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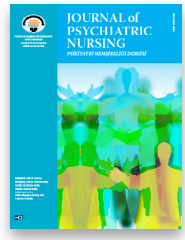

Original Article

An evaluation of cognitive function, depression, and quality of life of elderly people living in a nursing home

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Abstract

Objectives: To evaluate the cognitive function level, depression, and quality of life of elderly people living in a nursing home.

Methods: This cross-sectional, descriptive study was conducted at the Nursing and Rehabilitation Center for the Elderly in Adana, Turkey between May 1 and August 1, 2016. The participants included 118 elderly people chosen using a simple random sampling method. The data were collected using the Personal Information Form, Standardized Mini Mental State Exam, Geriatric Depression Scale, and World Health Organization Quality of Life-OLD module. The data were analyzed using IBM SPSS Statistics 22 (IBM, SPSS, Turkey).

Results: Of all the participants, 36.4% (n=43) were female, 63.6% (n=75) were male, and average age was 74.08±8.23 years. The participants' Standardized Mini Mental State Exam mean score was 20.37±7.08, Geriatric Depression Scale mean score was 14.92±4.29, and World Health Organization Quality of Life-OLD module mean score was 69.76±11.54. There was a negative, significant relationship between the Standardized Mini Mental State Exam and Geriatric Depression Scale scores. A positive relationship was found between the World Health Organization Quality of Life-OLD module total scores and the autonomy, past-resent-future activities, social participation, and intimacy subscores. A negative relationship was found between the Geriatric Depression Scale scores and World Health Organization Quality of Life-OLD module total scores.

Conclusion: More than half of the elderly people living in the nursing home experienced cognitive deterioration and depression. In addition, cognitive state, depression, and quality of life significantly correlated with each other.

Keywords: Cognitive function level; depression; quality of life.

The world's population is rapidly aging and the number of elderly people is increasing daily. Old age is accompanied by physical, social, and psychological problems.[1–4] The most common problems are psychiatric and quality of life is most impacted by loss of skills from dementia and old-age depression.[5]

The World Health Organization (WHO) notes that there are 47.5 million people with dementia worldwide and this number is expected to reach 76.5 million by 2030.[5,6] Dementia is not a natural part of aging and it is the most basic condition that leads to cognitive impairment in old age.[7,8]

According to the WHO, a study conducted in China found 12.7% prevalence of mild cognitive impairment in individuals over the age of 60.[9] In Taiwan, the prevalence of cognitive impairment in individuals 65 and over is 22.2%.[10] A study conducted in Brazil shows that 64.6% of the individuals living in nursing homes aged 65 and over have cognitive impairment. In another study conducted in 57 nursing homes in 13 European countries, 68% of the individuals are cognitively impaired.[11,12] Although there are not many regional studies on this subject in Turkey, one survey assessing depressive symptoms and the factors that could affect cognitive impairment

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found that 50.8% of the people living in nursing homes have cognitive impairment.[13]

The WHO states that depression will be one of the leading health problems due to its negative effects on health in the year 2020.[5] It is also expected that depression will be seen at a higher rate in the elderly population because of various risk factors from aging. However, according to the WHO's report, while the average prevalence of depression in the elderly living in the community is 2–3%, its prevalence in nursing homes and care centers is 10%.[5] In a study conducted in Brazil, 61.7 % of those 65 and over living in nursing homes for a long time have depression.[14] In Turkey, the prevalence of depression seen in elderly people aged 65–74 living in nursing homes and in their own houses is 68.9% and 81.8%, respectively, whereas those 75 and older in similar living arrangements is 31.1% and 18.2%, respectively.[15] In a study conducted by Hacıhasanoğlu and Türkleş (2008), 61.1% of individuals over 65 years of age were diagnosed with definitive depression.[16]

Elderly individuals have an important status within the traditional family structure in Turkey. They are consulted and have a say in family matters. In this structure, elderly individuals continue their lives together with the generation after them and all their needs are met. This situation allows them a sheltered position in our country. However, in addition to the increase in migration from the countryside to cities, transition to a nuclear family from the traditional large family, and extension of women's education period and their inclusion in working life, the institutional care of older individuals has also increased.[17] Life-style changes associated with living in a nursing home result in a decrease in environmental and psychosocial stimuli, loss of autonomy, and loneliness in elderly individuals. These factors are important variables affecting both increasing cognitive disorders and depression cases.[11]

