Relationship of Cognitive Functions with Daily Living Activities, Depression, Anxiety and Clinical Variables in Hospitalized Elderly Patients

Hastanede Yatan Yaşlılarda Bilişsel İşlevlerin Günlük Yaşam Aktiviteleri, Depresyon, Anksiyete ve Klinik Değişkenlerle İlişkisi

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ABSTRACT

Introduction: Cognitive impairment in elderly patients, which may be a sign of dementia, depression, anxiety or medical diseases, has been determined as a risk factor for functional loss. In this study, we aimed to investigate the frequency of cognitive impairment and to investigate the relationship of cognitive status with sociodemographic variables, daily living activities, anxiety and depression in elderly inpatients.

Method: The sample of this cross-sectional and descriptive study consists of 243 patients aged 65 years and older who were hospitalized in Bülent Ecevit University Hospital. A sociodemographic questionnaire, the Mini-Mental State Examination (MMSE), Activities of Daily Living Scale, Lawton-Brody Instrumental Daily Activities Scale, Geriatric Depression Scale (GDS) and the Beck Anxiety Inventory were used for data collection.

Results: One hundred and six (43.6%) patients were female and 137 (56.4%) were male. The patients were divided into two groups according to the Mini-Mental State Examination (MMSE) 23/24 cut-off score. The cognitive decline was statistically significantly more frequent in patients who were older, female, less educated, low socioeconomic status, and living in rural areas. There were more problems in the basic and instrumental activities of daily living and nutrition in patients with cognitive decline. Anxiety and depression scores were higher in this group. In our study, although the frequency of cognitive decline and depression according to GDS were 56% and 48%, respectively; we found that only 10.5% of patients applied to the psychiatrist, and 9.3% of patients received psychiatric treatment.

Conclusion: Cognitive decline may cause deterioration in the daily living activities, nutrition and capacity for independent functioning. Older age, female, low education, low socioeconomic status and living in rural area are important risk factors for cognitive impairment. Cognitive decline in older age may be associated with depression and anxiety. We assume that when cognitive decline, depression and other psychiatric problems are unidentified, it may contribute to deterioration of mental health in medically ill elderly. (*Archives of Neuropsychiatry 2014; 51: 267-274*)

Key words: Elderly, cognitive disorder, depression, activities of daily living

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ÖZET

Giriş: Yaşlı hastalardaki bilişsel bozulma, işlevsel kayıp için bir risk faktörü olarak tanımlanmıştır. Bu işlevsel bozulma; demans, depresyon, anksiyete veya medikal hastalıkların belirtisi olabilmektedir. Bu çalışma; hastanede yatan yaşlı hastalarda bilişsel bozulma sıklığını saptamak ve hastaların bilişsel durumları ile sosyodemografik değişkenler, günlük yaşam aktiviteleri, anksiyete ve depresyon arasındaki ilişkinin incelenmesi amacıyla yapılmıştır.

Yöntem: Kesitsel ve tanımlayıcı özellikteki bu çalışmanın örneklemini Bülent Ecevit Üniversitesi Sağlık Uygulama ve Araştırma Merkezi'nde yatarak tedavi gören 65 yaş ve üstü 243 hastadan oluşmaktadır. Hastaları değerlendirmek için Sosyodemografik veri formu, Standardize Mini Mental Test (SMMT), Günlük Yaşam Aktiviteleri Ölçeği, Lawton-Brody Enstrümental Günlük Aktiviteler Ölçeği, Geriatrik Depresyon Ölçeği (GDÖ) ve Beck Anksiyete ölçeği kullanılmıştır.

