RESEARCH

FRAILTY STATUS AND RELATED FACTORS OF ELDERLY PEOPLE RECEIVING AID FROM THE SOCIAL ASSISTANCE FOUNDATION IN BURDUR PROVINCE

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Abstract

Introduction: This study aimed to determine the characteristics and prevalence of frailty and related factors among the elderly who receive aid from the social assistance foundation.

Materials And Methods: The study population consisted of 464 people over the age of 65 y who lived in the city center of Burdur and received aid from the Social Assistance Foundation. All of the samples were selected, and we aimed to reach the entire population. While frailty according to Edmonton Frail Scale was the dependent variable of the research, general health status, socioeconomic and sociodemographic characteristics, and dependence in instrumental/daily living activities were determined as independent variables. The t-test and analysis of variance were used to analyze the scale scores. The forward linear regression method was used in multivariate analysis to determine the causes of frailty.

Results: While 29.0% of the elderly were not frail, 11.7% were severely frail. Being 85 y old and over, being fully/semi-dependent in terms of instrumental daily living activities, having a chronic disease, using multiple medicines, and having experienced a fall within the last year were determined as factors that increase frailty.

Conclusions: The frailty levels identified in our study are higher than those in other studies, which were carried out for community use. In our province, which has a large elderly population, trainings for increasing the recognition of frailty as part of preventive medicine, determination and monitoring of frailty level, and planning necessary interventions will make important contributions to the active aging process.

Keywords: Aged; Frailty; Prevalence.

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INTRODUCTION

Following the 2002 World Elderly Meeting, the World Health Organization (WHO) brought the definition of "active aging" to the agenda. The WHO defines active aging as "the process of providing health, social participation, and security opportunities at the best level in order to enrich the quality of life of people as they age" and advocates providing these opportunities to all individuals. In this context the WHO recommends supporting the maintenance of the participation of the elderly in society in every sense (1).

The elderly confront is a very heterogeneous group. Some individuals stay fit and active in their ninth or tenth decades, whereas others show signs of disability in their early sixties despite not having any acute physical illnesses. Such differentiation of biological and chronological age introduced the terms 'fit' and 'frail.'

'Frailty' is theoretically defined as a clinically recognizable state of vulnerability resulting from a decline in the reserves and functions of many physiological systems due to aging, in a way that the ability to cope with daily or acute stressors become threatened (2). Frailty is a condition characterized by a series of adverse outcomes, such as the loss of biological reserves, disruption of physiological mechanisms, frequent hospitalizations, longer hospital stay, and delirium (3). To find out the people with frailty will help to prevent developing adverse outcomes. Therefore, a shift toward providing more person-centered and targeted care can be achieved. Frailty is not an inevitable part of aging but a comorbidity like diabetes or Alzheimer's disease (4). Complications can turn into a vicious, self-repetitive circle and result in death.This condition affects approximately 10% of people over the age of 65 y, and increases with age, reaching up to 25–50% of people over the age of 85 y (4). The cost of these frailty-related conditions is estimated to be £5.9 billion per year in the UK (5). Prevention appears to be much more cost-effective than treatment, taking into account high frailty prevalence rates. As such, preventive services should be considered as the first line of defense (6).

Although many descriptive criteria have been put forward for the diagnosis of frailty, none of them has been accepted as the gold standard. The Edmonton Frail Scale was preferred because its Turkish validation study was conducted, and it was based on a questionnaire, was easy to apply, took less time, and was practical to apply in the field (7). Detection and monitoring of the frailty level and planning the necessary interventions will make a significant contribution to the active aging process.

Prevalence studies are important in terms of understanding the extent of the problem and planning intervention in the fight against frailty. Many studies in the literature have been conducted with patients admitted to the hospital. However, field studies are insufficient.

The aim of this study was to reveal the frailty levels and related factors of the elderly who received aid from the Social Assistance Foundation. The ultimate objective was to determine the priority group that needs services within the scope of the House of Healthy Plane Trees project being carried out in Burdur province.

MATERIALS AND METHODS

The study population consisted of 464 people over the age of 65 y who lived in the city center and villages of Burdur and received aid from the Social Assistance Foundation. All of the samples were selected, and we aimed to reach the whole population.

Data collection form: The data regarding overall health status and sociodemographic and socioeconomic levels of the elderly were gathered through Katz's Activities of Daily Living Index (ADL), Lawton and Brody's Instrumental Activities of Daily Living Index (IDLA), and the Edmonton Frail Scale, which inquires about addiction status and frailty level.

Data collection: The data were obtained using the face-to-face interview method from participants who gave verbal consent.

