ORIGINAL ARTICLE

THE RELATIONSHIP BETWEEN FRAILTY AND CAREGIVERS' CLOSENESS IN ELDERLY PATIENTS IN TURKEY

Turkish Journal of Geriatrics
DOI: 10.29400/tjgeri.2024.403
2024; 27(3):301-309

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Abstract

Introduction: Being cared for by family members is very important in Turkish society. We aim to evaluate the relationship between the frailty index and caregivers' closeness to patients aged 65 years and older.

Materials and Method: Four hundred people aged 65 and over living in the Çumra district of Turkey's Konya Province were included in our research. A sociodemographic data form consisting of 50 questions and the Tilburg Frailty Scale which consisted of 25 questions completed by all participants.

Results: The prevalence of frailty was found to be 60.0%. A statistically significant difference was found in the Tilburg Frailty Scale among age groups ($p < 0.0001$). A statistically significant difference was also found in the Tilburg Frailty Scale between the group living alone and the group not living alone, between the group receiving care and the group not receiving care, and between those cared for by their children and those cared for by other relatives or neighbors.

Conclusion: Frailty has been determined to be common enough to be considered a public health problem in Turkey. It has been concluded that almost all elderly people want to stay with their families and that state-sponsored arrangements are urgently needed in terms of caring for elderly people. The fastest and easiest way to educate caregivers and the elderly is possible with the family medicine system. We believe that the coordinated work of family doctors and caregivers will increase the success of home care.

Keywords: Frailty; Caregivers; Aged; Family.

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Received : Jul 05, 2024
Accepted : Aug 29, 2024

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INTRODUCTION

One of the most common and important aging-related syndromes that plays a major role in older people's quality of life and health status is frailty (1). Various factors can lead to frailty. While most definitions focus on physical problems, Gobbens et al. defined vulnerability as a dynamic situation that affects a person with a loss in one or more areas of human life (physical, psychological, and/or social), which increases the risk of negative consequences due to the effects of some variables. Thus, they explained it as a multifactorial condition that includes sociodemographic factors, socioeconomic factors, lifestyle, life events, environment, and genetic factors (2). Frailty can have serious outcomes for society, such as frequent falls, fractures, dependency, hospitalization, and ultimately death. The syndrome is associated with decreased quality of life, disability, and a growing need for healthcare (4–6).

Various frailty screening instruments have been designed around the world, such as the Edmonton Frailty Scale, Prisma 7, Groningen Frailty Indicator, Sherbrooke Postal Questionnaire, Gérontopôle Frailty Screening Tool, Kihon Checklist, and Frailty Trait Score. The Tilburg Frailty Indicator (TFI) is one of the most widely used instruments used in frailty screening and has no known limitations in comparison with other frailty screening instruments. The TFI is the best multidimensional tool for measuring frailty, but it cannot yet be considered the gold standard (6,7). According to Sutton et al., the TFI has the strongest evidence of reliability and validity among 38 vulnerability assessment tools (7,8). While variations in definitions of vulnerability have resulted in a large number of scan tools, researchers have agreed that higher levels of vulnerability result in a higher risk of adverse outcomes, regardless of the tool used (8, 9).

A growing number of studies have indicated frailty as a major health condition for older adults (9–11). Older adults are at a higher risk of frailty (11). Due to the increasing geriatric population and their risk of frailty, it is imperative to address the shortcomings of both the diagnosis and treatment of frailty for older adults (12).

According to population projections, it is predicted that the elderly population in Turkey will increase by 201% between 2008 and 2040. According to the United Nations' definition, if the proportion of the elderly population in a country is between 8.0% and 10.0% of the total population, this means the population of that country is 'old,' and over 10% means that it is 'very old' (12,13).

While the population over the age of 65 in Turkey was 8.0% in 2014, it is estimated to be 9.5% according to the 2020 data of the Turkish Statistical Institute, and it will increase to 27.7% in 2075 (14,15). While the total population growth rate in Turkey was 13.4% in 2015, the increase rate of the elderly population was approximately three times (36.2%) this rate (15). Addiction rates have also increased. While this rate was 6.5% in 1940, it was determined to be 14.1% in 2020 (TUIK 2020). It is predicted that the elderly dependency ratio will be 43.0% in 2080 (16,17).

It is known that the elderly feel better when their practical needs are met via family relationships and when their emotional needs are met via friendships. The elderly want to live in their own homes for as long as possible and receive reliable care from a family caregiver. However, demographic changes, a decrease in the number of children, and the fact that children are not close to elderly parents have created new problems in elderly care (18).