Bulgular: Hastaların 106'sı (%43,6) kadın, 137'si (%56,4) erkektir. Hastalar, SMMT 23/24 kesme puanına göre iki gruba ayrılmıştır. Bilişsel işlev bozukluğu; ileri yaş, kadın cinsiyet, düşük eğitim ve sosyo-ekonomik düzey, kırsal kesimde yaşayan hastalarda istatistik olarak anlamlı olarak daha sık bulunmuştur. Bilişsel işlev bozukluğu olan grubun temel ve yardımcı günlük yaşam aktivitelerinde ve beslenmelerinde daha çok sorun olduğu, anksiyete ve depresyon puanlarının daha yüksek olduğu saptanmıştır. Çalışmamızda, bilişsel yıkım ve GDÖ'ne göre olası depresyon sıklığı sırasıyla %56 ve %48 olmasına rağmen; hastaların sadece %10,5'inin daha önce psikiyatri doktoruna başvurduğu, %9,3'ünün psikiyatrik bir tedavi aldığı öğrenilmiştir.

Sonuç: Bilişsel işlevler bozuldukça günlük yaşam aktiviteleri gerilemekte, beslenme bozulmakta ve bağımsız iş yapabilme kapasitesi olumsuz yönde etkilenmektedir. İleri yaş, kadın cinsiyet, düşük eğitim düzeyi ve sosyoekonomik düzey, kırsal kesimde yaşamak bilişsel işlevlerde gerileme ile yakından ilişkilidir. Yaşlılardaki bilişsel gerileme depresyon ve anksiyete ile de ilişkili olabilir. Çalışmamızın sonuçlarına göre; tıbbi hastalığı olan yaşlılardaki bilişsel sorunlar, depresyon ve diğer psikiyatrik sorunların fark edilmemesinin, yaşlı hastaların zihinsel sağlığını olumsuz etkileyebileceği kanaatindeyiz. Yaşlı hastalarla karşılaşan tüm hekimlerin tarama testlerini kullanarak bilişsel yıkım ve depresyonu taraması önemlidir. (*Nöropsikiyatri Arşivi 2014; 51: 267-274*)

Anahtar kelimeler: Yaşlılık, bilişsel bozukluk, depresyon, günlük yaşam aktiviteleri

Çıkar Çatışması: Yazarlar bu makale ile ilgili olarak herhangi bir çıkar çatışması bildirmemişlerdir.

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Introduction

Aging diminishes certain physical, psychological, and social functions. Cognitive impairments cause incapacitation in daily functions and limit quality of life (1). For an elderly individual, advanced aging frequently creates partial dependence or complete reliance on external assistance or care.

Dementia causes personality, psychiatric, and behavioral changes in addition to various cognitive impairments and memory problems, and it is one of the most commonly observed health problems in old age (2). Depression is yet another recurring disease with increased duration and frequency in old age. Besides negative social effects, depression may cause reversible but significantly reduced high cognitive functions, such as concentration, attention span, short-term memory, learning, and voluntary attention. Occasionally, depression may be indistinguishable from dementia, and it may also be the prodromal sign. Depression is a treatable condition that, if unattended, could lead to significant loss of capabilities, reduction in quality of life, physical health problems, suicide, and increased mortality because of various diseases (2). Depression rates among the elderly have been reported to be 1%–5% in the general public and 12%–46% for elderly who are medically or surgically hospitalized (2).

Old age is a life phase during which illness and medicine use increase, and health services are more frequently utilized (2,3). Monitoring of the hospitalized elderly becomes more challenging; their residencies are typically extended (3). Among the reasons are cognitive dysfunctions and accompanying psychiatric diseases, such as depression (2,4,5). Care may be impeded by numerous important problems, such as treatment compliance, negative effects of medication on cognitive function, and risk of delirium (5,6). During hospitalization, the assessment and prevention of factors that may adversely affect the clinic are of utmost importance in elderly. However, many studies report that delirium, dementia, and psychiatric disorders are not diagnosed among the hospitalized elderly and that this leads to significant diminishing of quality of life and results in issues such as health caregiver burnout (3,5).

This study aims to investigate the frequency of cognitive impairment and examine the relationship between cognitive status and sociodemographic variables, daily living activities, nutrition, anxiety, and depression.

Methods

The present study, conducted in a cross-sectional and descriptive format, was pre-approved by the Clinical Research Ethics Board of the Bülent Ecevit University. The inclusion criteria of the study were aged 65 years or older and hospitalization duration of 24–48 h. The exclusion criteria were the inability to comprehend and/or incapability of cooperation in the completion of surveys, hearing or sight problems, and refusal to participate in the study. Between June 1 and August 31, 2012, at the Bülent Ecevit University's Research and Application Hospital, 243 (63%) of the 385 resident patients aged 65 years or older, excluding those in intensive care, met the predetermined study inclusion criteria.

