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DETERMINING FACTORS AFFECTING OF THE PHYSICAL ACTIVITY LEVEL OF OLDER ADULTS DURING THE COVID-19 PANDEMIC

COVID-19 PANDEMİSİ DÖNEMİNDE YAŞLI BİREYLERİN FİZİKSEL AKTİVİTE DÜZEYİNİ ETKİLEYEN FAKTÖRLERİN BELİRLENMESİ

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ABSTRACT

Objective: Social isolation during the COVID-19 pandemic adversely affected the physical and psychological conditions of the elderly. This study was planned to determine the factors affecting the physical activities of elderly individuals living in Turkey.

Method: In this study, frailty level (Fragility Scale), depressive symptoms (Geriatric Depression Scale [GDS]), physical activity level (PASE Questionnaire), kinesiophobia (TAMPA Scale), and anxiety (Beck Anxiety Scale) of elderly individuals were evaluated by a structured Google survey. Regression analysis was used to determine the factors affecting the level of physical activity.

Results: While 52% of the participants (28% male; 72% female; mean age: 69.34±15.03 years) stated that they were less physically active, 93% stated that their social participation decreased during the pandemic process. The mean physical activity score was 89.12±55.33 (the highest score was calculated for indoor activities: 32.00±21.34; the lowest score was calculated for work-related activities: 2.10±6.33). Kinesiophobia score was 41.44±7.39. Approximately half of the participants were in the category of “guarantees a comprehensive assessment for depression”, while 18% were in the category of “suggesting depression” and 30% were in the category of “no depression” (GDS mean score: 14.41±6.01). In addition, it was determined that 29% of the elderly had severe anxiety, 25% had moderate anxiety, and 24% had mild anxiety. The mean frailty score was 2.09±1.69 (normal 19%; pre-fragile 53%; frail 28%). According to univariate linear regression analysis and multiple regression analysis, the most factors affecting the level of physical activity were age, BMI score, fear of movement and fragility.

Conclusion: The results obtained from this study showed that the physical activity level of the elderly decreased in the first year of the COVID-19 pandemic. In addition, increasing age, BMI score, kinesiophobia and fragility caused a decrease in the physical activity level of the elderly. These findings suggest that health policy makers and health care providers should organize appropriate care plans for the elderly after the pandemic period.

Key Words: Elderly, COVID-19, Activity, Depression, Frailty

ÖZ

Amaç: COVID-19 pandemisi sırasında sosyal izolasyon yaşlıların fiziksel ve psikolojik durumlarını olumsuz etkilemiştir. Bu çalışma Türkiye’de yaşayan yaşlı bireylerin fiziksel aktivitelerini etkileyen faktörlerin belirlenmesi amacıyla planlandı.

Yöntem: Bu çalışmada yaşlı bireylerin kırılabilirlik düzeyleri (Kırılabilirlik Ölçeği), depresif semptomları (Geriatik Depresyon Ölçeği [GDS]), fiziksel aktivite düzeyleri (PASE Anketi), kinezyofobileri (TAMPA Ölçeği) ve kaygıları (Beck Anksiyete Ölçeği); yapılandırılmış bir Google anketi ile değerlendirildi. Fiziksel aktivite düzeyini etkileyen faktörleri belirlemek için regresyon analizi kullanıldı.

