the older adults. Each question that indicates depression is awarded 1 point, while non-depressive answers receive 0 points. The total points are then calculated to determine the depression score, with the following rating system: 0–9 points indicate "No

depression”, 10–19 points suggest “mild depression”, and 20–30 points indicate “Severe depression”.

### Statistical analysis

In the descriptive statistics of the data, mean, standard deviation, median, minimum, maximum, frequency, and ratio values were used. The distribution of variables was measured with the Kolmogorov-Smirnov test. For the analysis of quantitative independent data, ANOVA (test, Turkey) and Kruskal-Wallis test were used. For the analysis of dependent quantitative data, paired sample t-test and Wilcoxon test were used. Pearson and Spearman correlation analysis was used for correlation analysis. SPSS 28.0 program was used for the analysis.

### Results

The study comprised 100 patients, with a mean age of 76.48 years. Of these patients, 46% were aged 65–74 years, 29% were aged 75–84 and 25% were aged  $\geq 85$  years. 59% of the patients were male and 41% were female. 59% of the patients lived alone, while 41% lived with their families. 92% of the patients had one or more comorbid diseases, while 8% had none. Most common

accompanying diseases were hypertension (90%), hyperlipidemia (39%), diabetes mellitus (33%), chronic kidney disease (24%), benign prostatic hyperplasia (19%), chronic obstructive pulmonary disease (19%), cerebrovascular disease (15%), history of pulmonary embolism and coronary artery disease (4%) (Table 1).

The mean score on the WHOQOL-OLD test was  $70.5 \pm 11.4$  (with a maximum of 97 and a minimum of 46) (Table 1). The WHOQOL-OLD questionnaire score was higher in the 65–74 age group compared to the 75–84 and  $\geq 85$  age groups. There was no significant difference in questionnaire scores between the 75–84 and  $\geq 85$  age groups, nor between male and female patients or between the outpatient clinic and ward groups. Patients living alone had higher WHOQOL-OLD questionnaire scores compared to those living with family. Additionally, patients with comorbid diseases had lower WHOQOL-OLD questionnaire scores compared to those without comorbid diseases (Table 2).

In the GDS survey, the mean score was  $11.7 \pm 4.8$  (with a minimum score of 4 and a maximum of 25). Of the patients, 47% had no depression, 24% had mild depression, and 29% had severe depression (Table 1). The GDS scores were higher in the 75–84 and  $\geq 85$  age groups compared to the 65–74 age group. There was no significant difference in GDS scores between the 75–84 and  $\geq 85$  age groups or between female and male patients (Table 3). GDS scores were higher in patients living with family compared to those living alone, in the hospital ward group compared to the outpatient clinic group, and in patients with comorbid diseases compared to those without comorbid diseases (Table 3).

Additionally, there was a negative correlation between the number of diseases and the WHOQOL-OLD score and a positive correlation between the number of diseases and the GDS score (Table 4).

### Discussion

As we age in the normal course of life, many physiological changes occur in the nervous system, cardiovascular system, respiratory system, digestive system, and skeletal system [14–18]. These changes can result in a variety of different diseases, leading to significant healthcare cost for countries [19].

Mental health encompasses emotional, psychological, and social well-being across all ages, but it can decline due to reduced social interactions and increased social vulnerability [20]. One common mental health issue among the older adults is depression. Unfortunately, depression in the older adults is often overlooked and not adequately diagnosed. Studies have shown that depression in the older adults can have negative consequences such as a lower quality of life, difficulties with daily activities, physical health issues, early death, and cognitive

**Table 1** General characteristics of the study group

	Min-Max	Median	Mean.±sd/n-%
Age (years)	65–74	46	46.0%
	75–84	29	29.0%
	$\geq 85$	25	25.0%
Sex	Female	41	41.0%
	Male	59	59.0%
Living Arrangement	Alone	59	59.0%
	Family	41	41.0%
Referral Location	Hospital	50	50.0%
	Ward		
Comorbidity	Polyclinic	50	50.0%
	(-)	8	8.0%
	(+)	92	92.0%
Hypertension		90	90.0%
Hyperlipidemia		39	39.0%
Diabetes Mellitus		33	33.0%
Chronic Kidney Disease		24	24.0%
Benign Prostatic Hyperplasia		19	19.0%
Chronic Obstructive Pulmonary Disease		19	19.0%
Cerebrovascular Event		15	15.0%
Pulmonary Embolism		11	11.0%
Coronary Artery Disease		4	4.0%
Number of Comorbidities	1.0–5.0	3.0	$2.8 \pm 1.3$
WHOQOL(Old) Score	46.0–97.0	70.0	$70.5 \pm 11.4$
GDS Score	4.0–25.0	11.0	$11.7 \pm 4.8$
Depression	No	47	47.0%
	Mild	24	24.0%
	Severe	29	29.0%

