Original Article

An Investigation of the Relationship between Frailty and Life Satisfaction in Individuals Aged 65 and Over

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Abstract

Background: Frailty is a geriatric syndrome and is defined as an age-related decrease in the metabolic, neuromuscular, immune functions, and physiological reserves and an increase in the vulnerability against stressors.

Aim: This study aims to investigate the relationship between frailty and life satisfaction in people aged 65 and over.

Methods: Descriptive study design was utilized in the present study. It was conducted with individuals 65 years and older between January and March 2021. The sample included 342 individuals calculated by using the sampling method with an unknown population.

Results: The Frail Scale mean score was significantly higher in women, in whose spouse died, in those who were illiterate, who did not work, who lived in rural areas, who did not do exercises, who were dependent on others or had limitations in daily life activities, who defined their current health status as "bad", who fell and were hospitalized within the past one year, who had difficulty in falling asleep, and who had urinary incontinence. Life Satisfaction Scale mean score was found to be significantly higher in males, in those who were divorced, who graduated from university, who had income higher than expenses, who did exercises, who considered their current health status "good", who did not have falling history within the past one year and who were not hospitalized, who did not have difficulty in falling asleep, who did not have urinary incontinence, and who did not have limitations in their daily life activities.

Conclusions: A negative, significant relationship was detected between frailty and life satisfaction Older individuals should be provided with trainings to prevent frailty.

Keywords: Frailty, Life Satisfaction, Older People

Introduction

Aging of population is one of the most important demographic issues of the 21st century. Many factors such as developments in the field of health (scientific and technological), improvements in living standards, and easier access of older individuals to health services have led to an increase in the expected length of life. Hence, the average length of life has demonstrated an increase in the older population worldwide (Andreas et al., 2017). In 2010, 16.2% of the population in the world was reported to consist of people 65 years and older, which is predicted to increase up to 26.9% by the year 2050 (WHO, 2020). Parallel to the changes in the world, the older population in Turkey is also increasing. According to the Turkish Statistical Institute data, the population of older people in the normal population is 7 million 186 thousand 204 people. While the proportion of people 65 years and older is 8.7%, this ratio is expected to be 10.2% in the year 2023. In the year 2080, this ratio is estimated to become 25.64% (TUİK, 2019).

Aging is defined as the deterioration of the organism in an irreversible way and loss of functional capacity of the tissues. Aging is a period when an individual's mental, physical, and psychological nature change and losses

and physical regressions are experienced the most. Frailty is a factor that increases with age, decreases daily life activities, and has negative effects on individuals' cognitive functioning and well-being (Asiret, & Cetinkaya, 2018). Loss of weight, weakness, and decreased physical activities are among the factors that cause frailty (Kocak Kayhan, Sahin, & Akcicek, 2019). Frailty is a geriatric syndrome and is defined as an age-related decrease in the metabolic, neuromuscular, immune functions, and physiological reserves and an increase in the vulnerability against stressors (Alkan, & Rakicioglu, 2019). A study reported that 4 to 59% of individuals 65 years and older were in the frail group (Collard et al., 2012).

Frail older individuals' quality of life decreases with negative health outcomes such as the increase in the frequency of falling, longer length of hospitalization, emergence of the need for special care, and increase in health expenses and morbidity (Asiret, & Cetinkaya, 2018; Zhang et al., 2019)

Although several studies have investigated life satisfaction in individuals 65 years and older, few studies have examined the relationship of frailty with life satisfaction. Therefore, the purpose of this study is to investigate the relationship between frailty and life satisfaction in people 65 years and older.

Methods

Design: Descriptive study design was utilized in this study. The sample included individuals 65 years and older who were registered in a Family Health Center, which was located in a city in the eastern part of Turkey, between January and March 2021. The target population included older individuals registered in the related unit and met the research criteria; the sample was 342 individuals who were calculated using sampling with an unknown population.

Ethical Considerations: Prior to the study, ethics committee approval was received from the Scientific Research Ethics Committee (dated 16.12.2020 no E.22715); participating patients were informed about the purpose of the study and their verbal consent was received. All subjects were treated in accordance with the Declaration of Helsinki.