Application

The study data were collected by the researchers through personal interviews with patients after obtaining written consent. During the application of the sociodemographic data survey, Mini Nutritional Test Form (MNT-short form), Activities of Daily Living Scale (ADLS), and Instrumental Daily Activities Scale (IDAS), in addition to elderly patients, any relatives present and accompanying the patient were also used as sources of information. After the application of the Mini-Mental State Examination (MMSE), which was arranged in accordance with the patients' levels of education, patients were asked to fill out the Geriatric Depression Scale-short form (GDS-15) and the Beck Anxiety Inventory (BAI).

The patients' hospitalization duration and laboratory test results (lipid profile, liver function test, kidney function test, complete blood count, thyroid function test, vitamin B12, and folic acid) were collected from the hospital's current files. The presence of any chronic health problems, such as hypertension, diabetes mellitus, coronary artery disease, cardiac insufficiency, chronic obstructive lung disease, asthma, previous cerebrovascular disease, and chronic kidney disorder, were identified during the clinical interviews and through the existing hospital medical files.

Measurement Tools

Sociodemographic data form: This survey form that was arranged by the researchers included questions regarding age, gender, education level, marital status, monthly income, cohabitant, known physical disease and psychiatric disorders, medications, and reasons for hospitalization. Additionally, all elderly patients were asked to self-assess their old age, health perceptions, whether their health problems affected their physical activities, and how they preoccupied themselves during leisure times.

Mini-Mental State Examination (MMSE): This is a frequently employed and easily applicable test developed by Folstein et al. to determine a patient's degree of cognitive disorder (7). Formulated in sections named orientation, recording memory, attention and calculation, recall, language, and structuring, this test is evaluated on the basis of 30 score points in total. While the rearranged MMSE for the lesser educated was applied to those with education of five years or less, for patients with more education, the MMSE arranged for the educated was applied (8). The validity and reliability of MMSE have been assessed according to the education levels of citizens, and the threshold value was determined to be 23/24 points for screening potential dementia (8). Accordingly, an MMSE score of 24–30 represents normal cognitive function, 23–20 indicates mild cognitive impairment, and a score of 19 or lower represents moderate to severe cognitive impairment.

Assessment of Daily Life Activities: ADLS and IDAS were utilized for the evaluation.

Activities of Daily Living Scale (ADLS): It is a tool of measurement comprising nine items that inquire about an individual's self-care in terms of bathing, dressing, eating, toileting, transferring, personal hygiene, bed mobility, locomotion, and continence functions. Each item is assessed on the basis of a 3-point score range (0=independent, 1=supervised, 2=assisted, and 3=dependent). In ADLS, increasing scores signify reduced functionality (9). Although an evaluation of the scale's validation or reliability in Turkish has not yet been done, its use in the assessment of geriatric patients in Turkey has been proposed (10).

Instrumental Daily Activities Scale (IDAS): It was developed by Lawton and Brody (11). It comprises eight items totaling a score of 17 points assessing an individual's social abilities in terms of telephone use, shopping, food preparation, housekeeping, laundry, travel via public transportation or taxi, recognition and use of own medication, and money management. Although an evaluation of the scale's validation or reliability in Turkish has not yet been done, it is being used in the assessment of geriatric patients in Turkey (10,12).

Mini Nutritional Test (MNT)-short form: This is a method used in the study to assess the nutritional status of patients. MNT-short form comprises six items for verbal inquiry and anthropometric measurement. Whereas a score of 12 or higher indicates non-malnutrition, a score of 11 or lower is accepted as indicative of the patient's malnutrition risk, triggering the application of MNT-long form. The diagnostic validity and reliability of MNT-short form has been successfully tested (13). An evaluation of the Turkish validity and reliability has not been done.