As a result, the increase in the proportion of elderly in the population also increases the rate of cognitive impairment and depression in elderly individuals. Living in nursing homes can sometimes make these problems worse. Preservation and improvement of mental health in elderly people are important components to improve function and quality of life and are directly related to active aging, which is widely emphasized today. Because there are few studies on this subject in our country, an investigation should be conducted in order to determine how the services and initiatives aimed towards improving the psychological health of the elderly should be organized and directed. Knowledge of the cognitive functions, depressive states, and quality of life of elderly individuals in nursing homes and any relationships among them as well as determining the disorder and regression in mental status will contribute to the improvement in their quality of life.

This study evaluated the cognitive function level, depression, and quality of life of elderly people living in nursing homes.

Materials and Method

This cross-sectional and descriptive study was conducted at the Adana Geriatric Care and Rehabilitation Centre of the Adana, Provincial Directorate of the Ministry of Family and Social Policy between 1 May and 1 August 2016.

A total of 280 elderly individuals live in the nursing home where the study was conducted. Acceptance of participation in the study, being fluent in Turkish, no hearing or speech problems, and having adequate communication skills were the criteria for joining the study. As the 80 elderly individuals in the Special Care Unit in the nursing home did not meet the inclusion criteria, the other 200 elderly individuals formed the target study population of the study. It was determined that a minimum of 111 people should be included in the study with the simple random sampling formula (80%). Taking the losses that may arise during the study into consideration, 118 elderly individuals were included in the study.

The data were collected by the researchers using the face to face interview technique along with the Personal Information Form, Standardized Mini Mental Test, Geriatric Depression Scale, and World Health Organization Quality of Life Module for the Old that were prepared by examining the related literature.[3,8,13,18] The time to complete the forms was approximately 50 minutes.

The Personal Information Form was composed of 27 questions - 21 of which investigated the socio-demographic characteristics of the elderly individuals (age, gender, marital status, education status, profession, etc.) and 6 of which were open/closed-ended regarding characteristics related to illnesses and treatment.

The Standardized Mini Mental Test (SMMT) consisted of 11 items under five main headings - test orientation, recording memory, attention and calculation, recall, and language. In SMMT, which was evaluated over a total score of 30 points, one point was given to each correct answer. The validity and reliability assessments of SMMT in Turkey were made by Gülgen et al. in 2002.[19] They found the threshold value of the scale was 23/24 and the scale had 0.91 sensitivity, 0.95 specificity, and a high reliability among practitioners (Pearson coefficient: 0.99, Kappa: 0.92).[19] The version of SMMT for educated and uneducated individuals was rearranged by Keskinoğlu et al. They concluded that a 22/23 cut-off value for educated individuals had the highest sensitivity (90.9%) and selectivity (97%), whereas an 18/19 cut-off value for the uneducated elderly had the highest sensitivity (82.7%), selectivity (92.3%), positive predictive value (10.74), and negative predictive value (0.19). For SMMT, 23/24 points was the threshold for dementia. Mild stage dementia was defined as 18–23 points, intermediate stage was 10–17 points, and severe dementia was 10 or less.[20]

The Geriatric Depression Scale (GDS) was developed by Yesavage et al. and the validity and reliability of the Turkish version were assessed by Ertan et al.[21] It is a scale of self-report consisting of 30 items and the questions are answered as yes/no. A high score means that the level of depressive symptoms is also high.