Inclusion Criteria: Individuals who were 65 years and older, who could understand and answer questions, who did not have advanced stage dementia and who were not bedridden, who had no diagnosed psychiatric diseases, and who agreed to participate were included in this research.

Measurements: The study utilized the Socio-demographic Form, the Life Satisfaction Scale, and the Frail Scale for data collection.

The Socio-Demographic Form: The Socio-Demographic Form was prepared by the researchers and included 13 questions that collected data about age, gender, marital status, income level, social security, and the illness process.

The Life Satisfaction Scale (LSS): The Life Satisfaction Scale was developed by Neugarten (Neugarten, Havighurst, & Tobin, 1961) and Camur Karatas performed the Turkish reliability and validity of the scale (Camur Karatas, 1988). The Life Satisfaction Scale measures older people's views about life as well as life satisfaction in the framework of various criteria and gives a single score. Higher scores in the scale means the respondent has higher life satisfaction. Scores indicate the following life satisfaction levels: 7 and below: low; 8 to 12: moderate; and 13 and above: high. Neugarten reported the scale's Cronbach's alpha as 0.79. The study conducted by Camur Karatas reported Cronbach's alpha as 0.93. Cronbach's alpha value was found 0.79 in the present study.

The Frail Scale: Turkish validity and reliability of The Frail Scale, originally developed by Morley et al. (Morley, Malmstrom, & Miller, 2012) were done by Hymabaccus (Hymabaccus, 2017). The form is composed of five questions that assess the patient's Fatigue, Resistance, Ambulation, Illness and Loss of weight. In order to measure the patient's fatigue, the first question asks "How often have you felt tired within the past four weeks?". The patient chooses one of the options of 1=All of the time, 2=Most of the time, 3=Sometimes, 4=Rarely, and 5=Never. Responses 1 or 2 are given 1 point while all the other responses are given 0 points. The second question "Do you experience any difficulties in walking up 10 steps alone and without help?" is asked to measure resistance. While a "yes" response is given 1 point, "no" is given 0 points. The third question "Do you experience any difficulties

in walking several hundred yards alone without help?" is asked to measure the patient's ambulation. The patient is given 1 point if the response is yes and 0 points if the response is no. The fourth question "Have you ever been told by a physician that you have these illnesses (Diabetes, hypertension, Cancer (except for small cancer), heart attack, chronic lung disease, angina, congestive heart failure, arthritis, asthma, stroke, kidney disease)" is asked for illnesses. The patient is given 0 points if s/has 0-4 illnesses and 1 point if s/he has 5-11 illnesses. The fifth question asks about the individual's weight: "How much do you weigh with your clothes on but without shoes? (current weight) and how much did you weigh with your clothes on but without shoes a year ago? (weight in the previous year). The weight change percentage is calculated using the following formula: (weight in the previous year- current weight) / weight in the previous year) x 100. If the weight change percentage is >5 (represents 5% weight loss), it is given 1 point, and if it is <5, it is given 0 points. The 5-item Frail scale is given 0 or 1 point according to the responses given by patients, and 0 points indicate non-frail, 1-2 points represent pre-frail, and points >2 indicate frail (Hymabaccus, 2017). Hymabaccus detected the Cronbach's alpha value 0.78. This study found Cronbach's alpha as 0.73.

Data collection/procedure: Data were collected following the verbal consent received from the older people who volunteered to participate in the study. The forms prepared in an online environment were utilized for data collection. The participants were accessed on the phone, and the data were collected based on their responses.

Data analysis: SPSS was utilized for data analysis using descriptive statistics, Mann-Whitney U, Kolmogorov-Smirnov, Kruskal Wallis, and Spearman correlation analysis. Level of significance was accepted $p<0.05$.

Results

The average age of the participants was 70.26 ± 6.14, with the highest and lowest ages being 65 and 92. The categorical analysis showed that 78.4% of the participants were aged between 65 and 74. Of all the participating older people, 51.5% were females, 63.2% were married, 38.3% were primary school graduates, 80.1% did not work, 48% had income equal to expenses, and 67.5% lived in the center.