Geriatric Depression Scale (GDS-15)-short form: This test was developed for screening depression in elderly patients (14). Developed for the ease of use, the 15-item short form is rapidly being applicable. The GDS-short form has been validated, and its reliability has been established in Turkey (15). In this scale, a score of 6 or higher may be indicative of depression and must be jointly evaluated with the patient's clinical data.

Beck Anxiety Inventory (BAI): Developed by Beck et al. (16), this scale is a Likert-type self-assessment measure comprising 21 items. On the basis of the total score, 0–14 points represents a normal level of anxiety, 16–25 indicates a mild to medium level, and 26–63 points are an indication of severe level anxiety. The Turkish validity and reliability studies have been done by Ulusoy et al. (17).

Statistical Analysis

In the analyses of this study, the SPSS 13.0 software package was utilized. The study variables subject to continuous values were determined with their means, standard deviations, minimum and maximum values, and the variables assuming categorical values that were given as frequencies and percentages. Shapiro–Wilk test was used for normality tests.

In comparisons of the study's sample groups, the continuous variables that satisfy the parametric test supposition were evaluated with the independent samples t-test, and the continuous variables failing to satisfy the parametric test suppositions were tested using the Mann–Whitney U test. In group comparisons of categorical variables, Pearson's chi-square, Yates' corrected chi-square, and Fisher's exact chi-square tests were used.

The variables considered to effect the cognitive functions were examined through logistic regression, and an attempt was made to determine the risk factors. At the conclusion of the analyses, the risk factor and protective factor variables were identified. In the study, comparisons below $p=0.05$ are considered statistically significant.

Results

The study participants comprised 243 patients, including 106 female (43.6%) and 137 male (56.4%). The mean ages of the female and male were found to be 73.9 ± 6.8 (age 65–94) years

and 73.2 ± 5.9 (age 65–86) years, respectively ($p=.535$). Whereas 25.5% of the female were primary school graduates, 70% were not literate. Among the male, 64% were primary school graduates, whereas 23.4% were illiterate. The female's education level was lower than that of the male ($p<.001$). Similarly, the female's monthly income levels (699 ± 224 TL) were lower than those of the male (977 ± 539 TL) ($p=.008$). The group age range, monthly income, and hospitalization duration averages are given in Table 1. Gender, cohabitant, education level, marital status, regular income assets, and settlement location-related data are presented in Table 2.

While 62.1% of patients were hospitalized in internal medicine, the remaining 37.9% were being observed in surgical clinics. According to the information from patients and their attendant relatives, 10.5% of patients had previously consulted psychiatrists and 9.3% had received psychiatric treatment. The patients' regularly used medication was also determined; 53.9% used antihypertensive, 25% analgesics, 22% diabetes medication, 6.6% antidepressants, 5.4% antiepileptics, 3.7% antipsychotics, 3.7% anxiolytics, and 1.7% dementia medication.

The MMSE score mean for the entire group was 21.4 ± 5.6 (7–30) points, whereas the mean score for female was 19.9 ± 5.7 (7–30) and for male was 22.6 ± 5.3 (8–30).

According to MNT results, 62.8% of patients were at malnutrition risk. In GDS-15, 48.2% of patients had scores of 6 and above. There was no significant difference in the risk of depression in female (43.6%) and male (56.4%) ($p=.846$). According to BAI results, 52.2% of patients exhibited a normal level, 25% a mild-medium level, and 22.8% a severe anxiety. In Table 3, MMSE, ADLs, IDAS, MNT, BAI, and GDS-15 mean scores are given.

When a classification according to MMSE's 23/24 cut-off score value was done with two categories in terms of normal and impaired cognitive function, MMSE mean scores indicated 105 normal (43.2%) and 138 impaired (56.8%) patients with means of 26.43 ± 1.9 and 17.59 ± 4.3 , respectively. According to MMSE scores for the two groups, a statistically significant difference for age ($p=.004$) and monthly income ($p<.001$) was observed; however, no significant statistical evidence was identified in terms of the mean hospitalization duration (Table 1).