However, the decision of family members or relatives to care for a dependent person and, thus, fulfill the wishes of aging in the home environment is influenced by several factors. The degree of family relationships has a significant impact on the willingness of family members to provide services and care. The factors that affect a decision whether to care for a relative include the quality of a relationship, gender, mental, or physical illness of a person in need of care, a caregiver's health status, financial factors, perceptions, and attitudes toward

nursing homes (19). It has been reported that daughters and daughters-in-law are primarily held responsible for elderly individuals' care (20).

Considering Turkey's growing elderly population and the fact that frailty is one of the most common disorders in this population, frailty prevention can play a major role in improving the health statuses of older people and their families. In Turkey, elderly care is mostly taken care of by elderly people's children or their daughters-in-law. Since there is no study in Turkey examining the relationship between the TFI and the degree of closeness of caregivers, this current study investigated the relationship between frailty and caregivers' closeness to elderly patients in Turkey.

MATERIALS AND METHOD

Study Design and Participants

In this descriptive, cross-sectional study examined the TFI and sociodemographic data survey of 400 individuals (aged over 65 years) from the Çumra region of Konya, Turkey. Approval for data collection was obtained from the Karatay University Faculty of Medicine Ethics Committee. All of the participants provided written informed consent. The agesof the participants ranged from 65 to 92 years. Both sexes were equally represented: 223 females (55.7%) and 177 males (44.3%).

This study, conducted between February and August 2020 in Çumra, Konya, involved individuals aged 65 and over. Using simple random sampling, a sample size of 350 was determined with a 95% confidence level and a 5% margin of error (G Power 3.1.7). Due to participant willingness, the study included 400 individuals.

Inclusion Criteria:

- Aged 65 or older,
- Willing to participate,
- No language barriers or psychiatric issues preventing survey responses.

Exclusion Criteria:

- Under 65 years old,
- Language barriers or psychiatric issues preventing survey responses,
- Unwilling to participate.

Participants were first informed about the study. Those who agreed to participate provided informed consent in accordance with the Helsinki Declaration. Data were collected through face-to-face surveys with 400 randomly selected individuals in the Çumra district, including home visits for suitable participants.

Data Collection Tools

Sociodemographic Data Survey

We adapted a 50-question survey to assess participants' economic situations, family ties, living conditions, illnesses, and care statuses. The frailty index was compared with caregivers' degree of closeness, place of care, and care reception among participants aged 65 years and older.

Frailty Instrument (TFI)

The TFI consisted of 15 self-reported questions encompassing three domains: eight questions on the physical domain, four on the psychological domain, and three on the social domain. Scores ranged from 0–15, with higher scores indicating greater frailty. A cutoff score of≥5 was used to diagnose frailty. Detailed questions can be found in the original study (2).The final Turkish version was consistent with the original scale (3).

Statistical Analysis

Variable normality was assessed using histograms and the Kolmogorov–Smirnov test. Student's t-test was used to compare the means of two independent groups. Descriptive analysis included measures of central tendency and dispersion for continuous variables, and frequency distributions for categorical variables. TFI and sociodemographic

data were compared across age groups (65–74, 75–84, and 85+), with significance determined by the student's t-test ($p < 0.05$). Data were analyzed using SPSS v16.

Ethical Procedure

Approval was obtained from the Karatay University Faculty of Medicine Health Sciences Ethics Committee (28.01.2020/005). Each participant was informed and gave consent to participate.

RESULTS

Four hundred participants over 65 years of age were included. The mean age was 73.37±6.35 years, with a median age of 72. Of the participants, 55.7% (n=223) were women and 44.3% (n=177) were men. Participants were categorized into age groups: 62.7% (n=251) were aged 65–74 years, 30% (n=120) were aged 75–84 years, and 7.3% were aged 85 years and older. Table 1 shows the distribution of the participants' characteristics.

Two-hundred forty individuals were classified as frail (TFI ≥ 5). The overall frailty rate among the participants was 60%. The frailty rates were 68.1% for women and 49.7% for men. The frailty rates were 51.3%, 72.5%, and 82.7% for the 65–74, 75–84, and 85and over age groups, respectively. The mean TFI scores were 5.43±3.5, 7.33±3.6, and 8.51±3.1 for these age groups, indicating a significant increase in frailty with age ($p < 0.0001$).