Of all the participants, 51.2% did not do exercises, 52.6% performed their daily life activities independently, 63.5% perceived their current health as fair, 64.9% did not have falling history within the past one year, 55.3% had difficulty in falling asleep, 59.4% did not have urinary incontinence, 62% did not have history of hospitalization within the past one year, and 63.2% experienced limitations in their daily life activities. In addition, the number of medications taken daily was found to be 2.63 ± 1.50 on average (Table 1).

The participants' Frail Scale mean score was found 1.79 ± 1.28 with scores ranging from 0 to 4. The analysis of the score categorically showed that 43.3% were pre-frail and 34.8% were frail. The mean score for the Life Satisfaction Scale was found 8.02±4.22, with scores ranging from 1 to 19. The categorical analysis of the scale score indicated that 50.3% of the participants had low quality of life levels (Table 2).

The Frail Scale mean score was found to be significantly higher in women, in whose spouse died, in those who were illiterate, who did not work, who lived in rural areas, who did do exercises, who were dependent on others or had limitations in daily life activities, who defined their current health status as "bad", who fell and were hospitalized within the past one year, who had difficulty in falling asleep, and who had urinary incontinence ($p<0.01$). Income level indicated no significant differences between the groups (Table 3).

Life Satisfaction Scale mean score was found to be significantly higher in males, in those who were divorced, who graduated from university, who had income higher than expenses, who did exercises, who defined their current health status as "good", who did not have falling history within the past one year and who were not hospitalized, who did not have difficulty in falling asleep, who did not have urinary incontinence, and who did not have limitations in their daily life activities ($p<0.01$). Place of living and dependence in daily life activities indicated no significant differences between the groups (Table 4).

There was a negative, significant relationship between the Frail Scale total score and the Life Satisfaction Scale total score, and a positive, significant relationship between age and the number of medications taken daily (p<0.01). There was a negative, statistically significant relationship between the Life Satisfaction Scale total score and age and the number of medications taken daily (p<0.01) (Table 5).

Table 1. Socio-Demographic Characteristics of the Participants   (N=342)

		S	%
Gender	Female	176	51.5
	Male	166	48.5
Marital Status	Married	216	63.2
	Divorced	30	8.8
	Widow(er)	96	28.1
Educational Level	Illiterate	120	35.1
	Primary School	131	38.3
	High School	65	19.0
	University	26	7.6
Occupation	Working	68	19.9
	Not working	274	80.1
Income Level	Income less than expenses	150	43.9
	Income equal to expenses	164	48.0
	Income higher than expenses	28	8.2
Place of Living	Center	231	67.5
	Rural	111	32.5
Doing Exercises	Yes	48	14.0
	No	175	51.2
	Irregular	119	34.8
Daily life activities	Independent	180	52.6
	Dependent	162	47.4
How you define your current health	Good	73	21.3
	Fair	217	63.5
	Bad	52	15.2
Falling history within the past one year	Yes	120	35.1
	No	222	64.9
Difficulty in falling asleep	Yes	189	55.3
	No	153	44.7

Urinary incontinence	Yes	139	40.6
	No	203	59.4
History of hospitalization within the past one year	Yes	130	38.0
	No	212	62.0
Limitations in daily life activities	Yes	216	63.2
	No	126	36.8
Age	65-74	268	78.4
	75-84	59	17.3
	85 and over	15	4.4

	$\overline{X} \pm$SD
Age	70.26 ± 6.14 (min.65 - max.92)
The number of medications taken daily (number)	2.65 ± 2.26 (min.0 - max.10)

Table 2. Participants' Frail Scale and Life Satisfaction Scale Mean Scores and their Categorical Distributions (N=342)

Scale	$\overline{X} \pm$**SD**	
Frail Scale	1.79 ± 1.28	
	(min:0, max:4)	
Life Satisfaction Scale	8.02±4.22	
	(min:1, max:19)	
	n	**%**
Frail Scale Categorical Distribution		
Non-Frail (0 points)	75	21.9
Pre-Frail (1-2 points)	148	43.3
Frail (>2 points)	119	34.8
Life Satisfaction Categorical Distribution		
Low Life Satisfaction Level (≤ 7 points)	172	50.3
Medium Life Satisfaction Level (8-12 points)	122	35.7
High Life Satisfaction Level (≥13 points)	48	14.0

