European Journal of
Human Health

ORIGINAL ARTICLE

THE RELATIONSHIP BETWEEN SARCOPENIC QUALITY OF LIFE AND PSYCHOLOGICAL STATE IN ELDERLY PEOPLE DURING COVID-19 QUARANTINE DAYS: CROSS-SECTIONAL STUDY

Ilknur AYKURT KARLIBEL [1], Meliha KASAPOGLU AKSOY [1], Sinay ONEN [2]

[1] Department of Physical Health and Rehabilitation, University of Health Sciences Turkey Bursa Yuksek Ihtisas Training and Research Hospital, Bursa, TURKEY

[2] Department of Psychiatry, University of Health Sciences Turkey Bursa Yuksek Ihtisas Training and Research Hospital, Bursa, TURKEY

ABSTRACT

Aim: Social isolation and quarantine practices are recommended to control SARS-Cov-2. During this period, elderly individuals' physical mobility is significantly restricted, which may predispose them to sarcopenia. We aimed to investigate such pandemic restrictions' effects on elderly individuals' sarcopenic quality of life, anxiety and depression.

Methods: The open-ended questionnaire study gained access to volunteers online and remotely. The 'Sarcopenic Quality of Life Scale', 'Geriatric Depression Scale-Short Form' and 'Geriatric Anxiety Scale' were used. Data were evaluated prospectively and cross-sectionally.

Results: In total, 139 elderly volunteers (≥ 65age; 60% female) were included in the study. Compared to before the pandemic, respondents reports decreases in: arm strength (48.6%), leg strength (65.5%), muscle mass (55.7%), energy (67.9%), physical capacity and flexibility (64.3%), walking frequency (77.5%), walking time (79.6%), walking distance (82.4%), walking speed (88.7%) and step length (83.8%). Among coronavirus disease survivors, sarcopenic quality of life was significantly lower than those not exposed to the coronavirus disease, while depression and anxiety were higher. The 'Sarcopenic Quality of Life Scale' items 3 and 6 alone were significantly better among respondents who exercised. A negative correlation was found between sarcopenic quality of life and anxiety and depression.

Conclusion: Our study showed decreased physical functions and sarcopenic quality of life among elderly individuals whose movements were restricted to their homes. This decline was more pronounced among coronavirus disease survivors and patients who had not exercised at home during this period, and it was found to be associated with anxiety and depression.

Keywords: COVID-19; pandemic; quarantine; social isolation; sarcopenia; quality of life

Corresponding Author: Ilknur KARLIBEL karlibeli@hotmail.com

Received: ***January 21, 2023;*** *Accepted:* ***March 28, 2023;*** *Published Online:* ***March 31, 2023***

Cite this article as: Aykurt Karlibel, I., Kasapoglu Aksoy, M. & Onen, S. (2023). The Relationship Between Sarcopenic Quality of Life and Psychological State in Elderly People During Covid-19 Quarantine Days: Cross-Sectional Study. European Journal of Human Health 3(1), 01-14.

INTRODUCTION

COVID-19 (coronavirus disease 2019), the etiological agent of SARS-CoV-2, is a multisystemic disease classified as a pandemic by the World Health Organization, and it poses a public health problem due to the virus's close-contact transmission and rapid spread [1]. Although mortality rates vary from country to country, mortality is known to be higher for older individuals, and a recent study reported the disease's mortality rate at 36%for patients over 64 years old [2]. In nursing homes, this rate can rise to 54% [3]. Social isolation and quarantine practices are applied worldwide to control the disease due to the lack of a definitive pharmacological treatment and the virus's transmission from person to person. Findings suggest that quarantines are important to reduce incidences and mortality during the COVID-19 outbreak [4]. In our country, as of March 21, 2020, these restrictions have been strictly applied to people ≥ 65 years old. In this process, elderly individuals have faced problems, such as dependency on others, social isolation, changes to family dynamics, mental problems, sedentary lifestyles, an inability to benefit from daylight exposure, an inability to go to health check-ups and age discrimination [5].

Social isolation is a multidimensional concept that lacks a clear and consistent definition in the literature. Also, *social isolation* has been defined as the absence of contact with people who provide social support. Some researchers have defined it as a concept that includes an objective lack of contact or interaction, or a sense of little friendship and social loneliness [6].