The dependent variable of the research was the frailty level, and overall health status, socioeconomic and sociodemographic characteristics, and dependence status were taken as independent variables.

Statistical evaluation: SPSS program version 15.0. (SPSS; IBM Corp., Armonk, NY, USA) was used. Number, percentage, mean, standard deviation, and minimum and maximum values were used as descriptive statistics. In analytical assessments, t-test and analysis of variance were used to analyze the scale scores. $p<0.05$ was the cut-off value for statistical significance. Bonferroni analysis was performed to determine from which group the difference originated. The forward linear regression method was used as a multivariate analysis in order to determine the causes affecting frailty.

Approval to carry out the study was obtained from the Mehmet Akif Ersoy University Non-Interventional Clinical Research Ethics Committee (GO 2021/191).

RESULTS

Of the elderly study population, 30.0% were ≥85 y, 72.8% were women, 74.4% were illiterate or barely literate, 71.2% had a chronic disease, with hypertension being the most (43.3%), 22.7% fell within the last year, 3.4% experienced a fracture, 2.3% were fully dependent in terms of ADL, and 6.6% were fully dependent in terms of IDLA.

The Edmonton Frail Scale mean score was 6.5±3.3 (Minimum: 0, Maximum: 15), while 29.0% of the elderly had no frailty, 22.2% were vulnerable, 19.3% had a mild level of frailty, 17.8% a moderate level of frailty, and 11.7% a severe level of frailty (Table 1).

Table 2 shows the effects of overall health status and demographic and socioeconomic characteristics of the participants on frailty. Being ≥85 y old, being female, being illiterate or barely literate, being widowed or divorced, not living with a spouse, using a walking stick, walker, or other such aids, having a chronic disease, taking multiple medicines, having experienced a fall within the last year, having experienced a fracture, and being fully or semi-dependent in terms of ADL and IDLA were determined as parameters affecting frailty.

Independent variables in which a statistically significant difference was found were subjected to the linear regression analysis. As a result, it was found that being ≥85 y old, being fully or semi-dependent in terms of instrumental daily living activities, having a chronic disease, taking multiple medicines, and having experienced a fall within the last year were determined as factors that increase frailty (Table 3).

DISCUSSION AND CONCLUSION

In our study, the Edmonton Frail Scale mean score was 6.53±3.25; 29.0% of them had no frailty, 22.2% were found to be vulnerable, 19.3% had a mild level of frailty, 17.8% had a moderate level of frailty, and 11.7% had a severe level of frailty. Factors that increase frailty were the following: ≥85 y old, fully or

Table 1. Frailty Status of the Elderly

None n (%)	Vulnerable n (%)	Mild n (%)	Moderate n (%)	Severe n (%)	Total n (%)
111 (29.0)	85 (22,2)	74 (19.3)	68 (17.8)	45 (11.7)	383 (100)

Table 2. Distribution of the Edmonton frail scale mean scores according to the characteristics of the elderly

Age group (y)	n (383)	%	X±ss	Test value	P
65-69	37	9.7	4.70±2.52	11,749	**0.001**
70-74	76	19.8	5.47±3.07		
75-79	72	18.8	6.29±3.17		
80-84	83	21.7	6.54±3.29		
85+	115	30.0	7.95±3.25		
Sex					
Female	279	72.8	6.87±3.21	10,642	**0.001**
Male	104	27.2	5.67±3.22		
Educational Status					
Illiterate/barely literate	285	74.4	7.06±3.13	32,882	**0.001**
Elementary school and above	98	25.6	4.96±3.08		
Marital Status					
Married	84	21.9	5.38±3.00	13,896	**0.001**
Widowed/divorced	299	78.1	6.85±3.24		
Cohabitation					
Spouse	75	19.6	5.37±2.90	13,699	**0.001**
Living alone	203	53.0	6.77±3.10		
Families of their children	105	27.4	6.31±3.13		
Smoking status					
Not smoking/quit	356	93.0	6.57±3.28	0.883	0.348
Smoking	27	7.0	5.96±2.76		
Alcohol use status					
Not using/quit	382	99.7	6.52±3.25	0.578	0.448
Using	1	0.3	9.00±0		
Chronic disease					
None	111	28.8	4.84±2.60	46,934	**0.001**
Present	272	71.2	7.21±3.24		
DM					
None	326	85.1	6.27±3.15	14,163	**0.001**
Present	57	14.9	8.00±3.41		
HT					
None	217	56.7	6.06±3.28	10,308	**0.001**
Present	166	43.3	7.13±3.11		
Heart disease					
None	310	80.9	6.28±3.21	9,533	**0.002**
Present	73	19.1	7.57±3.23		

