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Original Article

The Evaluation of Frailty in the Elderly and Affecting Biopsychosocial Factors: A Cross-Sectional Observational Study

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Abstract

Background: We aimed to evaluate the frequency of frailty and the affecting factors in people living in our society over 65 yr old.

Methods: Our descriptive and cross-sectional study included 261 individuals aged 65 and over who applied to Ankara Training and Research Hospital family practice centers and district polyclinics from 1 Jan to 1 Feb 2020. The participants were asked to complete a sociodemographic data form, FRAIL Scale, Katz Daily Living Activities Scale, Lawton&Brody Instrumental Activities of Daily Living Scale and Geriatric Depression Scale Short Form.

Results: According to the FRAIL Scale results: 35 people were found to be frail (13.4%), 115 to be pre-frail (44.1%). No frailty was observed in 111 people (42.5%). While the mean score of the Katz Activities of Daily Living Scale was found to be 5.65±0.71, the mean score of the Lawton&Brody Instrumental Activities of Daily Living Scale was found to be 6.65±1.69. In the geriatric depression evaluation, mild, medium or severe depression was detected in 87 participants (33.2%). As the level of frailty increased, the Geriatric Depression Scale score climbed significantly (P<0.001). In frail individuals, Lawton&Brody Scale scores were significantly lower (P<0.001). In our study: a correlation was found between frailty and female gender, being single, low income, low educational level, obesity, polypharmacy and decreased physical activity. Additionally, as the number of children increase frailty in women increases therewithal.

Conclusion: Elderly people had high frailty. Polypharmacy, depression and reduced physical activity were the more frequent in frail elderly. In frail females, the number of children was significantly higher.

Keywords: Depression; Frailty; Physical activity

Introductıon

With the increase of the life span, the elderly population rate in societies has increased. Frailty is a very common health condition associated with ageing used to describe the predisposition of elderly for conditions such as clinical deterioration, falls and mortality over time (1,2). Frailty is a disorder of adjustment to weakness and stress due to decreasing physiological functions with the increasing age. Arising from both physical and psychological situations, frailty is a dynamic process (3,4). Depression is the most common mental illness in the older ages when

regression and insufficiency in biological, physiological and psychological functions arise (5). Symptoms of depression in the elderly are different from the juveniles with more apparent somatic symptoms and cognitive defects. Suicide rates in geriatric patients are high; therefore, depression is a major health problem in the older ages (6). The frequency of depression in frail elderly is a major factor increasing mortality and morbidity (7,8).

In primary care, a holistic approach based on a healthy aging perspective is essential within the scope of the protection and improvement of health. Recognition of frailty by primary care physicians will create opportunities for appropriate intervention and counseling for patients (9).

The aim of our study was to evaluate the prevalence of frailty and the factors affecting in people over 65 who applied to family practice centers for any reason.

Materials and Methods

Our descriptive and cross-sectional study included 261 individuals aged 65 and over who applied to Ankara Training and Research Hospital family practice centers and district polyclinics from 1 Jan to 1 Feb 2020. Ankara is the capital city of Turkey and district polyclinics are located in different regions. Individuals diagnosed with dementia, Alzheimer's or psychotic illnesses and physically or mentally, disabled were excluded from the study. The participants completed a face-to-face sociodemographic data form, FRAIL Scale, Katz Daily Living Activities Scale, Lawton&Brody Instrumental Activities of Daily Living Scale and Geriatric Depression Scale Short Form.

FRAIL Scale

It was developed by Morley et al. (10) to detect frailty in the clinic setting by examining and evaluating Fatigue, Resistance, Ambulation, Illness, and Low weight. On the scale composed of 5 articles, each article is graded as 0 or 1. In total, 0 points are evaluated as normal, 1-2 points are evaluated as pre-fail and 3-5 points are evaluated as frail. The validity and reliability study of the scale was conducted by Hymabaccus et al. (11).

The Katz Activities of Daily Living Scale

The scale used to evaluate the treatment and prognosis of chronic diseases in elderly people was developed by Katz et al. (12). Patient's ability to bath, dress up, relieve himself, transfer (from the bed to the couch or vice-versa), intestinal and bladder control, and functions related to nutrition are evaluated under 6 categories. In each activity, independence is 1 point and dependence is 0 points. A low score indicates higher dependence. The validity and reliability study of the scale in our country was conducted by Özkan Pehlivanoğlu et al (13).