The TFI of living alone and not living alone were calculated according to the participants' age groups.

Table 1. Distribution of patient characteristics

Variables		n	%
Sex	Female	223	55.7
	Male	177	44.3
Age Group	65-74 years	251	62.7
	75-84 years	120	30.0
	85 years and above	29	7.3
Education	Illiterate	121	30.2
	Be literate	56	14.0
	Primary school	192	48.0
	Middle school/High school	28	7.0
	University	3	0.8
Marital status	Married	312	78
	Single/Divorced-widowed	88	22
Monthly income	600 TL and below	141	35.2
	601-1300 TL	42	10.5
	1301-1500 TL	59	14.8
	1501-2500 TL	122	30.5
	2501-3500 TL	30	7.5
	3501 TL and above	6	1.5
Total		**400**	**100**

Table 2. Fragile participant rates by sex and age

Variables		TFI ≥ 5 (n)	%
Sex	Female	152	68.1
	Male	88	49.7
Age Group	65-74 years	129	51.3
	75-84 years	87	72.5
	85 years and above	24	82.7
Total		**400**	**100**
Tilburg Frailty Indexes by Age Groups			
Age Group	**TFI Mean+sd**	**TFI Median**	**Participants n**
65-74 years	5.43±3.5	5	251
75-84 years	7.33±3.6	8	120
85 years and above	8.51±3.1	10	29
Total			**400**

Table 3. Tilburg fragility Indexes of Who Live Alone and Who Do Not Live Alone

Age Group	TFI Live Alone Mean+sd(n)	TFI Do Not Live Alone Mean+sd(n)	Participants n
65-74 years	7.23±3.94 (27)	5.29±3.46 (224)	251
75-84 years	8.52±3.61 (26)	6.63±3.61 (94)	120
85 years and above	8.75±3.15 (9)	8.21±3.27 (20)	29
Total			**400**

The TFI was 7.23±3.94 in the 65–74 age group, 8.52 ± 3.61 in the 75–84 age group, and 8.75±3.15 in the 85 and over age group who lived alone. The TFI was 5.29 ± 3.46 in the 65–74 age group, 6.63±3.61 in the 75–84 age group, and 8.21±3.27 in the 85 and over age group who did not live alone (Table 3). A statistically significant difference was found in the TFI between the 65–74 (p=0.01) and 75–84 (p=0.02) age groups between living alone and not living alone. There was no statistically significant difference between the 85-year-old and older groups (p=0.069).

According to the participants' age groups, the TFI of the group cared for by someone at home and the group that did not receive any care were calculated. The TFI was 7.19±3.69 in the 65–74 age group,7.84±3.80 in the 75-84 age group, and 8.74 ± 3.18 in the 85 and over age group who received care. However, the TFI was 4.83±3.2 in the 65–74 age group, 6.93±3.38 in the 75–84 age group, and 9.00±3.74 in the 85 and over age group who did not receive care (Table 4). A statistically significant difference was found in the TFI between those who received care and those who did not receive care in the 65–74 age group ($p < 0.0001$). In the 75–84 age group ($p = 0.17$) and the 85 and older group (p= 0.87), there was no statistically significant difference.

According to the participants' age groups, the TFI of the group cared for by their daughters/sons

Table 4. Tilburg fragility Indexes of who receive care and who do not receive care

Age Group	TFI Who receive Care Mean+sd(n)	TFI Who do not receive Care Mean+sd (n)	Participants n
65-74 years	7.19±3.69 (73)	4.83±3.26 (178)	251
75-84 years	7.84±3.80 (52)	6.93±3.38 (68)	120
85 years and above	8.74±3.18 (24)	9.00±3.74 (5)	29
Total			**400**

Table 5. Tilburg fragility indexes of the group cared by their daughter/son at home and the group cared by other relatives/neighbours

Age Group	TFI Who Cared by Son/Doughter Mean+sd (n)	TFI Who Cared by other relatives/neighbours Mean+sd(n)	Participants N
65-74 years	5.96±3.82 (53)	8.57±2.73 (26)	79
75-84 years	7.45±3.86 (35)	10.92±1.16 (12)	47
85 years and above	8.42±3.10 (26)	0	26
Total			**162**

at home and the group cared for by other relatives/neighbors were calculated. The TFI was 5.96 ± 3.82 in those aged 65–74, 7.45±3.86 in those aged 75–84, and 8.42±3.10 in those aged 85 and above. The TFI was 8.57±2.73 in those aged 65–74, 10.92±1.16 in those aged 75–84, and no participant over the age of 85 or above was cared for by other relatives/neighbors (Table 5). According to the participants' age groups, those cared for by their daughters/sons and cared for by other relatives/neighbors were compared in terms of the TFI. A statistically significant difference was found in the TFI between those cared for by their daughters/sons and those cared for by their relatives/neighbors in the 65–74 and 75–84 age groups ($p < 0.01$).