The World Health Organization Quality of Life-OLD module

(WHOQOL-OLD) has been developed by the WHO with the participation of 22 international centers, including our country. The WHOQOL-OLD is a version of the WHOQOL-100 pertaining to the elderly. The validity and reliability of the Turkish version of the WHOQOL-OLD were assessed by Eser et al.[22] It is composed of 24 questions in six subscales answered using a five-point Likert scale. These six sub-dimensions are: "Sensory abilities" (questions 1, 2, 10, and 20), "Autonomy" (questions 3, 4, 5, and 11), "Past-Present-Future Activities" (questions 12, 13, 15, and 19), "Social Participation" (questions 14, 16, 17, and 18), "Death and Dying" (questions 6, 7, 8, and 9), and "Intimacy" (questions 21, 22, 23, and 24). Possible subscale scores range from 4 to 20. In addition, the "total score" is calculated by adding up each individual score. As the score increases, the quality of life improves. Sensory functions and the effects of their loss on quality of life are assessed through the "Sensory Abilities" subscale. The "Autonomy" subscale means independence in old age and expresses the ability to live alone. The "Past-Present-Future Activities" subscale shows the satisfaction obtained from achievements in life and expectations for the future. The "Social Participation" subscale describes the ability to engage in everyday life activities, especially in society. The "Death and Dying" subscale is about the concerns, worries, and anxieties about death and dying. The "Intimacy" subscale assesses the ability to establish personal and private relationships.[22]

Data Analysis

The IBM SPSS Statistics 22 (SPSS IBM, Turkey) program was used for the evaluation and statistical analysis of the data obtained. The suitability of the parameters for normal distribution was assessed using the Shapiro-Wilks test and a normal distribution was found. In addition to descriptive statistical methods (mean, standard deviation, and frequency), the Student's t-test was used to compare the quantitative data between the two groups. The one-way ANOVA test was used to compare the data among more than two groups. However, when determining the group causing differences, the Tukey HSD and Tamhane T2 Post hoc tests were used. Pearson Correlation Analysis was used to evaluate the relationship among scale scores. Significance was evaluated at the level of $p<0.05$.

Ethics of the Research

The approval of The Ethics Committee of Clinical Investigations of Çukurova University and written official approval from the Provincial Directorate of Family and Social Policies of Adana Governorship were obtained before the research was conducted. Selection of the patients in the study was on a voluntary basis. The elderly individuals who agreed to participate in the study were instructed about the study and its purpose both verbally and in written forms. Then, they were informed about confidentiality and privacy. Finally, they were told that they could leave the study whenever they wanted.

Results

The study was conducted with 118 elderly people, 36.4 % of whom were female and 63.6% of whom were male, living in a nursing home. The participants were between 70–79 (47.5%) years old and the mean age was 74.08±8.23. The internal consistency coefficient for the GDS (Cronbach's Alpha) was 0.904 and for the WHOQOL-OLD was 0.804.

It was determined that 55.1% of the individuals were married, 81.4% had children, 24.6% were never schooled, and 53.4% had equal income and expenses.

It was found that 75.4% of the individuals had visitors, 65.3% were not visited by their relatives, 76.3% were satisfied with the nursing home, and 76.3% had friends with whom they thought that they had good relationships with within the institution.

Approximately half (49.2%) of the individuals exercised. Within this group, 75.9% exercised every day, 20.7% exercised every 3 days, and 3.4% exercised once a week. Whereas 36.4% of the individuals participated in the activities in the organization, 63.6% of them did not take part in the activities at the nursing home (Table 1).

Individuals had an average score of 20.37±7.08, 14.92±4.29, and 69.76±11.54 on the SMMT, GDS, and WHOQOL-OLD, respectively (Table 2).

The scores of 8.5% individuals who took the SMMT were between 0 and 9, 24.6% were between 10 and 17, 27.1% were between 18 and 23, and 39.8% were over 24. On the GDS, 37.3% of the individuals scored between 0 and 10, 13.6% scored between 11 and 13, and 49.2% scored between 14 and 30.

SMMT and GDS scores were negatively correlated and WHOQOL-OLD and the Sensory Abilities and Death and Dying subscales were also negatively correlated. There was a significant positive correlation between the total WHOQOL-OLD scores and the subscales Autonomy, Past-Present-Future Activities, Social Participation, and Intimacy ($p<0.01$) (Table 3).

There was a statistically significant negative correlation between the GDS and WHOQOL-OLD total scores ($p<0.01$).

There was no statistically significant difference between gender, marital status, status, income level, and the average scores on the SMMT, GDS, or WHOQOL-OLD ($p>0.05$).

While there was no statistically significant difference between the average scores of the SMMT and GDS according to the having children status ($p>0.05$), the average score on the WHOQOL-OLD of individuals who had children was significantly higher than those who did not have children ($p=0.047$, $p<0.05$).