Table 1. Numerical data related features

		Cognitive Function			
		Normal (n=105)	Impairment (n=138)	Total (n=243)	p
Age	Mean±SD	72.0±5.02	74.6±6.91	73.5±6.29	.004
	Min–max	65–86	65–94	65–94	
Monthl Income	Mean±SD	957.02±483.25	786.62±425.03	863.66±458.99	<.001
	Min–max	500–4000	0–3500	0–4000	
Hospita- lization Duration	Mean±SD	8.72±7.53	8.48±5.49	8.58±6.42	.406
	Min–max	1–47	2–30	1–47	
SD: standard deviation					

Table 2. Socio-demographic Features

		Cognitive Function			p
		Normal, n (%)	Impairment, n (%)	Total, n (%)	
Gender	Female	29 (27.6)	77 (55.8)	106 (43.6)	<.001
	Male	76 (72.4)	61 (44.2)	137 (56.4)	
Cohabitant	Alone	5 (4.8)	8 (5.8)	13 (5.3)	.01
	With wife/husband	56 (53.3)	47 (34.1)	103 (42.4)	
	With relative	44 (41.9)	83 (60.1)	127 (52.3)	
	(child or another)				
Education	Illiterate	29 (27.6)	78 (56.5)	107 (44.0)	<.001
	Primary education	58 (55.2)	57 (41.3)	115 (47.3)	
	Secondary	7 (6.7)	2 (1.4)	9 (3.7)	
	High school	8 (7.6)	1 (0.7)	9 (3.7)	
	University	3 (2.9)	0 (0)	3 (1.2)	
Marital state	Married	79 (75.2)	78 (56.5)	157 (64.6)	.003
	Widowed/divorced	26 (24.8)	60 (43.5)	86 (35.4)	
Regular income	Absent	28 (26.7)	65 (47.4)	94 (38.7)	.001
	Present (retired)	77 (73.3)	72 (52.6)	149 (61.3)	
Location	Rural	49 (46.7)	90 (65.2)	139 (57.2)	.004

Table 3. Averages scores of the scales applied elderly

		Cognitive Function			p
		Normal Mean±SD	Impairment Mean±SD	Total Mean±SD	
MMSE		26.43±1.9	17.59±4.3	21.4±5.6	<.001
ADLS		2.88±5.73	8.94±9.36	6.31±8.53	<.001
IDAS		12.36±5.17	6.85±5.63	9.27±6.08	<.001
MNT		9.90±2.29	8.89±3.13	9.34±2.83	.027
BAI		13.42±9.21	19.60±12.82	16.91±11.78	<.001
GDS-15		4.35±3.78	7.39±4.27	6.07±4.33	<.001

SD: standard deviation; MMSE: Mini-Mental State Examination; ADLS: Activities of Daily Living Scale; IDAS: Instrumental Daily Activities Scale; BAI: Beck Anxiety Inventory; GDS-15: Geriatric Depression Scale-short form

Again, according to MMSE scores, a significant difference was observed between the two groups in terms of gender, cohabitants, educational level, marital status, regular income assets, and living area (Table 2). It is significant that cognitive impairment was higher for female, those living alone or with relatives, those with a lower level of education, those with irregular incomes, those who were unmarried, and those living in rural areas.

As shown in Table 4, according to MMSE results, patients in both the internal and surgical clinics do not exhibit a statistically significant difference in their cognitive function level ($p=.739$). In terms of prior psychiatric treatment stories and psychiatric outpatient consultations of patients with normal and impaired cognitive function, no difference was observed (Table 4). Chronic diseases were identified among 61% of patients. No effects of accompanying chronic diseases on cognitive functions were identified ($p=.244$).

Laboratory examination data of patients are presented in Table 5. Among all the study subjects, 55.8% were found to have lower hemoglobin, 37.3% lower vitamin B12, and 8.5% lower folic acid levels. Among patients with normal and impaired cognitive function, no differences were identified in terms of the blood levels of cholesterol, triglyceride, LDL, HDL, fasting blood sugar, free T3, free T4, TSH, vitamin B 12, and folic acid. However, in the group with impaired cognitive function, the rate of patients with lower hemoglobin was higher (43.3% and 65.4%; $p=.001$). In terms of the number of drugs used among patients, no difference was observed between the normal and impaired cognitive function groups (4.86 ± 2.98 and 5.08 ± 3.03 , $p=.608$).