Poor health status has been consistently reported among socially isolated older adults. Physical activity is considered one of the most important modifiable health behaviours, and it is associated with various chronic diseases, such as cardiovascular disease, obesity, type 2 diabetes and hypertension. Older adults following physical activity recommendations showed lower mortality rates [6-8]. In contrast, among elderly individuals, physical limitation and various chronic diseases are associated with decreased muscle mass and impaired muscle performance, a condition called *sarcopenia*. Gradual erosion in quality of life (QoL) is expected for these individuals [8]. Health-related behaviours, such as physical activity, also represent a possible link between social relationships and depressive symptoms [7-9]. In addition, a close relationship was found between the severity of sarcopenia and health-related Quality of life and anxiety/depression in older adults [10].

Clinically, depression is one of the most important psychiatric symptoms among elderly individuals. Its high prevalence is the major determinant of diseases among the geriatric population. A lack or loss of close social contacts is a major cause of late-life depression. Social isolation and a lack of social support can worsen depression [9]. Studies have associated low physical activity levels with perceived social isolation [7].

In the light of this information, we thought that during the pandemic, QoL may worsen, and depression and anxiety may increase among older adults, due to the effect of social isolation and limitation of physical activities. In the current study, we aimed to investigate pandemic restrictions' effects on individuals over 65 years of age vis-à-vis their

sarcopenic QoL, anxiety and depression during the pandemic.

METHODS

Our study population consists of individuals over the age of 65. In Turkey, as of 22 March 2020, citizens aged 65 and over and also chronically ill, going out of their residences and walking around in open areas such as parks and gardens are restricted with the circular numbered 5762.With the circular dated June 10, 2020 and numbered 9138, this restriction was relaxed and the permission to go out was limited to 3 hours. The current study was carried out between July 2020 and December 2020. Access to volunteers was provided via remote, online access. After the preliminary interview with the participants, the e-questionnaire was used for those who had the ability to answer the e-survey organized via google form. For those who could not answer the e-survey, survey responses were collected via video or non-video phone calls. Participants were informed about the study. Written consent was obtained. Open-ended questionnaire questions were asked to participants who had agreed to answer the study's questionnaire, and their answers were recorded. Men and women aged 65–85, who were mentally healthy and physically active were included in the study as volunteers. Patients who had no walking function due to an orthopaedic or neurological disease, who had an active infection, who were bedridden, who had a psychiatric disease, who could not answer the questionnaire or who did not want to answer the questionnaire were excluded from the study. The study was conducted in accordance with the *Declaration of Helsinki* rules, and approval was obtained from the local ethics committee (11-KAEK-25 2020 / 05-09).

Volunteers' demographic data, comorbidities, and home and social-life characteristics were recorded. The 'Sarcopenic Quality of Life Scale' (SarQoL), 'Geriatric Depression Scale Short Form' (GDS-SF) and 'Geriatric Anxiety Scale' (GAS) were used. Data were evaluated prospectively and cross-sectionally.

SarQoL comprises 22 questions, rated on a four-point Likert scale, containing 55 items in total, and it is available in 16 languages (http://www.SarQoL.org). The questionnaire is scored using a possible total of 100 points, with higher scores reflecting a better QoL through a scoring algorithm. SarQoL has seven sub-parameters: SarQoL 1, 'Physical and Mental Health' (eight items); SarQoL 2, 'Locomotion' (nine items); SarQoL 3, 'Body Composition' (three items); SarQoL 4,'Functionality' (14 items); SarQoL 5,'Activities of Daily Living' (15 items); SarQoL 6,'Leisure activities' (two items); and SarQoL 7,'Fears' (four items) [11]. The Turkish validity and reliability study of this scale has been performed (Cronbach's alpha: 0.88) [12].

The GDS-SF is a 15-item scale commonly used to assess depression among the geriatric population. Answers are scored as 'yes' or 'no'. The sum of a respondent's 'yes' answers provides the scale's total score with the following indicators: 0–4, no depression; 5–8,mild depression; 9–11, moderate depression; and 12–15, severe depression [13]. The Turkish validity and reliability study of this scale has been performed (Cronbach's alpha: 0.92) [14]

The GAS is a four-point Likert-type scale with 28 items. Its validity and reliability in Turkish have been confirmed by Karahan et al (Cronbach's alpha: 0.91).

Its total score is 75, and higher scores indicate higher levels of anxiety [15].