Bulgular: Katılımcıların (%28’si erkek; %72’si kadın; ortalama yaş: 69.34±15.03 yıl) %52’si fiziksel olarak daha az aktif olduğunu belirtirken, %93’ü pandemi sürecinde sosyal katılımlarının azaldığını belirttiler. Ortalama fiziksel aktivite puanı 89.12±55.33 olarak saptandı (en yüksek puan ev içi aktiviteler için hesaplandı: 32.00±21.34; en düşük puan işle ilgili aktiviteler için hesaplandı: 2.10±6.33). Kinezyofobi puanları 41.44±7.39’dur. Katılımcıların yaklaşık yarısı “depresyon için kapsamlı bir değerlendirmeyi garanti eder” kategorisinde yer alırken, %18’i “depresyonu düşündüren” kategorisinde ve %30’u “depresyon yok” kategorisindeydi (GDS ortalama puanı: 14.41±6.01). Ek olarak, katılımcı yaşlı bireylerin %29’unda şiddetli kaygı, %25’inde orta düzeyde kaygı ve %24’ünde hafif düzeyde kaygı olduğu belirlendi. Ortalama kırılabilirlik skoru 2.09±1.69’dur (normal %19; ön kırılabilir %53; kırılabilir %28). Tek değişkenli lineer regresyon analizi ve çoklu regresyon analizine göre fiziksel aktivite düzeyini en çok etkileyen faktörlerin yaş, vücut kitle indeksi (VKİ) skoru, hareket korkusu ve kırılabilirlik olduğu belirlendi.

Sonuç: Bu çalışmadan elde edilen sonuçlar, COVID-19 pandemisinin ilk yılında yaşlı bireylerin fiziksel aktivite düzeylerinin düştüğünü gösterdi. Ayrıca artan yaş, VKİ skoru, kinezyofobi ve kırılabilirlik yaşlı bireylerin fiziksel aktivite düzeylerinde azalmaya neden olmuştur. Bu bulgular, sağlık politika yapıcılara ve sağlık hizmeti sağlayıcılarına pandemi dönemi sonrasında yaşlı bireyler için uygun bakım planı yapılması gerektiğini önermektedir.

Anahtar Kelimeler: Yaşlı, COVID-19, Aktivite, Depresyon, Kırılabilirlik

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INTRODUCTION

The number of people at a very advanced age is increasing around the world, including in Turkey, due to advancements in medicine and technology as well as the ability to control infectious diseases. According to censuses, the world population in 2019 was approximately 7.5 billion, of which the elderly population comprised 700 million (i.e., 9.3% of the general population). It is predicted that the percentage of elderly people will increase to 12.9% by 2030 and 25.6% by 2080. According to the Turkish Statistical Institute, the size of the elderly population is increasing gradually. Chronic diseases are the most common cause of death at a rate of 78.7% in Turkey and 86% in developed countries [1,2].

The high morbidity and mortality rates and effects of COVID-19 in older adults are still under investigation. Many governments have emphasized age in their discourses, thus creating an environment that paves the way for age (elder) discrimination. The emphasis on “old age” in the language of both governments and the media has led to the perception that they are more dangerous than being “cautious” about the elderly [3]. To keep the pandemic under control, the lifestyles of people, including the elderly, have changed. These changes have aimed to raise awareness of the value of social isolation, wearing face masks, and hygiene rules [4]. Since mortality and morbidity due to COVID-19 infection is high, it is necessary for elderly individuals to stay at home and reduce the spread of the virus. The reduced social interaction secondary to social distancing can have a negative impact on the mental and physical health of the elderly as it limits their social participation with community organizations and in family activities [5]. Furthermore, restricting the movement of the elderly for a long time can cause sarcopenia, which is defined as a syndrome of loss of muscle mass, quality, and strength. Both sarcopenia itself and the increased risk of falls secondary to sarcopenia can cause new problems. Frailty is a medical syndrome characterized by reduced physical function and strength in daily life [6]. Frailty is closely related to sarcopenia as it is a common negative consequence of aging. Sarcopenia is more common in older adults and is a precursor syndrome or physical state of frailty [7]. In particular, it may cause a fear of movement, also known as kinesiophobia. In such cases and in those with additional health problems, the fear of not being admitted to a healthcare facility may cause delays in the care and treatment that the elderly should receive urgently. For these reasons, the management and control of comorbidities among the elderly may be reduced [3]. Along with physical activity, the one-year COVID-19 lock down also affected the mental health of the elderly. The increase in anxiety, depression, and decrease in external stimulus due to social isolation increased the risk of heart disease and mortality as well as dementia and cognitive dysfunction. The “social distancing”, which is recommended by the authorities during the pandemic, has been misunderstood and they forced the elderly to stay at home [8]. As is the case with previous quarantines, mental health consequences such as a higher risk of depression, emotional distress, stress, mood swings, irritability, and insomnia have been identified. Nevertheless, as well known, physical activity has positive effects on health and quality of life by reducing the risk of functional and cognitive impairments, risk of falling, falling induced fractures, depression, hospitalization rates, and mortality in the elderly. At the same time, low physical activity level and social isolation also increases these risks mentioned above [4]. We, therefore, aimed to determine the most factors affecting the physical activity of the older adults living in Turkey.