Table 3. Distribution of the Participants' Frail Scale Mean Scores by their Characteristics (N=342)

		n	$\overline{X}$ ±SD	Test Value	p
Gender	Female	176	1.99±1.20	U= 11999.0	**.003**
	Male	166	1.58±1.33		
Marital Status	Married	216	1.63±1.30	KW= 25.021	**.001**
	Divorced	30	1.27±1.14		
	Widow(er)	96	2.32±1.09		
Educational Level	Illiterate	120	2.33±1.21	KW= 42.114	**.001**
	Primary School	131	1.66±1.26		
	High School	65	1.46±1.10		
	University	26	.81±1.10		
Occupation	Working	68	1.19±1.16	U= 6219.5	**.001**
	Not working	274	1.94±1.26		
Income Level	Income less than expenses	150	1.87±1.28	KW= 1.861	.394
	Income equal to expenses	164	1.76±1.27		
	Income higher than expenses	28	1.54±1.35		
Place of Living	Center	231	1.66±1.25	U= 10512.0	**.006**
	Rural	111	2.06±1.30		
Doing exercises	Yes	48	1.02±1.02	KW= 36.731	**.001**
	No	175	2.16±1.26		
	Irregular	119	1.55±1.21		
Daily life activities	Independent	180	1.61±1.34	U= 12072.0	**.005**
	Dependent	162	1.99±1.18		
How do you define your current health?	Good	73	.68±.96	KW= 81.292	**.001**
	Fair	217	1.96±1.21		
	Bad	52	2.63±.91		
Falling history within the past one year	Yes	120	2.36±1.19	U= 8187.5	**.001**
	No	222	1.48±1.22		
Difficulty in falling asleep	Yes	189	2.19±1.23	U= 8757.5	**.001**
	No	153	1.30±1.16		
Urinary incontinence	Yes	139	2.31±1.20	U= 8646.0	**.001**
	No	203	1.43±1.21		
	Yes	130	2.39±1.18	U= 7906.0	**.001**

History of hospitalization within the past one year	No	212	1.42±1.19		
Limitations in daily life activities	Yes	216	2.17±1.19	U= 7432.5	**.001**
	No	126	1.14±1.16		

Table 4. Distribution of the Participants' Life Satisfaction Scale Mean Scores by their Characteristics (N=342)

		n	$\overline{X}$ ±SD	Test Value	p
Gender	Female	176	7.57±4.26	U= 12575.5	**.026**
	Male	166	8.50±4.13		
Marital Status	Married	216	8.55±4.23	KW= 16.351	**.001**
	Divorced	30	9.00±4.50		
	Widow(er)	96	6.52±3.74		
Education Level	Illiterate	120	6.73±3.80	KW= 23.709	**.001**
	Primary School	131	8.06±4.16		
	High School	65	9.29±3.81		
	University	26	10.58±5.31		
Occupation	Working	68	9.85±4.29	U= 6514.5	**.001**
	Not working	274	7.57±4.09		
Income Level	Income less than expenses	150	7.12±3.98	KW= 12.492	**.002**
	Income equal to expenses	164	8.55±4.27		
	Income higher than expenses	28	9.75±4.25		
Place of Living	Center	231	8.26±4.14	U= 11487.0	.118
	Rural	111	7.51±4.36		
Doing exercises	Yes	48	11.21±3.98	KW= 39.198	**.001**
	No	175	6.86±3.97		
	Irregular	119	8.45±3.95		
Daily life activities	Independent	180	8.35±4.49	U= 13412.0	.199
	Dependent	162	7.65±3.87		
How do you define your current health?	Good	73	11.64±4.21	KW= 76.648	**.001**
	Fair	217	7.54±3.66		
	Bad	52	4.94±2.80		
Falling history within the past one year	Yes	120	6.43±3.62	U= 8853.0	**.001**
	No	222	8.88±4.28		

Difficulty in falling asleep	Yes	189	6.74±3.69	U= 8868.0	**.001**
	No	153	9.60±4.29		
Urinary incontinence	Yes	139	6.29±3.69	U= 8482.5	**.001**
	No	203	9.20±4.16		
History of hospitalization within the past one year	Yes	130	7.32±4.27	U= 11450.0	**.008**
	No	212	8.45±4.14		
Limitations in daily life activities	Yes	216	7.08±3.96	U= 8882.5	**.001**
	No	126	9.63±4.18		