COPD					
None	315	82.2	6.24±3.21	13,838	**0.001**
Present	68	17.8	7.83±3.13		
Alzheimer's Disease/Dementia					
None	347	90.6	6.16±3.12	52,154	**0.001**
Present	36	9.4	10.02±2.18		
Myocardial Infarction					
None	355	92.7	6.39±3.26	8,624	**0.004**
Present	28	7.3	8.25±2.56		
Depression					
None	349	91.1	6.27±3.16	25,131	**0.001**
Present	34	8.9	9.11±2.98		
Muscle/Joint Diseases					
None	252	65.8	5.87±3.16	32,153	**0.001**
Present	131	34.2	7.78±3.04		
Cancer					
None	377	98.4	6.47±3.24	6,382	**0.013**
Present	6	1.6	9.83±2.04		
Stroke					
None	362	94.5	6.39±3.19	11,215	**0.001**
Present	21	5.5	8.80±3.45		
Fall within the last 1 year					
None	296	77.3	5.90±3.03	54,888	**0.001**
Present	87	22.7	8.65±3.07		
Fracture within the last 1 year					
None	370	96.6	6.45±3.23	5,192	**0.023**
Present	13	3.4	8.53±3.15		
Number of medicines taken					
4 and below	323	84.3	6.22±3.12	19,280	**0.001**
5+	60	15.7	8.18±3.43		
Orthosis use status					
Eyeglasses	85	22.2	5.57±2.95	18,615	**0.001**
Hearing aid	10	2.6	6.30±3.09		
Walking stick, walker, etc.	145	37.9	8.01±2.92		
Not using	143	37.3	6.53±3.25		
Dependence according to Katz's ADL Index					
Fully dependent	9	2.3	9.77±2.22	35,958	**0.001**
Semi-dependent	33	8.6	10.33±2.34		
Independent	341	89.1	6.07±3.05		
Dependence status according to Lawton and Brody's IDLA Index					
Fully dependent	25	6.6	9.96±2.63	85,606	**0.001**
Semi-dependent	117	30.5	8.61±2.64		
Independent	241	62.9	5.16±2.74		

Table 3. Results of linear logistic regression analysis involving the factors affecting the fragility level

Independent Variables		B	S.E.	Wald	Odds Ratio	95% Confidence Interval	P
Age (y)	Advanced old age	0.273	0.103	0.113	**2.654**	0.071-0.475	**0.007**
	Under 85				Reference		
Instrumental Daily Living Activities	Dependent/Semi-dependent	1.874	0.279	0.354	**6.714**	2.424-1.325	**0.001**
	Independent				Reference		
Polypharmacy	Present	1.463	0.433	0.146	**3.381**	0.612-2.314	**0.003**
	None				Reference		
Chronic disease	Present	1.064	0.361	0.149	**2.950**	0.355-1.773	**0.004**
	None				Reference		
Fall within the last 1 year	Yes	1.488	0.322	0.192	**4.628**	0.856-2.121	**0.001**
	No				Reference		
DM	Yes	0.837	0.368	0.092	**2.271**	0.112-1.561	**0.022**
	No				Reference		

semi-dependent in terms of IDLA, having a chronic disease, taking multiple medicines, and having experienced a fall within the last year.

The level of frailty varied according to the parameter/scale used and the group with whom the studies were carried out. The level of frailty as investigated in a Cardiovascular Health Study carried out with a population aged 65 y and over in the USA was determined to be 3.9% in the 65–74 age group, 11.6% in the 75–84 age group, and 25.0% in those over 85 y old. In a study involving 10 European countries, the frailty level varied between 5.8% (Switzerland) and 27.0% (Spain), and the average prevalence was found to be 17.0% (8). In a study involving Latin America and the Caribbean, the frailty level was found to be within the range of 30–48% in women and 21–35% in men (2).

The prevalence of frailty in community-based studies was determined to be 17–31% in Brazil, 15% in Mexico, 5–31% in China, and 21–44% in Russia. It was also found to be 49% of those receiving institutional care in Brazil. Among the hospitalized elderly in India and Vietnam, it was found to be 32% and 32%–35%, respectively. Among the elderly applying to outpatient clinics, it was determined to be 55–71% in Brazil and 28% in Peru (9,10,11).

In a systematic review of studies conducted in our country, the frailty level was found to be 44.5% (12). In the validity study of the Edmonton Frail Scale, 39.2% of the elderly were revealed to be not frail, 24.6%, vulnerable, 13.1%, a mild level of frailty, 10.0%, a moderate level of frailty, and 13.1%, a severe level of frailty (7). The prevalence rate was observed to be higher in studies conducted in Turkey than in other countries, possibly due to the different scales used or the fact that the studies were conducted in more hospitals.