Lawton&Brody Instrumental Activities of Daily Living Scale

The scale was developed by Lawton and Brody in 1969 to evaluate the ability to live independently within the society. It is a scale composed of eight articles comprising information related to the ability to use a phone, do shopping, prepare a meal, do household chores, do laundry, take transport, take one's medicines, and calculate one's own money. The score interval is 0-8. A low score indicates higher dependence (14).

Geriatric Depression Scale Short Form

It was developed by Sceikh and Yesavage (15). It is a self-evaluation scale aiming to determine depression in elderly people composed of 15 yes/no questions asking about how they have been feeling within the past week. The scoring ranges between 0-15. The scale is evaluated as: 0-4 points no depression, 5-8 point's mild depression, 9-11 moderate depression, and 12-15 severe depression. The validity and reliability study of the scale in our country was conducted by Durmaz et al (16).

Statistical Analysis

Data were analyzed using the IBM SPSS 21 package program (IBM Corp., Armonk, NY, USA). The conformity of the numeric parameters to the

normal distribution was evaluated using the Kolomogorov-Smirnov and Shapiro-Wilk tests. While the average and standard deviation of the numeric parameters were given, categorical parameters were stated with numbers and percentages. In these two groups, Student-T or One-way Anova test was used for those that conformed to the numeric parameters, whereas Mann Whitney U or Kruskall Wallis test was used for those that did not conform to the normal distribution. The Chi-square test was used to compare the categorical parameters. The Spearman correlation test was used to evaluate the correlation levels of numeric variables. A value of $P<0.05$ was considered as statistically significant.

Ethical Approval

Approval for the study was granted by the Ethics Committee of the Ankara Training and Research Hospital numbered 89/2019 dated 28/11/2019. Written informed consents were obtained from all the patients.

Results

The average age of the 261 participants was 71.95±6.14 (min=65, max=93). Of all participants, 129 were (49.4%) female, and 132 were (50.6%) male. Most of the participants were married (70.1%), overweight (39.8%), and had chronic diseases (94.6%). They did not require home care (92.3%). Of the participants, 189 (72.4%) had a history of hospitalization and 106 (40.6%) a history of falls (Table 1).

Table 1: Sociodemographic Features of Participants

Sociodemographic Features		***n***	***%***
	65-74	185	70.9
Age (yr)	≥75	76	29.1
	Female	129	49.4
Sex	Male	132	50.6
	Married	183	70.1
Marital status	Single/Divorced	78	29.9
	Uneducated	58	22.2
Education	Primary school	142	54.4
	Middle school and higher	61	23.4
	Paid	169	64.8
Retirement	Unpaid	92	35.2
	<25	59	22.6
Body Mass Index (kg/m^2)	25-29.9	104	39.8
	≥30	98	37.5
	Yes	247	94.6
Chronic Disease	No	14	5.4
	<4 Drug utilization	152	58.2
Polypharmacy	≥4 Drug utilization	109	41.8
	Yes	20	7.7
Requirement of home care	No	241	92.3
	Yes	189	72.4
History of Hospitalization	No	72	27.6
	Yes	106	40.6
History of Falls	No	155	59.4
Falls outcome	Fracture	25	9.6
	Soft tissue trauma	32	12.3
	No injury	49	18.8

According to the FRAIL Scale results, 35 people were found to be frail (13.4%). Overall, 115 were identified as pre-frail (44.1%) and no frailty was observed in 111 people (42.5%). While the mean

score of the Katz Activities of Daily Living Scale was found to be 5.65±0.71, the mean score of the Lawton&Brody Instrumental Activities of Daily Living Scale was found to be 6.65±1.69. In the geriatric depression evaluation mild, medium or severe depression was detected in 87 participants (33.2%) (Table 2).

Table 2: Evaluation of the Frailty and Depression Scale Results

Variable		*n*	*%*
FRAIL Scale	Normal	111	42.5
	Pre-frail	115	44.1
	Frail	35	13.4
Depression	No	174	66.7
	Mild	51	19.5
	Moderate	27	10.3
	Severe	9	3.4

When the status of frailty and sociodemographic data were compared; the frailty in participants over 75 yr of age was found to be statistically higher (P<0.001). Female, single/divorced participants had significantly higher frailty levels (P<0.001). There was a significant decrease in frailty with the increase in the level of education (P=0.001). Frailty was observed to be higher in participants who did not receive a pension (P<0.001) and similarly, frailty increased as monthly income decreased (P<0.001).