In the group with impaired cognitive functions, health perception was more pessimistic ($p=.0001$), and the negative physical locomotion impact on the basis of health problems was higher ($p=.0001$). No effect of family support availability was found for cog-

nitive functions ($p=.511$). When compared in terms of the desire to participate in social activities, the group with cognitive impairment was less eager, and this condition was statistically significant ($p=.008$). In terms of rest or watching television, there was no difference between the groups; however, in terms of activities, such as conducting conversations, leisurely wandering, exercising, going out alone, and unaccompanied shopping, the two groups exhibited a statistically significant difference. The data relevant to leisure activities of elderly patients are given in Table 4.

Table 3 presents statistical analysis results relating to the comparative means of ADLS, IDAS, MNT, BAI, and GDS-15 scores of patients in the two groups. Among elderly patients with cognitive impairment, IDAS and MNT scores were lower, whereas ADLS, BAI, and GDS-15 scores were higher and statistically significant.

Multiple regression analysis performed to determine the effect of gender, living area, and age variables on MMSE scores of patients with cognitive impairment is given in Table 6. Each single unit of an increase in age multiplies the cognitive impairment risk

Table 4. Data related to the view of old age, health perception, and leisure activities.

		Cognitive Function		
		Normal, n (%)	Impairment, n (%)	p
View of elderly	Does not reach the elderly	41 (39.8)	21 (16.0)	<.001
	A bad situation	24 (23.3)	38 (29.0)	
	Uselessness	4 (3.9)	14 (10.7)	
	Discomfort	34 (33.0)	58 (44.3)	
Health perception	Good	46 (44.7)	33 (25.2)	<.001
	Medium	46 (44.7)	55 (42.0)	
	Poor	11 (10.7)	43 (32.8)	
Effect on physical movement of health problems	Affecting	67 (65.0)	111 (84.7)	<.001
	Unaffecting	36 (35.0)	20 (15.3)	
Chat	Absent	48 (46.6)	79 (60.0)	.042
	Present	55 (53.4)	52 (40.0)	
Watching Television	Absent	49 (47.6)	62 (47.7)	.986
	Present	54 (52.4)	69 (52.3)	
Relax	Absent	53 (51.5)	54 (41.5)	.131
	Present	50 (48.5)	77 (58.5)	
Walkabout	Absent	57 (55.3)	92 (70.0)	.021
	Present	46 (44.7)	39 (30.0)	
Exercise	Absent	73 (69.5)	114 (82.6)	.016
	Present	32 (30.5)	24 (17.4)	
Going outside by self	Absent	23 (21.9)	67 (48.6)	<.001
	Present	82 (78.1)	71 (51.4)	
Shopping by self	Absent	27 (25.7)	82 (59.4)	<.001
	Present	78 (74.3)	56 (40.6)	
Psychiatric application	Absent	94 (91.3)	118 (88.1)	.560
	Present	9 (8.7)	16 (11.9)	
History of psychiatric treatment	Absent	95 (92.2)	120 (89.6)	.632
	Present	8 (7.8)	14 (10.4)	
Section (clinic)	Internal	64 (61.0)	87 (63)	.739
	Surgical	41 (39)	51 (37)	

Table 5. Laboratory tests in elderly patients

Laboratory tests		Cognitive Function			p
		Normal, n (%)	Impairment, n (%)	Total, n (%)	
Hemoglobin	>12 gr/dL	59 (56.7)	47 (34.6)	106 (44.2)	.001
	<12 gr/dL	45 (43.3)	89 (65.4)	134 (55.8)	
Vitamin B12	>250 nmol/L	39 (61.9)	50 (63.3)	89 (62.7)	.865
	<250 nmol/L	24 (38.1)	29 (36.7)	53 (37.3)	
Folic acid	>3 nmol/L	43 (87.8)	65 (94.2)	108 (91.5)	.316
	<3 nmol/L	6 (12.2)	4 (5.8)	10 (8.5)	
TSH	0.4–4 mIU/L	46 (65.7)	72 (76.6)	118 (72)	.069
	<0.4 mIU/L	17 (24.3)	20 (21.3)	37 (22.6)	
	>4 mIU/L	7 (10)	2 (2.1)	9 (5.5)	
Cholesterol	<200 mg/dL	47 (67.1)	67 (77.9)	114 (73.1)	.185
	>201 mg/dL	23 (32.9)	19 (22.1)	42 (26.9)	