METHOD

This study was conducted between April and September in 2021. Older adults, who were age of 65 years and over living in Turkey, were included in this study. The study was approved by the Ethical Board of Hatay Mustafa Kemal University (22/04/2021-16). In this study, a structured google survey was sent to the investigators, who were selected and educated about the study procedures and instructions the questionnaires. The investigators asked to collect the data face to

with the participants, who met the inclusion criteria of the study. The inclusion criteria were as follow; 1) To be over 65 years old (women or men), 2) To be native in Turkish language. The investigators got help from the older adults’ caregivers or relatives if needed. The link of the survey was sent to the investigators via WhatsApp text message or e-mail.

Outcome Measures

Physical Activity Level: Physical activity level was measured using by the Physical Activity Scale for the Elderly (PASE), which is a tool for assessing physical activity in older adults. The scale was developed in 1993. The questionnaire evaluates the levels of recreational, work and home activities of the elderly in the previous week. To obtain the PASE scores of these activities, the activity frequencies are multiplied by the weight coefficient of the activity. The total PASE score is calculated by summing the scores of each parameter. High scores indicate that individuals are very physically active [9].

Kinesiophobia: We evaluated kinesiophobia using by the Turkish version of the Tampa Kinesiophobia Scale (TKS). The TKS is a 17-item scale developed to measure kinesiophobia/reinjury. The scale includes parameters of injury/reinjury and fear/avoidance in work-related activities and applies a 4-point Likert scoring system (1 = strongly disagree, 4 = totally agree). Given that the highest score is the last option in items 4, 8, 12, and 16, the total score is calculated accordingly. The total score can range from 17 to 68 points. A high score on the scale indicates a high level of kinesiophobia [10].

Depressive Symptoms: The Geriatric Depression Scale (GDS) was used to detect depressive symptoms in the older adults included in this study. GDS was developed by Yesavage et al. in 1983, and validity and reliability studies were performed. The GDS consists of 30 self-reported questions that can be answered “yes” or “no” to facilitate understanding. In terms of scoring, each answer suggestive of depression is allocated 1 point, while the other answers are given 0 points. The total score is thus accepted as the depression score. The score range is as follows: 0–10 points indicate “no depression,” 11–13 points are “suggestive of depression,” while 14 and above “warrants a comprehensive assessment for depression” [11].

Anxiety: We used the Beck Anxiety Scale (BAS), which is a self-report scale that determines the frequency of anxiety symptoms experienced by individuals. It is a Likert-type scale consisting of 21 items, each of which is scored from 0 to 3 points, with a higher score indicating greater anxiety. The total score is categorized as follows: 0–7 points indicate minimal anxiety/normal; 8–15 points indicate mild anxiety, 16–25 points indicate moderate anxiety, and 26–63 points indicate severe anxiety [12].

Frailty: We used the FRAIL Scale developed by Morley et al. in 2012 to measure frailty. It allows the evaluation of fatigue, resistance, mobility, weight loss, and other diseases in patients. Each of the 5 items in the FRAIL Scale provides a score of 0 or 1 depending on the answer given by the patient. A total score of 0 indicates that the patient is non-frail, 1–2 points that they are pre-frail, and >2 points that they are frail [13].