STATISTICAL ANALYSIS

Data analysis was conducted using the IBM Corp. Released 2015. IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY: IBM Corp statistics package program. Descriptive statistics (frequency, percentage, mean, standard deviation, median and min-max) were used while reporting the study's data. The data's compliance with a normal distribution was evaluated using Shapiro–Wilk test. Student's t-test was used when the data showed a normal distribution, and Mann–Whitney U test were used to comparing groups when the data did not show a normal distribution. A chi-square test was used to compare categorical data between groups. Relationships between the variables were evaluated using Spearman's rho correlation coefficient. Type I error rate was set at $\alpha = 5\%$. Type I error rate was set at $\alpha = 5\%$.

RESULTS

160 people over the age of 65 were reached. However, six refused to answer the questionnaire, five did not complete the questionnaire, four had cognitive function deficits, and 6 did not have active walking function. For these reasons, 21 patients were excluded from the study. This study was conducted with 139 volunteers, 60% of whom were women; their average age was 72.17 ± 5.40.Of these volunteers, 54% had at least one additional disease. While 37.3% of volunteers reported that at least one of their relatives had suffered from COVID-19 (coronavirus disease 2019), 9.4% reported that they had suffered from the disease themselves. The average hospital stay length among volunteers who had had COVID-19 was 9.61 ± 2.84 (6–15) days, and none of these patients had needed intensive care. Volunteers' demographic data, comorbid illnesses and home and social-life characteristics are shown in Table 1.

While answering benchmarking questions in SarQoL, participants were asked to compare their situations just before the pandemic with their situations during the pandemic. SarQoL Question 1 asked, 'Have you been feeling a decrease in the following lately?'In response, 48.6% of participants reported decreased strength in their arms, 65.5% reported decreased strength in their legs, 55.7% reported decreased muscle mass, 67.9% reported decreased energy, 64.3% reported decreased physical capacity and 64.3% reported decreased flexibility.

SarQol Question 9 asked, 'Do you feel a reduction in the following?'In response, 77.5% of participants reported decreased walking frequency, 79.6% reported decreased able walking time, 82.4% reported decreased able walking distance, 88.7% reported decreased walking speed and 83.8% reported decreased step length.

SarQol Question 11 asked, 'Do you have problems with your balance?' In response, 71.8% of participants reported impaired balance. SarQol Question 12 asked, 'How often do you fall?'In response, 43% of participants reported falling at varying frequency.

Table 1: Demographic characteristics and evaluation parameters of the participants

Age (years)		72.17±5.40	(65-86)
Gender n%	Female	84	60.4%
	Male	55	39.6%
BMI kg/m^2	BMI 1	28.05 ±4.16	(20.36-41.02)
	BMI 2	28.36 ± 4.32	(20.36-41.80)
Smoke n%	Current smoker	21	15.1%
	Ex-smoker	48	34.5%
	Non-smoker	70	50.4%
Marital status n%	Married	97	69.8%
	Single	42	30.3%
Households in quarantine days n%	Alone	22	15.8%
	With his wife	71	51.1%
	With his wife and children	22	15.8%
	With her children, no partner	24	17.3%
House of residence n%	Apartment	52	37.4%
	Garden site	54	38.8%
	Detached house with garden	33	23.7%
Education n (%)	Below high school	61	43.9%
	High school and above	78	56.1%
Comorbidity n (%)		75	54%
	Cardiac disease	9	6.5%
	Hypertension	28	20.1%
	Diabetes	9	6.5%
	Chronic lung disease	3	2.2%
	Chronic kidney disease	1	0.7%
	Chronic liver disease	8	5.8%
	Chronic rheumatic disease	4	2.9%
	Cancer	13	9.4%
Covid-survivors n%		13	9.4%
Hospital-stay due to Covid (days)		9.61 ± 2.84	(6-15)

mean ± standard deviation; BMI 1: pre-quarantine body mass index; BMI 2: post-quarantine body mass index

SarQol Question 21 asked, 'Has there been any change in your physical activity (movement) / sport?'In response, 1.4% of participants reported increased physical activity, 53.6%reported decreased physical activity, 20% reported unchanged physical activity and 24.3% reported not exercising at all.

SarQol Question 22 asked, 'There has been a change in the work you do in your spare time (going out to dinner, dealing with gardening, repair and installation work, hunting/fishing, participating in collective activities (coffee shop, local, associations), card games, going for a walk, etc.).'In response,

70.5% of participants reported decreased leisure activities, 10.1% reported no change, 13.6% reported not having any leisure-time activities and 0.7% reported increased leisure activities.