The frailty levels identified in our study are higher than in other studies, which were community-based. The group with whom our study was

carried out consisted of elderly people with a low economic level who received aid from the Social Assistance Foundation. A recent research carried out in Europe revealed that the frailty and fitness levels of a country's elderly people were strongly associated with national economic indicators, and those living in low-income countries were found to have higher frailty and lower fitness levels compared to residents of high-income countries (13).

In our study, the frailty levels of those aged ≥85 y were found to be higher (odds ratio [OR]: 2,654, confidence interval [CI]: 0.071–0.475). In the literature, fragility has been observed to increase with age in both international and domestic studies (2-12), so much so that the boundaries between age and frailty are seen to be very vague, and the perception that all people will become frail at a certain age has become common. The physiological and pathological changes that occur with age are considered to cause this perception.

Frailty is generally associated with the presence of pathological conditions, such as chronic diseases in older adults (6,13,14). In our study, the risk of frailty was seen to increase in the elderly with chronic diseases (OR: 2,950, CI: 0.355–1.773). Among them, the frailty risk of those who were also at risk of developing diabetes mellitus (DM) was observed to be higher (OR: 2,271, CI: 0.112–1.561). Likewise, in many other studies in the literature, the presence of DM, glucose tolerance, and insulin resistance were found to be associated with frailty, and high glycosylated Hemoglobin A1c has been reported to increase the level of frailty (14,15,16,17).

Multiple medicine use is considered to be a risk for frailty (6,12,14,18,19,20,21). In our study, polypharmacy was found to be another factor that increases the fragility level (OR: 3.381, CI: 0.612–2.314). Older adults, especially those with a chronic illness, use more prescription and over-the-counter compounds than all other demographic groups. The interactions of these drugs with each other can pose significant dangers for the elderly population (14,18,20). Polypharmacy-induced medicine-medicine and medicine-disease interactions and their side effects are thought to contribute to increased vulnerability. For this reason, when prescribing medicine for the geriatric group, inquiring about the medicines they are currently using and avoiding unnecessary medicine use is of importance.

Falls, which increase with age, constitute a health problem that causes high rates of morbidity and mortality in the elderly, and is factor that increases frailty (14,18,20,21,22). In our study, falling was identified as an important risk factor for frailty (OR: 4.628, CI: 0.856–2.121). The measures to be taken against falls, such as physical activity and indoor and outdoor arrangements, are also likely to be highly effective in preventing frailty.

Similar to the literature (6,9,21), in our study, frailty was found to be 6.7 times more common in the elderly who are fully or semi-dependent in terms of IDLA compared to those who were independent (OR: 6.714, CI: 2.424–1.325). A systematic review drawing on community-based studies conducted abroad determined that frailty indicators are precursors of future ADL/IDLA disability in older people (23). Since the IDLA status is inquired in the "functional independence" section of the Edmonton Frail Scale, the frailty-IDLA dependence status seems to be intertwined. Just as every intervention to ensure independence will reduce frailty, every intervention to prevent frailty will prevent the elderly from transitioning to dependence.

In conclusion, the frailty level was found to be high in the group with whom our study was conducted in our province. This suggests that our elderly residents are more vulnerable to stress factors, and their dependency and comorbidity levels are higher.

Taking into consideration that frailty is a preventable and reversible condition, unlike aging, as the rate of the elderly population has been increasing rapidly, planning trainings to aid in the recognition of frailty, especially as a part of preventive medicine,

determining and monitoring the frailty level, and planning the necessary interventions are thought to contribute significantly to the active aging process. Providing preventive services during primary care will enable the prevention of many negative situations, such as the need for and cost of care and caregiver burden.

Limitations:The weakness of the study is that it was conducted in a specific group that received help from the social assistance foundation. Therefore the results cannot be generalized to society.