TSH: Thyroid stimulating hormone

Table 6. The results of the regression analysis

Variable	Regression coefficient	p
Gender	.302	<.001
Residential	.489	.011
Age	1.070	.004

by a factor of 1.07. From the perspective of gender, being male manifests as a protective factor. In other words, by a factor of 3.31, female are at higher risk of cognitive impairment. While urban residency is a protective factor, the risk of cognitive impairment for rural area residents is 2.08 times higher.

Discussion

Decline in cognitive functions becomes prevalent with increasing age. According to studies done in the USA, in patients aged above 65 years, the rate of severe cognitive impairment was 5%, rate of mild cognitive impairment was 15%, and these rates increased with advancing age (4). In a study, the rate of cognitive impairment was found to be 56.7% in elderly people who live in a rest home in Turkey (18). In studies that assessed cognitive impairment in hospitalized elderly, the rates of cognitive decline related to dementia were found to be 30.5%–35% (1,3,19,20). Similar to previous literature, we also found in our study that the cognitive impairment increased with advancing age (3,4,18). The rate of cognitive impairment in patients of this study was 56.8%. A low MMSE score alone does not confirm the presence of dementia or mild cognitive impairment in these cases. However, it could contribute in a general manner to the understanding of the existence of cognitive decline in hospitalized elderly.

Most studies indicate that cognitive dysfunction is common among women and particularly higher at lower socioeconomic levels (3,18,20,21). In alignment with the literature, MMSE scores in our study were lower among female and individuals with lower socioeconomic level. In some studies, whereas the increased impact on cognition among females was correlated to postmenopausal estrogen deficiency (22), others proposed explanations in terms of female's generally being housebound, performing domestic work, remoteness from social life, and lack of interaction (21) or their longer life expectancy (18). In this study, the average ages of both sexes were similar; thus, the cognitive impairment frequency in female cannot be correlated to their more advanced age. Female's lesser educational qualifications and lower income levels may be associated with the factors that increase cognitive impairment. In alignment with existing literature, our study identified a significantly higher rate of cognitive impairment risk among those with lower educational levels (1,3,4,18,20,21). In contrast to literature suggesting no relationship between marital status, rural life, and cognitive impairment, our study identified a high impact of being either unmarried or widowed and an effect of rural life on cognitive decline (4,20,21). Furthermore, male gender and urban life were also identified as independent factors with a positive effect on cognitive functions.

Cognitive impairment also affects the daily lives of elderly. In our study, no difference was identified in terms of activities, such as watching television or rest, thereby requiring lesser functional capacity between the two groups of patients who were categorized as normal or with impaired cognitive function. We established that patients without cognitive impairment were better off in terms of social participation and interaction, such as more leisure, exercising, and shopping, and their mood were

better. The assessment of the daily living activities of elderly could yield important health information. Particularly among patients with cognitive impairment, deterioration can be expected in the basic and instrumental daily living activities measured with the scales (18). Some studies have reported that when mild- or medium-level cognitive impairment develops, instrumental daily activities, such as financial matters, telephone use, shopping, and utilization of transit, started to deteriorate. It has also been noted that basic daily living activities, such as eating, dressing and undressing, walking, toileting, and bathing are more prominent among patients with severe cognitive dysfunction (18). In our study, we identified that instrumental and basic daily living activities in patients with cognitive impairment were both significantly worse.