Participants' mean total SarQol score 66.91 ± 14.35 (34.90–96.00), and the scores for the SarQol subscales are shown in Table 2. Compared to just before the pandemic, 53.6% of participants reported a decrease in their exercise levels, and 24.3% reported not exercising at all. Only SarQol 3, body image (p = 0.11), and SarQol 6, leisure activities (p< 0.001), were significantly better among the exercisers group (n = 105) compared to the non-exercisers group (n = 34) (Table 3).The SarQol total and SarQol1,2, 4,5 and 6 sub-parameters were significantly lower – and GDS and GAS were significantly higher – for participants who had suffered from COVID compared to participants who had not suffered from COVID (Table 4).

Table 2: Participants' SARQOL and its sub-parameters, depression and anxiety status

SARQOL total	66.4	(34.90-96)
SARQOL 1 (physical and mental	72.2	(28.90-100)
SARQOL 2 (locomotion)	66.7	(25-100)
SARQOL 3 (body composition)	79.2	(8.30-100)
SARQOL 4 (functionality)	76.9	(38.50-100)
SARQOL 5 (activities of daily living)	60	(13.30-95)
SARQOL 6 (leisure activities)	33.3	(0-66.50)
SARQOL 7 (fears)	50	(50-100)
GDS-SF	4	(0-14)
GAS	25	(1-70)

SARQOL: The Sarcopenia Quality of Life; GDS-SF: Geriatric Depression Scale-Short Form; GAS: Geriatric Anxiety Scale; median (minimum-maximum)

Table 3: Comparison between exercising (Group 1) and non-exercising (Group 2)

	Group 1 (n=105)	Group 2 (n=34)	p-value
SARQOL total	65.80 (40.80-96.00)	64.35 (34.90-91.30)	0.432
SARQOL 1 (physical and mental health)	68.90(27.80-100)	72.75(27.80-100)	0.900
SARQOL 2 (locomotion)	68.80(25.00-100)	66.65(25.00-100)	0.517
SARQOL 3 (body composition)	79.20(8.30-100)	70.80(37.50-100)	**0.011**
SARQOL 4 (functionality)	75.00 (42.30-100)	75.00 (38.50-96.40)	0.668
SARQOL 5 (activities of daily living)	58.30 (23.20-95.00)	58,35 (13.30-93.30)	0.776
SARQOL 6 (leisure activities)	33.30 (16.60-66.50)	16.60 (0-49)	**<0.001**
SARQOL 7 (fears)	50.00(50.00-100)	50.00(50.00-100)	0.615
GAS	24.50(1-70)	24(4-61)	0.728
GDS-SF	3(0-14)	4(0-13)	0.959
Age	72.15±5.21	72.23±6.03	0.877
Gender	64 females (61%) / 41 males (39%)	20 females (58.8%) / 14 males (41.2%)	0.826

SARQOL: The Sarcopenia Quality of Life; GDS-SF: Geriatric Depression Scale-Short Form; GAS: Geriatric Anxiety Scale; median (minimum-maximum)

Table 4: Comparison between Covid-survivors (Group 1) and non-Covid (Group 2)

	Group 1 (n=13)	Group 2 (n=126)	p-value
SARQOL total	53.50(38.80-71.20)	67.75(34.90-96.00)	**<0.001**
SARQOL 1 (physical and mental health)	52.20(34.40-72.20)	72.20(27.80-100)	**<0.001**
SARQOL 2 (locomotion)	44.40(25.00-72.20)	69.40 (25.00-100)	**0.001**
SARQOL 3 (body composition)	70.80(37.50-91.70)	79.20(8.30-100)	0.196
SARQOL 4 (functionality)	59.60(38.50-82.70)	76.90(40.40-100)	**0.001**
SARQOL 5 (activities of daily living)	46.70(13.30-78.30)	60.00(20.00-95.00)	**0.016**
SARQOL 6 (leisure activities)	33.30(0-33.30)	33.30(0-66.50)	**0.005**
SARQOL 7 (fears)	50.00(50.00-100)	50.00(50.00-100)	0.237
GDS-SF	9(4-14)	3(0-14)	**<0.001**
GAS	35(24-60)	23(1-70)	**<0.001**
Age	74(70-80)	71(65.00-86.00)	**0.049**
Gender	5 males (%38.5)/ 8 females (%61.5)	50males (%39.6)/ 79females (%60.4)	0.932

SARQOL: The Sarcopenia Quality of Life; GDS-SF: Geriatric Depression Scale-Short Form; GAS: Geriatric Anxiety Scale; median (minimum-maximum)

Meanwhile, participants' median GDS was determined as 4 (0–14), and 23.7% were mildly depressed, 15.1% were moderately depressed and 5.8% were severely depressed. The median GAS value was calculated as 25 (1–70) (Table 2). A statistically significant negative correlation was found between GDS, GAS and SarQol scores. As SarQol scores increased, anxiety and depression scores decreased (Table 5).