(GDS: Geriatric depression scale)

**Table 2** WHOQOL-OLD test results

		WHOQOL Score			p	
		Mean.±sd	Median	Min-Max		
Age (years)	65–74	75.6±10.7	75.0	53.0–92.0	<b>&lt; 0.001</b>	A
	75–84	68.8±11.4	67.0	48.0–97.0		
	≥ 85	63.0±7.3	62.0	46.0–74.0		
Sex	Female	70.2±12.7	67.0	48.0–97.0	0.856	t
	Male	70.6±10.5	71.0	46.0–92.0		
Living Arrangement	Alone	73.2±11.7	73.0	48.0–97.0	<b>0.004</b>	t
	Family	66.6±9.8	65.0	46.0–89.0		
Referral Location	Hospital Ward	70.1±10.5	70.5	48.0–97.0	0.734	t
	Polyclinic	70.9±12.3	70.0	46.0–91.0		
Comorbidity	(-)	87.0±6.5	89.5	72.0–92.0	<b>&lt; 0.001</b>	m
	(+)	69.0±10.6	68.5	46.0–97.0		
Depression	No	78.5±9.2	79.0	62.0–97.0	<b>&lt; 0.001</b>	t
	Mild	67.3±6.7	68.5	54.0–78.0		
	Severe	60.1±7.3	60.0	46.0–75.0		

<sup>A</sup> ANOVA / <sup>t</sup> Quantitative independent data / <sup>m</sup> Mann-whitney u test

**Table 3** GDS results

		GDS Score			p	
		Mean.±sd	Median	Min-Max		
Age (years)	65–74	9.8±3.9	8.5	4.0–20.0	<b>0.001</b>	k
	75–84	12.9±5.6	11.0	5.0–25.0		
	≥ 85	13.8±4.1	13.0	9.0–21.0		
Sex	Female	12.3±5.6	11.0	4.0–25.0	0.552	m
	Male	11.2±4.1	11.0	4.0–22.0		
Living Arrangement	Alone	10.3±4.2	9.0	4.0–25.0	<b>&lt; 0.001</b>	m
	Family	13.8±4.9	13.0	6.0–24.0		
Referral Location	Hospital Ward	13.1±5.6	12.0	5.0–25.0	<b>0.033</b>	m
	Polyclinic	10.3±3.3	10.0	4.0–18.0		
Comorbidity	(-)	5.9±1.6	6.0	4.0–8.0	<b>&lt; 0.001</b>	m
	(+)	12.2±4.7	11.0	4.0–25.0		

<sup>k</sup> Kruskal-wallis (Mann-whitney u test) / <sup>m</sup> Mann-whitney u test  
(GDS: Geriatric depression scale)

**Table 4** Correlation of WHOQOL score and GDS score

		Number of comorbidities	
WHOQOL Score	r	-0.471	
	p	<b>&lt; 0.001</b>	
GDS Score	r	0.438	
	p	<b>&lt; 0.001</b>	

Pearson / Spearman Correlation  
(GDS: Geriatric depression scale)

impairments. While the frequency of depression in the older adults is similar to that in the general population, it is associated with a higher risk of suicide, more frequent hospitalizations, increased visits to treatment facilities, and burden on the family. Therefore, it is crucial to recognize and manage depression in the older adults [21]. In our study, more than half of the patients had depression, with 29% being severely depressed. Additionally, 59% of the patients were living alone, which could result in a lack

of social support and difficulty in the early recognition of depression.

Some studies suggest that psychiatric disorders such as depression are more common, especially in male geriatric patients whose spouses have passed away [22]. There are also other studies revealing that depression is linked to being female, unmarried, having a low income, and taking multiple medications in geriatric population [23]. A study conducted in Greece among individuals aged ≥ 60 years showed a depression rate of 22.53% in men and 35.12% in women using GDS-15 survey [24]. Another study showed a higher prevalence of unipolar depression noted in older women compared to men [25]. In our study, sex did not have a significant impact on the scores of either scale.