There is a statistically significant difference between the educational statuses and the average SMMT scores ($p=0.001$, $p<0.01$). As a result of the Tukey HSD test conducted to determine from which educational institution the difference had arisen, the SMMT score averages of secondary or high school level graduates were significantly higher than those of the

Table 1. Distribution of general characteristics related to elderly individuals (n=118)

	n	%
Age (years), Mean±SD (min.–max.)	74.08±8.23 (50–100)	
Sex		
Female	43	36.4
Male	75	63.6
Age group		
<70 years	35	29.7
70–79 years	56	47.5
≥80 years	27	22.8
Marital status		
Single	53	44.9
Married	65	55.1
Having children		
Yes	96	81.4
No	22	18.6
Education		
Non-literate	29	24.6
Literate	15	12.7
Primary level	32	27.1
Secondary level	15	12.7
High school level	12	10.2
Tertiary level	15	12.7
Income status		
Income lower than expenditures	44	37.3
Income equal to expenditures	63	53.4
Income higher than expenditures	11	9.3
Having visitors		
Yes	89	75.4
No	29	24.6
Visiting relatives		
Yes	41	34.7
No	77	65.3
Satisfied with the institution		
Yes	90	76.3
Partly	13	11.0
No	15	12.7
Having friends/good relationships		
Yes	90	76.3
No	28	23.7
Doing regular exercise		
Yes	58	49.2
No	60	50.8
Frequency of exercise		
Every day	44	75.9
Three days a week	12	20.7
Once a week	2	3.4
Participation in activities at the institution		
Yes	43	36.4
No	75	63.6

non-literate (p=0.004) and primary level graduates and below (p=0.003) (p<0.01). The SMMT score averages of those who were tertiary level graduates were significantly higher than those who were non-literate (p=0.019) and primary level graduates and below (p=0.020) (p<0.05). There was no significant difference among the other educational statuses in terms of the SMMT scores (p>0.05).

There was a statistically significant difference among the educational status and the GDS (p=0.022; p<0.05). As a result of the Tukey HSD test conducted to determine which educational institution the difference had arisen from, the average score of the GDS was significantly higher in non-illiterate patients (p=0.048) and in primary level graduates and below (p=0.049) than in other educational levels (p<0.05). There was no significant difference among other educational statuses and the scores from the GDS (p>0.05).

The average total score of the SMMT (p=0.001, p<0.01), GDS (p=0.001, p<0.01), and WHOQOL-OLD (p=0.001; p<0.01) of those who visited their relatives were significantly higher than those of the individuals who did not visit their relatives.

The average total score of the SMMT (p=0.005, p<0.01), GDS (p=0.007; p<0.01), and WHOQOL-OLD (p=0.008; p<0.01) of those who thought they had good relationships were significantly higher than those of the individual who did not have good relationships with others.

The average total score of SMMT (p=0.004, p<0.01), GDS (p=0.008, p<0.01), and WHOQOL-OLD (p=0.001; p<0.01) of those who exercised every day were significantly higher than those of individuals who did not exercise regularly.

The average total score of SMMT (p=0.001, p<0.01), GDS (p=0.008, p<0.01), and WHOQOL-OLD (p=0.001, p<0.01) of those who took part in the activities at the institution were significantly higher than those of the individuals who did not participate in the activities.

Discussion

The average score of the individuals on the SMMT was 20.37±7.08 and its median was 21. Thus, 60.2% of the individuals had a cognitive disorder. In a study by İlhan et al. in two nursing homes in Ankara, Turkey, 50.8% of the individuals have cognitive impairment. In a study conducted in long-term nursing homes in Brazil, 64.6% of individuals over the age of 65 have a cognitive disorder.[14] In studies conducted[12] in 57 nursing homes in England, France, Germany, Finland, the Netherlands, Israel, and the Czech Republic, Önder et al. showed that 68% of the elderly individuals have cognitive impairments. Björk et al.[23] assessed the dependence on pain, cognitive status, neuropsychiatric symptoms, and daily activities of elderly individuals living in a nursing home in Switzerland and found that 66.6% of elderly individuals have cognitive disorders. Thus, the findings of our studies are similar to those of other studies and more than half of elderly people over 65 living in nursing homes have cognitive impairment.