Table 5. Relationship between Frailty, Life Satisfaction, Age and the Number of Medications Taken daily

		Frail Scale Total Score	Life Satisfaction Scale Total Score
Life Satisfaction Scale Total Score	r	-.475	1
	p	**.001**	
Age	r	.232	-.150
	p	**.001**	**.006**
Number of Medications taken daily	r	.394	-.191
	p	**.001**	**.001**

Discussion

Of all the older people who participated in this study, 34.8% were found to be frail, and women's frailty was significantly higher in comparison to men. In their study done in 2020, Szwaczka et al. (Batko Szwaczka et al., 2020) reported that 24% of the participants were frail, and women's frailty rates were higher than men's. Similarly, Eyigor et al. (Eyigor, Kutsal, & Duran, 2015). investigated frailty among older people and identified the frailty rate as 39.2%; women's frailty level was similarly found to be higher in comparison to men. Some other studies on frailty also reported that women were frailer than men (Farías Antúnez, & Fassa, 2019; Sewo Sampaio et al., 2015). Older women are reported to have more physical movements and a significant relationship was reported between physical movements and frailty (Heuberger, 2011). This finding is also considered to be associated with frequent births and the high prevalence of osteoporosis in our country.

Older people whose spouse died were found to have significantly higher frailty mean scores. Studies report higher frailty mean scores among older people who live alone and cannot receive social support (Jurschik et al., 2012; Oliveira et al., 2013; Niederstrasser, Rogers, & Bandelow, 2019). It is considered that social isolation accompanied with increased limitations of movements could cause this condition.

Older people with low education levels were found to have significantly higher frailty mean scores. This finding parallel to the literature (Niederstrasser, Rogers, & Bandelow, 2019; Rohrmann, 2020; Hsu, & Chang, 2015). Individuals with low education levels could have increased frailty due to factors such as economic poverty, malnourishment, lack of access to medical

treatment, and limitations of social opportunities.

The present study found that frailty mean scores of the older people who did not work were significantly higher. Eyigor et al. reported high frailty mean scores among housewives. This finding could be associated with more active mobility of individuals who worked in comparison to those who did not work.

Frailty was significantly higher in older people living in rural areas. In their study conducted in different regions of China, Ma et al. reported that frailty was significantly higher in individuals who lived in rural areas (Ma et al., 2018).

This study found that mean scores of frailty were significantly higher in those who did not do exercises (González Vaca et al., 2014; Moreira, & Lourenco, 2013). Exercise was found to be an important factor in preventing frailty (Heuberger, 2011). Being sedentary and avoiding physical activities due to fear of falling are considered to be associated with this finding.

Mean scores of frailty were significantly higher in participating individuals who were dependent on others and had limitations in their daily life activities; the results of this study are in line with the literature (González Vaca et al., 2014; Moreira, & Lourenco, 2013). Older people who could move independently and do shopping alone are reported to have lower frailty rates (Niederstrasser, Rogers, & Bandelow, 2019).

This study found that mean scores for frailty were significantly higher in participating individuals who fell and were hospitalized within the past one year (Eyigor, Kutsal, & Duran, 2015) also detected a relationship between frailty and falling history. The literature also indicates that frailty increases the risk of falling and fractures (Jurschik et al., 2012).

In line with the literature, this study found that frailty was significantly higher in those who had difficulty in falling asleep (Jurschik et al., 2012; González Vaca et al., 2014; Moreira, & Lourenco, 2013). Frailty increases with health problems, mobility limitations, increased fatigue, and hence causes sleep problems.

Frailty was found to be significantly higher in elderly individuals who had urinary incontinence; the literature also reports similar findings (González Vaca et al., 2014; Moreira, & Lourenco, 2013). Further studies are needed to have a more detailed explanation of the relationship between frailty and urinary incontinence.

Mean score of Life Satisfaction Scale was significantly higher in men. Studies that investigated the relationship of life satisfaction in older individuals reported higher life satisfaction mean scores among women (Oliveira et al., 2019; Enkvist, Ekstrom, & Elmstahl, 2012). Higher frailty rates of the women in this study are considered to be associated with low life satisfaction.