Frail elderly had a significantly higher number of children (P=0.009). This difference resulted from the frail female participants (P=0.011) and was observed between frail and normal groups. No statistically significant difference was found between the number of children of mothers and the level of frailty in male participants. When the body mass index of the participants was evaluated, frailty was found to be higher in the obese participants (P=0.012). No statistically significant difference was found between the existence of a chronic disease and the level of frailty. However, the participants taking 4 or more medications had significantly higher frailty (P=0.009). Participants who thought they needed home care had statistically higher frailty levels (P<0.001). History of hospitalization and falls were more frequent in the frail group (P=0.018; P=0.040, respectively).

Additionally, in our study, when frailty increased, depression climbed as well (P<0.001). The result of Spearman Correlation analysis showed a medium-level positive correlation between the FRAIL Scale and the Geriatric Depression Scale score (r=0.605), so that participants experiencing depression had significantly higher frailty (P<0.001). Katz and Lawton&Brody scale scores of frail participants were significantly lower (P<0.001) (Table 3).

Table 3: Comparison of Frailty, Depression, Katz and Lawton&Brody Scale Scores

Variable	*FRAIL Scale*	*n*	*Mean*	*SD*	*P*
Geriatric Depression Scale Score	Normal	111	1.51	2.00	<0.001*
	Pre-frail	115	4.09	3.43	
	Frail	35	7.86	3.61	
Katz Scale Score	Normal	111	5.89	0.31	<0.001*
	Pre-frail	115	5.65	0.56	
	Frail	35	4.89	1.32	
Lawton& Brody Scale Score	Normal	111	6.88	1.30	<0.001*
	Pre-frail	115	6.88	1.48	
	Frail	35	5.17	2.54	

*Kruskal Wallis test was used

Discussion

The study included 261 participants over 65 yr old. In the study, 35 people were found to be frail (13.4%) and 115 to be pre-frail (44.1%). No frailty was observed in 111 people (42.5%). In Turkey, using the FRAIL Scale on 906 participants over 65, the frailty prevalence was found to be 10% (17). In the same study, the rates of pre-frail and not frail participants were determined to be 45.6% and 44.4%, respectively. Approximately 15% noninstitutionalized adults in the United States are frail, and the estimated global frailty ranges between 3.5% and 27.3% (18). In a society surveillance in China performed by using the FRAIL scale on 816 people over 65, pre-frail and frail prevalence were found to be 52.4% and 12.5%, respectively (19). In another study, the frailty prevalence was found to be 10% for participants over 65, and to be 30% for participants over 80 (20). We observed that the frailty prevalence in our study was consistent with the literature and that participants over 75 had significantly higher frailty.

Similarly, in studies examining frailty and the related factors, elderly people who are female, single, those who have a low income and low education level, who do not receive a pension, and who are obese were found to have higher frailty. Distinctively, the frailty prevalence showed an increase in line with the number of chronic diseases in these studies (21,22). While the frail and pre-frail elderly in our study had quantitatively more chronic diseases, we could not find a significant correlation between frailty and chronic diseases. The sample group created a limitation in terms of the distribution of chronic diseases. While there were 247 (94.6%) participants with at least one chronic disease, only 14 (5.4%) participants did not have any chronic disease.

Different from other studies, frail females had more children in our study. We did not encounter any data showing the correlation between the number of children and frailty in literature.

In our study, individuals taking 4 or more medicines had significantly higher frailty. In frail individuals, Katz and Lawton&Brody scale scores were lower. Participants who thought they needed home care had significantly higher frailty. History of hospitalization and falls was more frequent in the frail group. Similar to these results, effects of frailty on negative factors such as polypharmacy, reduced physical activity, and history of falling have been reported in the literature (23).

Depression is frequently seen in older ages with depression prevalence ranging between 10% and 20% (24). Depression prevalence in the elderly is even higher and that 16%-35% of frail people are also experiencing depression (25,26). Nonetheless, the correlation between frailty and depression is not clear, and it is not known which one is the cause and which is the effect (27). In our study, depression was detected in 33.2% of the participants. Depression increased in proportion with frailty and that depressed individuals had significantly higher frailty. In line with the present study, in China, the pre-frail and frail elderly had more depression symptoms compared to normal individuals. Frailty in the elderly was considered as an important comorbidity and determinant (28).

Conclusion

Elderly people had high frailty. Polypharmacy, depression and reduced physical activity were the more frequent in frail elderly. In frail females, the number of children was significantly higher. Further comprehensive studies are required to reveal the correlation between the number of children and frailty. A detailed geriatric evaluation made in the primary care setting would create an opportunity for preventive and therapeutic approaches for the early diagnosis of frailty in the elderly.

Journalism Ethics considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or

falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

Conflict of interest

The authors declared no conflict of interest.

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