Ethical Approval

The study was approved by the Ethical Board of Hatay Mustafa Kemal University (22/04/2021-16).

Statistical Analysis

GPower version 3.1.9.4 (Franz Faul-Universität Kiel, Kiel, Germany) was used to determine the magnitude of the effect and to analyze the power. The effect size and power were calculated for the total PASE scores based on the results of previous studies (mean H0: 63.8; mean H1: 80.79; SD: 65.18; effect size d: 0.2606628; α error probability: 0.05; power (1- β error probability): 0.80; total sample size: 93) [14, 15].

The data were analyzed using SPSS for Windows version 20.0 software (IBM SPSS Inc., Armonk, NY). The normality of the data was tested with the Kolmogorov–Smirnov test. The categorical variables were expressed as numbers (N) and percentages (%), and the countable variables as mean, standard deviation. To determine the most factors affecting the physical activity level, the multiple regression and univariate linear regression analysis was used.

RESULTS

The demographic and clinical characteristics of the elderly are shown in Table 1. A total of 100 older adults participated in this study.

Table 1. Demographics and clinical characteristics of the older individuals

Variables	Mean±SD
Age (years)	69.34±15.03
Height (cm)	163.69±8.27
Weight (kg)	76.90±12.78
BMI (kg/m ²)	28.78±4.94

Variables	n	
Gender	Male	28
	Female	72
Marital Status	Never Married	14
	Married	54
	Widow	30
	Divorced	2
Educational Status	No Illiterate/ Illiterate	25
	Primary	17
	Middle School	33
	High School	25
Medication Usage	None	32
	One	29
	Multiple Medications- ≥2	39
Having Chronic Diseases	Diabetes mellitus	23
	Hypertension	45
	Cardiac Disorders	27
	Pulmonary Disease	12
	Other Disease	44
Living Status	Alone	14
	With Children or Grands	26
	With Spouse	45
	In a Nursing Home	8
	Other	7

BMI: Body Mass Index

All gave their informed consent to participate in the study. Most of the participants (48%) were from the Mediterranean region of Turkey (Figure 1). The mean age was 69.34±15.03 years (range: 65–89), 72% were female, and the majority of the sample were overweight with a mean body mass index score of 28.78±4.94 kg/m². About half of the participants reported having chronic diseases, such as hypertension (45%), cardiac disorders (27%), diabetes mellitus (23%), pulmonary disease (12%), and others (44%).

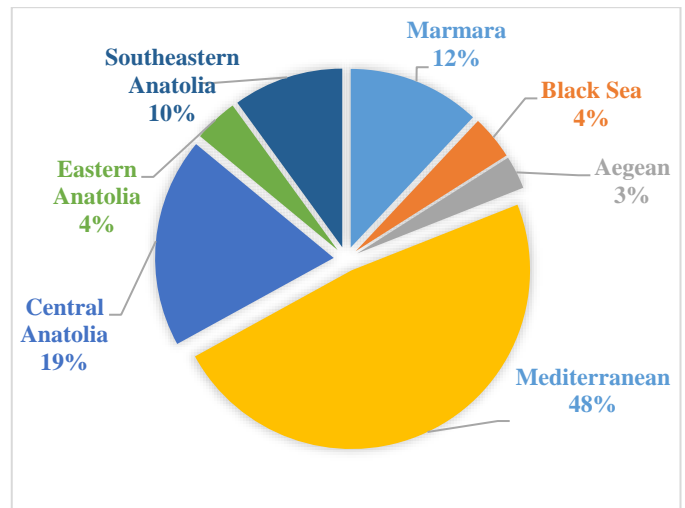


Figure 1. Distribution of the participant’s living region in Turkey

At the end of the first year of COVID-19, fall history and walking aid usage were recorded and the details are shown in Table 2. 26% of the participants reported fall history the pandemic period and 15% of the participants reported that they used walking aids. The details about the measurements just used in this study are shown in Table 2.