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REFERENCES

1. World Health Organization. Active ageing: a policy framework. [e-book]NIH Publication;2002. [Internet]. Available from: https://apps.who.int/iris/handle/10665/67215 .Accessed: 03.03.2021.
2. Xue QL. The frailty syndrome: definition and natural history. Clin Geriatr Med. 2011;27(1):1-15. (PMID: 21093718).
3. Clegg A, Young J, Iliffe S, Rikkert MO, Rockwood K. Frailty in elderly people. Lancet 2013; 381(9868): 752-762.(PMID: 23395245)
4. The British Geriatrics Society.Fit for Frailty Part 1 – consensus best practice guidance for the care of older people living in community and outpatient settings. [e-book] British Geriatrics Society publication; 2017. [Internet]. Available from:https://www.bgs.org.uk/sites/default/files/content/resources/files/2018-05-23/fff_full.pdf. Accessed:27.03.2021.
5. Akın S, Mazıcıoglu MM, Mucuk S et al. The prevalence of frailty and related factors in community-dwelling Turkish elderly according to modified Fried Frailty Index and FRAIL scales. Aging clinical and experimental research, 2015;27(5): 703-709. (PMID: 25762157)
6. Eyigor S, Kutsal YG, Duran E et al. Frailty prevalence and related factors in the older adult—FrailTURK Project. Age, 2015; 37(3): 1-13. (PMID: 25948502)
7. Aygör, HE, Fadıloğlu Ç, Şahin S, Aykar FŞ, Akçiçek F. Validation of edmonton frail scale into elderly Turkish population. Archives of gerontology and geriatrics, 2018;76: 133-137. (PMID: 29499529)
8. Collard RM, Boter H, Schoevers RA, OudeVoshaar RC. Prevalence of frailty in community-dwelling older persons: a systematic review. J Am Geriatr Soc. 2012;60(8):1487–1492. (PMID: 22881367)
9. Nguyen TN, Cumming RG, Hilmer SN. A review of frailty in developing countries. J Nutr Health Aging. 2015;19(9):941–946. (PMID: 26482697)
10. Vu HTT, Nguyen TX, Nguyen TN et al. Prevalence of frailty and its associated factors in older hospitalized patients in Vietnam. BMC Geriatr. 2017;17(1):1-7. (PMID: 28923012)
11. Hilmer SN, Perera V, Mitchell S et al. The assessment of frailty in older people in acute care. Australasian Journal on Ageing, 2009;28(4): 182-188. (PMID: 19951339)
12. Pala F, Yalçın Gürsoy M. Studies on Elderly Vulnerability in Turkey: A Systematic Review. In: AKGOL J (Ed). Health in Different Dimensions. Rating Academy R&D Software Publishing, Çanakkale, Turkey 2020, pp.67-75.
13. Theou O, Brothers TD, Rockwood MR et al. Exploring the relationship between national economic indicators and relative fitness and frailty in middle-aged and older europeans. Age and Ageing, 2013; 42(5): 614-619. (PMID: 23443511)
14. Heuberger RA. The frailty syndrome: a comprehensive review. J Nutr Gerontol Geriatr. 2011;30(4):315-368. (PMID: 22098178)
15. Willey KA, Singh MA. Battling insulin resistance in elderly obese people with type 2 diabetes: bring on the heavy weights. Diabetes Care. 2003;26(5):1580-1588. (PMID: 12716822)
16. Blaum CS, Xue QL, Tian J, Semba RD, Fried LP, Walston J. Is hyperglycemia associated with frailty status

in older women? J Am Geriatr Soc. 2009;57(5):840-847. (PMID: 19484839)

17. Morley JE. Diabetes, sarcopenia, and frailty. Clin Geriatr Med. 2008;24(3):455-469.(PMID: 18672182)
18. LaCroix AZ, Gray, SL, Aragaki A et al. Statin use and incident frailty in women aged 65 years or older: prospective findings from the women's health initiative observational study. J Gerontol A Biol Sci Med Sci. 2008;63(4):369-375. (PMID: 18426960)
19. Fried LP, Tangen CM, Walston J et al. Frailty in older adults: evidence for a phenotype. The Journals of Gerontology Series A: Biological Sciences and Medical Sciences 2001; 56(3): 146-156. (PMID: 11253156)
20. Arslan M, Keskin Arslan E, Koç EM, Sözmen MK, Kaplan YC. The relationship between frailty and drug use and polypharmacy in people aged 65 and over. Med Bull Haseki, 2020; 58: 33-41. (DOI: 10.4274/haseki.galenos.2019.5409).
21. Castell MV, Sánchez M, Julián R, Queipo R, Martín S, Otero Á. Frailty prevalence and slow walking speed in persons age 65 and older: implications for primary care. BMC Fam Pract. 2013;14(1): 1-9. (PMID: 23782891)
22. Lang PO, Michel JP, Zekry D. Frailty syndrome: a transitional state in a dynamic process. Gerontology. 2009;55(5):539-549. (PMID: 19346741)
23. Gobbens RJ, Van Assen MA. The Prediction of ADL and IADL Disability Using Six Physical Indicators of Frailty: A Longitudinal Study in the Netherlands. Curr Gerontol Geriatr Res. 2014; 2014(3):1-10. (PMID: 24782894)