Table 5: Relationship between SARQOL and depression and anxiety

	GDS-SF		GAS	
	r_s	p-value	r_s	p-value
SARQOL total	-0.479	**<0.001**	-0.479	**<0.001**
SARQOL 1 (physical and mental health)	-0.476	**<0.001**	-0.490	**<0.001**
SARQOL 2 (locomotion)	-0.321	**<0.001**	-0.476	**<0.001**
SARQOL 3 (body composition)	-0.449	**<0.001**	-0.321	**<0.001**
SARQOL 4 (functionality)	-0.314	**<0,001**	-0.449	**<0.001**
SARQOL 5 (activities of daily living)	-0.162	**<0.001**	-0.314	**<0.001**
SARQOL 6 (leisure activities)	-0.162	0,060	-0.162	**<0.001**
SARQOL 7 (fears)	-0.351	**<0.001**	-0.351	**<0.001**

SARQOL: The Sarcopenia Quality of Life; GDS-SF: Geriatric Depression Scale-Short Form; GAS: Geriatric Anxiety Scale

In response to the question, 'What do you want to do most when the quarantine days are over?' 54 participants stated that they wanted to be with their families and relatives and to go to their hometown, 29 said they wanted to travel, 26 said wanted to go shopping, 16 said they wanted to meet with their friends more often and 14 said they wanted to walk outside comfortably.

Discussion

This study's results showed a gradual decline in respondents' physical functions and, hence, in the sarcopenic QoL of elderly individuals whose movements were restricted to their homes. This decline was more pronounced among participants who had had COVID and who did not do physical activity/exercise at home during this period, and this inactivity was found to be associated with anxiety and depression.

Sarcopenia is an age-related decline in muscle mass, strength and quality that begins in patients' 40s and significantly contributes to poor health and disability among older adults. Sarcopenia has been associated with comorbidities, poor physical performance, physical disability, depression, hospitalisation, functional decline, falls and mortality [8]. The most important factor in the aetiology is a decrease in

activity levels and malnutrition [16]. Patel et al. found that men and women with sarcopenia were shorter and lighter and had smaller waist, hip and mid-thigh circumferences than their peers without sarcopenia; also, their study found that the Timed Up and Go Test and the chair-up test were performed more slowly by people with sarcopenia [17]. Home quarantine, which has been applied to control the COVID-19 pandemic, both restricts movements and limits social communication among people who are restricted to their homes for long times. A survey study reported an increase in daily sitting time, a 33.5% decrease in physical activity and a 42.7% decrease in metabolic equivalents (MET) of the task [18]. During these periods, the elderly population is especially exposed to stricter isolation than the general population. Social isolation among older adults can increase their risk of cardiovascular, autoimmune, neuro-cognitive and mental health problems. Home confinement also carries a greater risk of inactivity. As a result, quarantined seniors may face an increased risk of balance disorders and falls [7,8]. Quarantine and social isolation are also known to lead to increased stress and anxiety levels [19]. This psychological stress can also lead to poorer dietary choices, reducing protein intake by increasing the tendency to favour foods rich in sugar and/or fat. Such dietary changes are also associated with obesity, hypertension, dyslipidaemia and metabolic syndrome [20]. Short-term reduced activity has been shown to result in a rapid loss of muscle mass and physical function – even among young adults [21]. Studies have shown that individuals have lower step counts and heart rates and spend more time on sedentary activities, such as using their phones, during COVID-19 lockdowns [22].

In the current study, 54% of our study population had at least one comorbidity. Compared to before the pandemic, our study's participants had generally complained of weight gain during the pandemic. Moreover, participants reported significant reductions in muscle strength, muscle mass, energy, physical capacity and walking function. During the pandemic, 71.8% had a balance disorder and 43% had a fall that did not result in a known fracture.

The SARCPH study showed a decrease in QoL areas, especially physical functions, among sarcopenic patients [23].In one study, mean SarQoL scores were reported as 58.43±17.13 for Sarcopenic patients and 69.89±13.31 for non-sarcopenic patients [24]. In our study, the mean SarQol total value during the pandemic period was found to be 66.91 ± 14.35.