Table 2. Changes in the first year in older adults

Variables	n	
Fall History in First Year of the COVID-19	Yes	26
	No	74
Walking Aid Usage	Yes	15
	No	85
Physical Activity Changes in the First Year of COVID-19	Increased	4
	Decreased	72
	Not changed	19
	No idea	5
Social Participation Changes	Increased	7
	Decreased	93
Psychological Impact	Increased	41
	Decreased	20
	Changed	24
	No idea	15

The investigators also asked the participants the following open ended question “How has your physical activity level changed during the one-year pandemic period?” 72% of the participants stated that their physical activity levels decreased, and 19% of them reported that their physical activity level did not change. At the same time, 93% of the participants stated that their social participation decreased during the first year of COVID-19 pandemic. For the question “At the end of the first year of COVID-19, did you experience psychological problems such as depression and anxiety?” 41% of the participants answered “yes, increased.”

The PASE, TKS, GDS, BAS, and Frailty scores belonging to the participants are presented in Table 3. The total PASE score was 89.12±55.33. The highest PASE score was for household activities (32.00±21.34), while the lowest score was for work-related activities (2.10±6.33).

The levels of kinesiophobia were high, as indicated by the TKS score (mean: 41.44±7.39; range: 25–60). In terms of depression, 52% of the participants were in the category “warrants a comprehensive assessment for depression,” while 18% were in the category “suggestive of depression” and 30% in the category “no depression.” The total GDS score was 14.41±6.01. The percentages of participants in the different BAS categories at the end of the first COVID-19 year were as follows: severity anxiety 29%, moderate anxiety 25%, mild anxiety 24%, and no anxiety 22%. Finally, the mean FRAILITY score was 2.09±1.69. 19% of the respondents were in the normal category, 53% were in the pre-frail category, and 28% were in the frail category (Table 3).

Table 3. Results of physical activity, kinesiophobia, depression, anxiety, and frailty of the sample

Variables	Mean±SD
PASE Leisure Time Activities	24.93±32.61
PASE Household Activities	32.00±21.34
PASE Work-Related Activities	2.10±6.33
PASE Total	89.12±55.33
Tampa Scale Score	41.44±7.39
GDS Score	14.41±6.01
Beck Anxiety Scale Score	18.23±12.85
Frailty Score	2.09±1.69

Variables	%	
GDS Categorization	No Depression	30
	Suggestive of Depression	18
	Warrants a Comprehensive Assessment for Depression	52
Anxiety Categorization	None	22
	Mild	25
	Moderate	24
Frailty Categorization	Severe	29
	Non-Frail	19
	Pre-Frail	53
	Frail	28

PASE: Physical Activity Scale Elderly, GDS: Geriatric Depression Scale

According to the univariate linear regression analysis and multi regression analysis, the most factors affecting physical activity level were found to be age, BMI score, kinesiophobia and frailty (Table 4,5).

Table 4. Univariate linear regression analysis results

Item	Regression Coefficient B	p
Tampa Scale Score	-2.033	0.006
Geriatric Depression Scale Score	-0.723	0.437
Beck Anxiety Scale Score	-0.649	0.134
Frailty Scale Score	-7.768	0.017
Age (year)	-2.040	<0.001
Gender	22.166	0.720
Education Level (over 8 years)	-0.920	0.943
BMI Score(kg/m ²)	-3.997	<0.001

BMI: Body Mass Index

Table 5. Multiple linear regression analysis with backward Wald method results

STEP 1		
Item	Regression Coefficient B	P
Tampa Scale Score	-0.693	0.402
Geriatric Depression Scale Score	-0.605	0.559
Beck Anxiety Scale Score	0.208	0.663
Frailty Scale Score	-3.113	0.323
Age (year)	-1.758	<0.001
Gender	18.573	0.94
Education Level (over 8 years)	-17.558	0.116
BMI Score (kg/m ²)	-1.777	0.089