Table 2. Distribution of SMMT, GDS, and WHOQOL-OLD Subscales and Total Scores of elderly individuals

	Minimum–Maximum	Mean±Standard deviation	Median
Standardized Mini Mental Test (SMMT)	2–30	20.37±7,08	21
Geriatric Depression Scale (GDS)	6–22	14.92±4,29	15
World Health Organization Quality of Life Module for the Old			
Sensory abilities	6–18	10.75±2,65	11
Autonomy	5–20	12.69±3.40	12
Past-present-future activities	5–20	12.36±3.33	12
Activities	4–20	11.66±3.80	11
Death and dying	4–20	9.87±4.35	10
Intimacy	4–18	12.42±3.22	12
Total	44–98	69.76±11.54	69

WHOQOL-OLD: World Health Organization Quality of Life-OLD module

Table 3. Correlation of SMMT with GDS and WHOQOL-OLD Subscales and total scores of elderly individuals

	SMMT	
	r	p
Geriatric Depression Scale (GDS)	-0.435	0.001**
WHOQOL-OLD		
Sensory abilities	-0.314	0.001**
Autonomy	0.466	0.001**
Past-present-future activities	0.447	0.001**
Social participation	0.399	0.001**
Death and dying	-0.302	0.001**
Intimacy	0.361	0.001**
Total	0.313	0.001**

Pearson Correlation Analysis. **p<0.01. WHOQOL-OLD: World Health Organization Quality of Life-OLD module; SMMT: Standardized Mini Mental Test.

The average score of the elderly individuals on the GDS was 14.92±4.29 and the median was 15. Approximately half of the individuals had definite depression. A number of studies assess depression symptoms in the elderly in Turkey. Softa's[24] study conducted in two nursing homes in Kastamonu shows an average GDS score of 13.52. Gül et al.[25] assessed depressive symptom levels and related risk factors of the elderly living in nursing homes and found 53% have definite depression. In a study conducted on the relationships among life satisfaction, gender, social security, and depressive symptoms, Altun and Yazıcı[26] found that 42.1% of the elderly individuals over 65 and living in their own house or with their relatives have definite depression and 15.8% of them have possible depression. Büker et al.[27] investigated the effect of depression level and moral conditions of the elderly living in nursing homes and home environments on their functional status. They report that the depression level of those living in a home environment is significantly lower. Accordingly, the results of our study support the literature. In particular, the incidence of depression in elderly people living in nursing homes is high.

A meta-analysis by Volkert et al.,[28] in which they examined psychological disorders in elderly individuals living in North America and Europe, shows that the depression rate in old age is 19.47%. In their study on the prevalence of depressive symptoms in elderly people in a nursing home in Greece, Kleisiaris et al.[29] found that 58.8% of these individuals had depressive symptoms. Kim et al.[30] evaluated the geriatric depression prevalence of elderly individuals living in nursing homes in Korea and found that 63% had depression. Depression was found in 53.75% of the elderly individuals living in nursing homes in a study conducted by Goud et al.[31] to assess the depression prevalence in nursing homes in India. Marinho et al.[32] compared elderly people living in nursing homes and in society and reported that 61.7% of those living in nursing homes and 22% of those living in their homes had depression, and there was a significant difference between them. Therefore, our study is compatible with the literature, although it just contains the results of depression levels of the individuals living in nursing homes. The results of Kılıçoğlu and Yenilmez's study indicate there is a relationship between depression and social support.[33] In addition to the risk factors associated with depression for elderly people living in nursing homes, rather than those living in their own houses, lack of support could also be included.[34] Elderly individuals in the traditional family structure in Turkey are willing to live in their own houses and do not prefer to stay in nursing homes. In addition, negative biases regarding the living conditions of elderly individuals living in nursing homes in Turkey affect them negatively and cause them to be unhappy.