Mean score of Life Satisfaction Scale was significantly higher in participating individuals who were divorced, which is in line with the literature (Kahraman et al., 2011).

Mean score of Life Satisfaction Scale was significantly higher in participating individuals who graduated from university, who worked, and who had a higher income than expenses. The literature reports that education level and income level affect life satisfaction significantly (Oliveira et al., 2019; Hu et al., 2016). Individuals with high education level are considered to have better social opportunities, wage-earning employment, and thus a higher income level, which is considered to contribute to more comfortable living conditions and thus affect life satisfaction.

Mean score of Life Satisfaction Scale was significantly higher in participating individuals who exercised. In their study conducted with older people (Oliveira et al., 2019) reported that life satisfaction mean scores were significantly higher in those who exercised.

Mean score of Life Satisfaction Scale was significantly higher in participating individuals who defined their health status as "good". The literature also indicates that those who perceived current health status as poor had low life satisfaction mean scores (Kankaya, & Karadakovan, 2017; Abu Bader, Rogers, & Barusch, 2003). Chronic

diseases associated with aging and physical inadequacy are considered to affect life satisfaction.

Mean score of Life Satisfaction Scale was significantly higher in participating individuals who had no falling history or were hospitalized. In their study that investigated life satisfaction in older individuals (Hu et al., 2016) found that life satisfaction mean scores were lower in individuals who had falling history and fractures. Physical inadequacies caused by falls are considered to affect individuals' daily life activities and thus life satisfaction.

Mean score of Life Satisfaction Scale was significantly higher in participating individuals who did not have difficulty in falling asleep. Studies on the association between insomnia and life satisfaction in older people reported that older people who had sleep problems had low life satisfaction (Khagi et al., 2019; Aslam, & Mahreen, 2018).

Mean score of Life Satisfaction Scale was significantly higher in participating individuals who did not have urinary incontinence. Similar results were reported in a study on life satisfaction in elderly individuals who had incontinence (Sanses et al., 2020).

Mean score of Life Satisfaction Scale was significantly higher in participating individuals who did not have any limitations in daily life activities. These results are parallel to the literature (Kankaya, & Karadakovan, 2017). Increase in independence in daily life activities is considered to affect life satisfaction.

The Frail Scale and Life Satisfaction Scale indicated a negative and significant relationship between the total scores, and a positive and significant relationship was reported between age and the number of medications taken daily. The literature has parallel findings to the present study (Arslan et al., 2020; Yang, Gu, & Mitnitski, 2017; Degboé et al., 2017; Tsuda, 2017; Harvey et al., 2019).

A negative and statistically significant relationship was reported between the Life Satisfaction Scale total score and age and the number of medications taken daily. The findings of this study are in line with the literature (Kankaya, & Karadakovan, 2017)

Limitations: The limitations of this study are that it was conducted in one city and the data were collected online and via telephone.

Conclusions: A negative relationship was reported between life satisfaction and frailty. A multidimensional geriatric assessment is of importance for the identification of frailty. İdentification and prevention of the risk factors for frailty are of great importance for both treatment practices and the national economy. Therefore, it is important to organize preventive programs for frailty. For instance, frailty could be prevented by regulating and improving nutrition and physical activities. Older individuals should be provided with trainings to prevent frailty and they should gain healthy behavioral habits. Considering individual factors as well, healthcare personnel responsible for the follow-up and treatment of older people should be sensitive about this issue.

References

Abu-Bader, S. H., Rogers, A., & Barusch, A. S. (2003). Predictors of life satisfaction in frail elderly. *Journal of Gerontological Social Work, 38*(3), 3-17.

Alkan, S.B., & Rakicioglu, N. (2019). Nutrition in frail elderly patients. *SDU Journal of Health Science Institute, 10*(2), 184-189.

Andreas, S., Schulz, H., Volkert, J., Dehoust, M., Sehner, S., Suling, A., ... & Harter, M. (2017). Prevalence of mental disorders in elderly people: The European MentDis_ICF65+ study. *The British Journal of Psychiatry, 210*(2), 125-131.

Arslan, M., Keskin Arslan, E., Koc, E. M., Sozmen, M. K., & Kaplan, Y. C. (2020). Relationship between frailty and medicine use and polypharmacy in people over sixty-five years of age. *Med Bull Haseki, 58,* 33-41.