STEP 6		
Item	Regression Coefficient B	P
Age (year)	-1.932	<0.001
BMI Score (kg/m ²)	-2.211	0.026

BMI: Body Mass Index

DISCUSSION

In this study, we searched the factor affecting physical activity level of older adults living in Turkey after first year of Covid 19 pandemic. The results showed those older adults’ physical activity levels and their social participation decreased. Moreover, their psychological health deteriorated resulting from lock down during the pandemic. Along with social isolation, the rates of anxiety and depressive symptoms increased. The participants just evaluated in this study also showed risk in terms of frailty.

Although it is known that all age groups have been similarly affected by the COVID-19 pandemic, older people are at a higher risk of adverse outcomes, which can lead to higher morbidity and mortality than the global average due to their comorbidities and poor immune systems [4]. Rates of hypertension and diabetes are highest among the elderly, and chronic disease increases the risk of frailty in this population [16]. Similarly, the prevalence of diabetes (23%) and hypertension (45%) was higher than those of participants in our study. However, we could not investigate the correlations between their frailty and comorbidities. It would be valuable for future studies to evaluate the relationship between chronic disease and frailty during the long period of the pandemic.

The precautions to prevent the spread of COVID-19 lead to social isolation and sedentary lifestyles characterized with reduced physical activity in all ages, especially in older adults. Huber et al. assessed physical activity levels of the elderly living in Bavaria, Germany during the pandemic and they reported a decrease in physical activities, especially outdoor sporting activities [17]. The mean PASE score in our study was lower compared to Huber’s study. Turkish older adults showed less active [15] than the German older adults during the pandemic [17]. In this study, physical activity levels of 72% of the study sample decreased. As well known, low physical activity level resulting from COVID-19 pandemic lead to increased risk of various health problems and shortened life expectancy among older peoples. Decreased physical activity level can also affect well-being. This increases rate of frailty and kinesiophobia. The quarantine and concomitant social isolation not only increase sedentary lifestyle behavior and physical dysfunction in the elderly, but also increase the risk of depression and anxiety [17, 18, 19]. In our study, the rates of depression (52%) and anxiety (78%) in the elderly were high. Similarly, we found that rate of kinesiophobia and risk of frailty increased by the end of one year of the COVID-19 pandemic in our study sample. Physical inactivity and sedentary lifestyle among the elderly during the pandemic make worsened their health status (e.i.

sarcopenia) [20]. The pandemic, therefore, leads to decrease both physical functioning and well-being of the older adults. The pandemic, which caused sarcopenia, increased rate of frailty, and risk of falling, showed the same impact on all of the people around the world. It may also increase hospital admissions resulting from frailty fractures in the near future [21]. In this study, while 28% of the participants were found to be frail, most of them of participants were in the pre-frail category. The rate of falls in our study was 26% in the first year of the pandemic similarly to related literature. All research indicates that the pandemic had negative impact on the elderly. Furthermore, the pandemic decreased social participation of the elderly living in Turkey and this leads to negative impact on their emotional status by increasing depressive symptoms and anxiety after first year of the COVID-19 pandemic.

Limitations

Although the sample size of this study was very small, the results obtained from this study highlighted the situation occurred after the pandemic and may pioneer the new research on this subject. On the other hand, we, unfortunately, did not know physical activity level before the pandemic of the participants. This is another limitation of our study.

CONCLUSION

The quarantine during the pandemic showed a negative impact on many aspects of the well-being of older adults. In our study, results showed that increased age, increased BMI score, increased kinesiophobia, and increased frailty level were the most factors affecting the physical level of the elderly during the pandemic. That's why all health policymakers and health care providers should take these results into consideration in order to plan the most suitable care for the elderly.

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