When we asked the participants, "Do you want to live in a nursing home?" only four people answered 'Yes.' The remaining 396 people said they wanted to be cared for by their wives/husbands or children.

The p-values for Tables 2, 3, 4, and 5 were calculated using Student's t-test.

DISCUSSION

In this study, we examined the impact of caregiving on frailty among individuals aged 65 and older in Turkey. We employed a sociodemographic survey alongside the TFI to explore the influence of sociodemographic and cultural factors on frailty. The TFI encompasses the physical, social, and psychological domains of frailty (2). Utilizing the Turkish version of the TFI, we conducted individual surveys, ensuring that participants' responses were independent of their partners' responses.

We investigated the associations between several factors and frailty. In crude analyses, many similarities have been observed in previous surveys worldwide(21). We found that the rate of frailty was

higher in women than in men. In other studies, females are commonly referred to as a risk factor for frailty (19, 21–23).

In our study, age was another factor that affected the fragility rate. We divided the participants into three groups: 65–74, 75–84, and 85 and over. As a result, we found that fragility increases as age groups get older. Other studies were like ours; age is an important factor associated with frailty (22, 23).This is because of an increase in diseases with age, a reduction in mobility, and social life. We eliminated the effects of age by matching the age groups among themselves. When we compared the TFIs of those living alone and those not living alone in their age groups, we found that those living alone had higher TFI scores.

There was a significant TFI difference between the 65–74 age group ($p = 0.01$) and the 75–84 age group ($p=0.02$).Although there are few publications on this subject, in a study conducted in Brazil, the researchers showed a significant difference between the group living alone and the group not living alone ($p<0.05$) (23).As in our study, the TFI was higher in living alone. Elderly people living alone find it difficult to access nutritious food, adequate housing, and healthcare (24). This plays an important role in increasing the fragility of living alone.

Another question we asked the participants was whether they received care assistance. There was a statistically significant difference only in the 65–74 age group ($p < 0.0001$). The TFI index of the elderly who received care was higher than that of those who did not receive care. This clearly showed that those with a high TFI index were in serious need of care. Receiving care can reduce the fragility of the elderly for years (25).

Receiving care is important for the survival of those in need of care. In our study, we showed that TFI increases in direct proportion to the need for care. However, the 75–84 age group was not significantly correlated with the other groups. Although the TFI of caregivers in this group was high (7.84±3.80 in receive care; 6.93±3.38 in do not receive care), it was not statistically significant ($p=0.17$).We wanted to reveal the fragility of the elderly who are cared for by their children in Turkish society by comparing the TFI indexes of those who are cared for by the son or daughter of people in need of care with those who are cared for by other people.162 of the participants, 162 were receiving care, 79 were in the 65–74 age group, 47 were in the 75–84 age group, and 26 were in the age group of 85 and above. A statistically significant difference was found in the TFI between those cared for by their daughter/sons and those cared for by their relatives/neighbors in the 65–74 and 75–84 age groups ($p<0.01$). No person in the 85+ age group received care from someone other than their children.

Our study showed that people of the same age who were cared for by their children had lower fragility. The importance of being a family member and being cared for by their children significantly reduced the fragility of the elderly individuals in our study group. For the elderly in Turkish society, living with their children is an important source of happiness in their lives. While the rate of those who wanted to receive care in a professional place was 1%, the rate of those who wanted to be cared for by their wives/husbands or children was 99%. Here, we can see how much the participants wanted to be taken care of by their families. Living with family plays an important role in the Turkish social structure.

CONCLUSION

This study utilized the TFI and sociodemographic surveys to assess frailty among elderly individuals in Turkey. The findings indicate that gender and age are significant factors that influence frailty. Independent of these factors, living alone was associated with increased frailty. Moreover, caregiving was found to correlate directly with frailty in the 65–74 age group in Turkey. The overwhelming preference for familial caregiving underscores its cultural significance and

potential benefits in reducing elderly frailty. To optimize care outcomes, training and support for familial caregivers should be prioritized within the family medicine framework.

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