Aslam, N., & Mahreen, K. (2018). Role of urinary incontinence in depression and life satisfaction in geriatric patients. *Pakistan Journal of Public Health, 8*(4), 185-189.

Asiret D.G., & Cetinkaya, F. (2018). The relationship between frailty and sleep quality in the elderly hospitalized patients. *Firat Med J, 23*(4), 184-188.

Batko Szwaczka, A., Dudzińska Griszek, J., Hornik, B., Janusz-Jenczeń, M., Iwona

Włodarczyk, I., Wnuket, B., ... & Szewieczek, J. (2020). Frailty phenotype: evidence of both physical and mental health components in community-dwelling early-old adults. *Clinical İnterventions in Aging, 15*, 141.

Collard, R.M., Boter, H., Schoevers, R.A., Richard, C., & Voshaar, O. (2012). Prevalence of frailty in community dwelling older persons: A systematic review. *J Am Geriatr So, 60*, 1487-92.

Camur Karatas, S. (1988). Factors Affecting Life Satisfaction ın The Elderly. Hacettepe University Institute of Social Sciences, Master Thesis. Ankara.

Degboé, Y., Eischen, M., Nigon, D., Apoil, P. A., Mailhol, C., Tournier, E., ... & Bulai-Livideanu, C. (2017). Prevalence and risk factors for fragility fracture in systemic mastocytosis. *Bone, 105*, 219-225.

Enkvist, Å., Ekstrom, H., & Elmståhl, S. (2012). What factors affect life satisfaction (LS) among the oldest-old? *Archives of Gerontology and Geriatrics, 54*(1), 140-145.

Eyigor, S., Kutsal, Y.G., & Duran, E. (2015). Frailty prevalence and related factors in the older adult Frail TURK Project. *Age, 37*(3), 1-13.

Farías-Antúnez, S., & Fassa, A.G. (2019). Frailty prevalence and associated factors in the elderly in Southern Brazil, 2014. *Epidemiologia e Serviços de Saúde, 28*, e2017405.

González-Vaca, J., de la Rica-Escuín, M., Silva-Iglesias, M., Arjonilla-García, M. D., Varela-Pérez, R., Oliver-Carbonell, J. L., & Abizanda, P. (2014). Frailty in INstitutionalized older adults from ALbacete. The FINAL Study: rationale, design, methodology, prevalence and attributes. *Maturitas, 77*(1), 78-84.

Harvey, L., Taylor, M., Delbaere, K., Lord, S., Brodaty, H., Kochan, N., ... & Close, J. (2019). 57 The Use of the Physiological Profile Assessment to Improve Prediction of Fragility Fractures in Community-Dwelling Older People. *Age and Ageing, 48*(Supplement_4), iv13-iv17.

Heuberger, R.A. (2011). The frailty syndrome: a comprehensive review. *J Nutr Gerontol Geriatr, 30*, 315-368.

Hsu, H. C., & Chang, W. C. (2015). Trajectories of frailty and related factors of the older people in Taiwan. Experimental aging research, 41(1), 104-114.Ma, L., Tang, Z., Zhang, L., Sun, F., Li, Y., & Chan, P. (2018). Prevalence of frailty and associated factors in the community-dwelling population of China. *Journal of the American Geriatrics Society, 66*(3), 559-564.

Hu, S. X., Lei, W. I., Chao, K. K., Hall, B. J., & Chung, S. F. (2016). Common chronic health problems and life satisfaction among Macau

elderly people. *International Journal of Nursing Sciences, 3*(4), 367-370.

Hugh, D., & Gil, J. (2018). Senescence and aging: Causes, consequences, and therapeutic avenues. *Journal of Cell Biology, 217*(1), 65-77.

Hymabaccus Muradi, B.A.B. (2017). Validation of FRAIL Scale in Turkish older adults, Hacettepe University Faculty of Medicine. *Thesis in Internal Medicine*, Ankara.

Jurschik, P., Nunin, C., Botigué, T., Escobar, M. A., Lavedán, A., & Viladrosa, M. (2012). Prevalence of frailty and factors associated with frailty in the elderly population of Lleida, Spain: the FRALLE survey. *Archives of Gerontology and Geriatrics, 55*(3), 625-631.20.