In our study, the average score of the WHOQOL-OLD was 69.76±11.54. The individuals' WHOQOL-OLD subscales were as follows: "Sensory Abilities" was 10.75±2.65, "Autonomy" was 12.69±3.40, "Past- Present- Future Activities" was 12.36±3.33, "Social Participation" was 11.66±3.80, "Death and Dying" was 9.87±4.35, and "Intimacy" was 12.42±3.22. Individuals partici-

pating in the study had the highest scores on the Autonomy subscale. When we look at similar studies in our country, e.g. the one conducted in three nursing homes in Ankara by Ercan Şahin, and Emiroğlu,[35] the average scores of WHOQOL-OLD are as follows: "Sensory Abilities" is 15.82±3.73, "Autonomy" is 12.49±2.86, "Past- Present-Future Activities" is 11.80±3.3, "Social Participation" is 12.35±3.22, "Death and Dying" is 11.63±3.49, "Intimacy" is 11.80±3.2, and the total score is 76.11±16.8. In the study carried out by Arpacı et al.[36] to evaluate the quality of life of elderly people living in nursing homes, the average scores of sensory abilities, autonomy, past-present-activities, social participation, death and dying, and intimacy are 11.09±2.94, 12.24±2.28, 11.66±2.60, 10.81±2.61, 14.12±2.97, 11.97±3.60, respectively. The total score is 71.90. Altay et al.[37] investigated the quality of life of elderly people in society and found the average scores of 38±2.81, 13.19±2.72, 13.36±2.69, 12.68±2.91, 10.76±4.30, 14.35±2.95, and 75.74±9.99, respectively. Vitorino et al.[38] conducted studies in nursing homes in Brazil to investigate the quality of life of elderly individuals and found the average scores of the subscales above are 73.7±22.7, 56.9±22, 60.2±19.2, 58.6±21.5, 71.8±23, 58.4±21.7, respectively. Accordingly, elderly people living in nursing homes in our country have similar quality of life scales. However, the quality of life scores of elderly people living in nursing homes in our country is lower than in those living abroad.

According to findings of our study, there is a negative correlation between SMMT and GDS scores. Based on the data of this survey, we can assert that as the cognitive status of elderly individuals is impaired, depression levels increase. These results are consistent with the literature.[39–41] Cognitive impairment and depression seem to be correlated in elderly individuals.

A negative correlation existed between the SMMT and sensory abilities and death and dying scores of elderly individuals who volunteered in our study. Nevertheless, there is a statistically significant positive correlation between the total scores of autonomy, past-present-future activities, social participation, intimacy, and that of WHOQOL-OLD. Kitiş et al.[42] investigated the relationships among cognitive level, depression status, functional level, and quality of life and showed a significant positive correlation between cognitive statuses of the individuals and their quality of life.

The results of the study conducted by Abrahamson et al.[43] in long-term nursing homes and those of Misotten at al.,[44] in which they assessed the quality of life of elderly people with mild cognitive impairment and dementia and those in the control group, support the results of our study. Quality of life for elderly people increases with increased cognitive status. In addition, as cognitive disorders increase, the ability of the individuals to fulfil their daily functions diminishes, and as a result, their quality of life deteriorates.

There is a statistically significant negative correlation between the total scores of GDS and those of WHOQOL-OLD. Lin et al.[45] investigated the quality of life and end-of-life depression in a geriatric population and reported that as the depression levels of the elderly individuals increase, their quality of life decreases. Studies of depression and quality of life in elderly individuals by Sivertsen et al.[46] indicate that elderly people with depression have a lower quality of life than those without depression and that the level of depression increases in individuals with a lower quality of life. Halvorsrud et al.[47] conducted a study evaluating the quality of life of elderly people living in their houses in Norway. They report that as the level of depression increases, the quality of life diminishes. Therefore, the results of our study are compatible with the literature and quality of life deteriorates as depression level increase in elderly individuals.

Conclusion

More than half of elderly people living in nursing homes had cognitive disorders and depression. However, half of the participants had high scores on the WHOQOL-OLD autonomy subscale. Additionally, cognitive status, depression, and quality of life in elderly individuals were interrelated. As cognitive status improves, depression decreases and quality of life increases accordingly. Furthermore, quality of life increases as the depression level of the individuals decreases. Thus, it is suggested that multi-center studies, in which the statuses of elderly people living in nursing homes are evaluated and the factors affecting their cognitive status, mood, and quality of life are determined, should be carried out and these initiatives ought to be prioritized.

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