In accordance with the available literature, among elderly individuals with cognitive deterioration, our study determined that the self-perception of health was worse and that these patients engaged less in physical activities (1). This situation in particular can affect patients' treatment benefit during the post-discharge period, satisfaction with treatment services, and compliance for follow-up visits. As suggested in our study, when a special screening is not conducted, cognitive impairments and mental problems of elderly patients can easily be underdiagnosed (3). In cases involving cognitive impairment, it is very important for physicians to provide a comprehensible definition regarding the illness and medication to patients and an easily understood treatment advice (e.g., less medication, single dose drug treatment, etc.).

Many studies have reported that hospital resident patients with cognitive impairment typically had extended hospitalization periods than patients with normal cognitive function and that, in addition to existing illness, they suffered a higher rate of falls, urinary incontinence, decubitus ulcers, and behavioral problems (4,5). Other studies have reported that cognitive impairment did not extend the hospitalization duration of elderly patients (3). In our study, we were unable to identify any relationship between the existence of chronic disease, daily used drug numbers, hospitalization duration, and cognitive impairment.

It is known that cognitive problems among the elderly may also be related to depression. In addition, the differential diagnosis of dementia, i.e., pseudodementia is important in a patient with cognitive impairment. In this respect, a substantially degraded mood is an expected result in a patient with increased cognitive impairment (23,24). Moreover, we found higher depression scores among elderly patients in the cognitive impairment group. In an elderly patient, it is important to consider the cognitive function in conjunction with mood. Studies done in this regard have reported findings that the increasing of cognitive impairments was accompanied by the worsening of depression, anxiety, social functions, and capacity for daily activities (1,25). This study identified higher depression and anxiety scores among patients with lower MMSE scores. Depression possesses the power to negatively affect daily life activities, family relationships, the ability to cope with chronic diseases, and the meeting of basic requirements.

Cognitive impairments and accompanying psychiatric disorders may affect nutrition among elderly patients. A study conducted in Turkey reported a 45.4% malnutrition risk rate among the elderly living at home and a 10.8% malnutrition rate and concluded that malnutrition in connection with socioeconomic conditions was higher in Turkey than in Europe and Far East countries (26). When we evaluated the nutrition among the elderly in accordance with MNT findings, 62.8% of patients faced malnutrition risk, and it was also observed that patients with cognitive impairments exhibited worse MNT scores. However, the malnutrition observed may be associated with other physical and mental disorders accompanying the cognitive deterioration.

Although these are easily screenable conditions even among hospitalized patients, cognitive and emotional problems are often underdiagnosed and receive inadequate diagnosis (4,19,20). A study has reported that among hospitalized elderly patients, cognitive impairment was not recognized by hospital physicians most of the time, and the cognitive impairment rate identified by screening was far higher than the rate of psychiatric consultations (3). When we consider the 56.8% cognitive impairment rate, 48.2% depression risk, and 47.8% anxiety signs obtained in our study through the screening of elderly patients hospitalized because of physical problems, we found that the 10.5% psychiatric consultation rate is far too low. This situation may be related to unnoticed or ignored cognitive and psychiatric conditions by patients or their relative, or it could be related to conditions that generally do not cause noticeable difficulties during home care but may more prominently manifest in hospitalization under acute medical conditions and when in a different, alien environment (5,20). The diagnosis of dementia and depression is important not only for patients but also for health caregivers. Early diagnosis ensures prompt treatment and enables higher quality of life for patients while reducing burnout among health caregivers. The early treatment of health conditions improve and extend independence in conducting daily life activities (3). Consequently, we conclude that cognitive and psychiatric screening of the hospitalized elderly is highly important.

Our study limitations include the cross-sectional method; relatively undetailed scales used, with the exception of MMSE; laboratory examination variations among patients; and lack of detailed examination and neuropsychological dementia assessment of cases with low MMSE scores.

Consequently, in clinical practice, particularly among elderly patients, female gender, low educational and socioeconomic levels, advanced age, and life in rural areas are closely affiliated with cognitive decline. This study has demonstrated that cognitive functions are linked with depression, nutrition, and daily living activities. The early diagnosis of mild cognitive impairment has an important effect on an individual's overall functionality. Therefore, the hospitalization of elderly patients should be deemed as an opportunity by physicians to perform simple but standardized routine screening procedures for cognitive function and depressive state using methods such as MMSE and GDS.

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