Kahraman, S., Zincir, H., Erten, Z.K., & Ozkan, F. (2011). Effects of seperate living of old women and men on their's loneliness and life satisfaction n a nursing home. *Turkey Journal of Sociological Research, 14*(2), 1-16.

Kankaya, H., & Karadakovan A. (2017). The effects of daily life activity levels on the quality of life and life satisfaction of elderly. *Gumushane University Journal of Health Sciences, 6*(4), 21-29.

Khagi, B. R., Timalsina, R., Chhantyal, A., Shiwakoti, S., & Maharjan, M. (2019). Life Satisfaction and Insomnia among Elderly Community Dwellers of Lalitpur, Nepal. *Journal of Institute of Medicine Nepal, 41*(1), 38-51.

Kocak Kayhan O., Sahin, S., & Akcicek, F. (2019). Frailty: Decreased response to stress and endurance. *Frailty Handbook*, 1(17).

Moreira, V. G., & Lourenco, R. A. (2013). Prevalence and factors associated with frailty in an older population from the city of Rio de Janeiro, Brazil: the FIBRA-RJ Study. *Clinics, 68*(7), 979-985.

Morley, J.E., Malmstrom, T.K., & Miller, D.K. (2012). A simple frailty questionnaire (FRAIL) predicts outcomes in middle aged African Americans. *J Nutr Health Aging,16*(7), 601-8.

Neugarten, B.L., Havighurst, R.J., & Tobin, S.S. (1961). The measurement of the life satisfaction. *Journal of Gerontology, 16,* 134-143.

Niederstrasser, N. G., Rogers, N. T., & Bandelow, S. (2019). Determinants of frailty development and progression using a multidimensional frailty index: Evidence from the English Longitudinal Study of Ageing. *PloS one, 14*(10), e0223799.

Oliveira, D. R., Bettinelli, L. A., Pasqualotti, A., Corso, D., Brock, F., & Erdmann, A. L. (2013). Prevalence of frailty syndrome in old people in a hospital institution. *Revista Latino-Americana de Enfermagem, 21*(4), 891-898.

Oliveira, D. V. D., Ribeiro, C. C., Pico, R. E. R., Murari, M. O., Freire, G. L. M., Contreira, A. R., & Nascimento Júnior, J. R. A. D. (2019). Is life satisfaction associated with the purpose in life of elderly hydrogymnastics practitioners? *Motriz: Revista de Educacão Física,* 25(3).

Rohrmann, S. (2020). Epidemiology of frailty in older people. *Frailty and cardiovascular diseases,* 21-27.

Sanses, T., Alden, J., Pearson, S., Gopaul, S., Ukaegbu, A. (2020). Relationship between urinary ıncontinence & functional mobility and life satisfaction in older adult Women. American *Journal of Occupational Therapy, 74*(4), 7411510313p1.

Sewo Sampaio, P.Y., Sampaio, R.A.C., Yamada, M., Ogita, M., & Arai, H. (2015). Comparison of frailty among Japanese, Brazilian Japanese descendants and Brazilian community-dwelling older women. *Geriatrics & Gerontology international, 15*(6), 762-769.

Tsuda, T. (2017). Epidemiology of fragility fractures and fall prevention in the elderly: a systematic review of the literature. *Current Orthopaedic Practice, 28*(6), 580.

Turkish Statistical Institute, Elderly Statistic. Turkish Statistical Institute Publication. http://www.tuik.gov.tr/PreHaberBultenleri.do?id=30567. Erisim Tarihi: 15.12.2019.

World Health Organization. Ageing and health. https://www.who.int/news-room/factsheets/detail/ageing-and-health adresinden erisildi. Erisim Tarihi: 15.06.2020.

Yang, F., Gu, D., & Mitnitski, A. (2016). Frailty and life satisfaction in Shanghai older adults: The roles of age and social vulnerability. *Archives of Gerontology and Geriatrics, 67*, 68-73.

Zhang, J., Xu, L., Sun, L., Li, J., & Qin, W. (2019). Gender difference in the association of frailty and health care utilization among Chinese older adults: results from a population-based study. *Aging Clinical and Experimental Research, 1*(7).