In our study, 92% of the patients had comorbidities, with the majority presenting multiple conditions. In these cases, it is crucial for society to prioritize the physical and mental well-being of older individuals living alone and to

vigilantly monitor their healthcare needs. New clinical practice guidelines are being developed to improve the management and outcomes for these patients [26, 27].

Seeking medical attention is often a significant source of stress and anxiety for many individuals, particularly among hospitalized patients who require close clinical monitoring. Witnessing fellow patients deteriorate to the point of intubation, experiencing medical emergencies like cardiac arrest in the ward, and undergoing CPR all amplify the depressive feelings stemming from their medical condition and confront them with the fear of death [28, 29].

Quality of life is an important factor influencing rates of mortality, hospitalization, and life expectancy. It also serves as a valuable predictor for evaluating medical outcomes and the quality of healthcare for patients [20]. To enhance the quality of life for geriatric patients and improve their overall well-being, various quality of life and depression scales are utilized.

The GDS is a depression scale specifically designed for the older adult population and was created by Yesavage et al. in 1983 [13]. The validity and reliability of this questionnaire in Turkey have been demonstrated in studies by Ertan et al. [30]. The validity and reliability of the Turkish version of the WHOQOL-OLD scale for assessing quality of life were studied by Eser et al. in 2010, who found an internal consistency (alpha value) of 0.85 [31, 32].

In our study, we assessed geriatric populations across three age ranges, consistent with existing literature [33]. Patients aged 65–74 had significantly higher scores on the WHOQOL-OLD scale compared to other age groups and lower scores on the GDS scale. Similarly, a study conducted by Lizis E. et al. investigated older adults aged 65–84 years using the WHOQOL-BREF and GDS-15 surveys. Their study found no significant age or gender differences in assessing quality of life and depression [34].

Interestingly, our study revealed that geriatric patients living with family had lower WHOQOL-OLD scores and higher GDS scores compared to those living alone. This finding contrasts with other research from our country suggesting that living with family can reduce the frequency of depression [35]. Conversely, a study conducted in the United States found that those living alone reported more feelings related to depression compared to those living with family members [36]. These discrepancies highlight the complex interplay of factors influencing quality of life and mental health outcomes in geriatric populations.

We did not find a significant difference in quality of life between patients treated in the internal medicine outpatient clinic and those admitted to the internal medicine ward in our study. However, the depression scale scores were lower in hospitalized patients compared to those visiting the outpatient clinic. The higher GDS scores in

hospitalized patients are likely due to factors such as a fear of death and a more advanced degree of physical deterioration in these patients [37].

In our study, the WHOQOL-OLD score was lower and the GDS score was higher in the group with comorbid diseases compared to those without comorbidities. Patients with comorbidities, compared to those of a similar age group without accompanying diseases, are often more homebound, must cope with multiple illnesses, participate less in social activities, and lead a more sedentary lifestyle [38]. Consequently, we believe they are more prone to depression and have a lower quality of life.

#### Limitations of the study

The number of patients is limited. Two different scales were used for evaluation. Additional scales with a higher number of subjects could have provided more comprehensive results.

#### Conclusion

Our study investigated the relationship between quality of life and depression among the geriatric population. The quality of life was higher among geriatric population aged 65–74 years compared to other age groups, and the incidence of depression was less. There was no significant difference between male and female patients for frequency of depression and quality of life. The rate of depression was higher in patients who were hospitalized or had comorbid diseases.

To ensure our older adults lead a happier and higher quality of life, depression must be detected early and treated effectively, including professionals in this area in the management team when needed.

#### Abbreviations

GDS Geriatric Depression Scale

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#### Author contributions

VCC: Resources, Investigation Writing - Original Draft, Writing - Review & Editing. BB: Writing - Original Draft Writing - Review & Editing. MA: Data collecting, Writing - Review & Editing. ZBK: Writing - Original Draft Writing - Review & Editing. EGA: Conceptualization, Writing - Original Draft Writing - Review & Editing. FA: Methodology, Conceptualization, Writing - Original Draft Writing - Review & Editing.

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#### Data availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.



## Declarations

### Ethics approval and consent to participate

Ethics committee approval was received for this study from the Ethics Committee of Istanbul Training and Research Hospital (282/27.10.2023). All participants provided written informed consent. All procedures performed in the study were in accordance with the 1964 Helsinki Declaration.

### Consent for publication

Not applicable.

### Competing interests

The authors declare no competing interests.

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