Age-related declines in muscle mass are mainly due to the selective atrophy of type II fibres. Regular resistance exercise has been shown to reduce this decrease in type II fibres. Studies have shown that older people who use lifelong resilient exercise programmes have significantly higher rates of strength development and increased muscle size compared to older people who do not use these programmes [25]. While studies have reported that differences in exercise intensities among elderly patients may affect their results differently, some studies have also reported that such programmes are equally effective at varying intensities [26]. Minimally supervised exercise at home has been reported to be safe and capable of improving functional performance among elderly individuals without causing a significant change in muscle strength or endurance [27]. On the other hand, Nordic walking has been reported as

more effective than general exercise for physical function and depression among elderly patients [28]. Our subjects exercised at a low intensity. Comparing participants who exercised and those who did not, only SarQol 3 (body image) and SarQol 6 (leisure activities) were significantly better among exercisers. According to our survey results, 24.3% of participants did not exercise at all, and 53.6% of participants who did exercise reported a decrease in exercise levels compared to before the pandemic. Our finding of no difference in sarcopenic QoL even if patients exercised can be explained by pandemic responses' prevention of walking. This finding also supports Lee's results.

This hyperinflammatory state (SARS-CoV-2), combined with inactivity and inadequate food intake, has also been noted as a risk factor for acute sarcopenia. Prolonged bed rest poses a greater risk of muscle loss, especially for older individuals [25]. This risk is particularly important, given that hospitalisation rates are higher for older individuals. The average hospital stay length due to COVID-19 has been reported as a median of 22 days (12–42 days) [2]. We found that 9.4% of our study population had had COVID, and these participants' average hospital stay was nine days, with no intensive-care admissions. When we compared patients with and without COVID, the SarQol total, physical and mental health, locomotion, functionality, daily life activities and fear sub-parameters were significantly worse among the group with COVID. Moreover, anxiety and depression levels were higher in the group with COVID.

One important finding of our study is that participants who had suffered from SARS-CoV-2 infection had higher depression and anxiety symptoms than the group that did not. These findings actually support the findings of previous studies investigating SARS-CoV-2 infection's psychological effects among the elderly population [29]. Factors such as having negative expectations about the disease, significantly reduced kin support (due to strict quarantine restrictions and fear of contagion) may be responsible for these results. Moreover, in low-income countries such as Turkey, where public social services are insufficient, the deterioration of traditional solidarity systems could worsen these difficulties.

It has been reported that this social disconnection exposes older adults to a greater risk of depression and anxiety. Also, this increase in physical health problems means that the psychological burden of isolation becomes more severe because elderly people's mental states are directly affected by their physical health and functionality [7-9]. Consistent with the literature, we found a negative correlation between SarQol levels and depression and anxiety levels. When the pandemic ends, the majority of our study's participants wanted most to meet and cuddle with their children, grandchildren, friends and relatives.

Our study was planned as a remote access questionnaire, given its safety for the elderly population under pandemic conditions, and patients' own subjective evaluations were taken as our study's basis. The SarQol questionnaire has been reported to be able to detect changes over time, and it is an appropriate tool for assessing sarcopenic populations' QoL [17]. However, large-scale studies are needed to evaluate the pandemic's effects on sarcopenia-related QoL among elderly people and its results (such as falls,

fractures, muscle strength and mass changes and muscle performance measurements) with objective data.

This study confirmed that home isolation significantly regresses physical function in the population over-65. As a result, a significant increase in body mass index (BMI) was detected, and participants' having had COVID and not exercising at home both negatively affected their QoL. This situation is associated with anxiety and depression. To increase elderly population' QoL, encouraging exercise and nutrition practices and encouraging social solidarity is necessary. Projects should be developed and implemented to provide the necessary remote supervision and guidance for this encouragement.

Conflict of interest

On behalf of all authors, the corresponding author states that there is no conflict of interest.

Financial Disclosure

No financial support was provided for the study.

REFERENCES

1. Shahriar, S., Rana, M. S., Hossain, M., Karim, A., Mredula, T. N., Nourin, N., ... & Amran, M. (2021). COVID-19: epidemiology, pathology, diagnosis, treatment, and impact. *Current Pharmaceutical Design*, *27*(33), 3502-3525.
2. Grasselli, G., Greco, M., Zanella, A., Albano, G., Antonelli, M., Bellani, G., ... & Zoia, E. (2020). Risk factors associated with mortality among patients with COVID-19 in intensive care units in Lombardy, Italy. *JAMA internal medicine*, *180*(10), 1345-1355.
3. Cangiano, B., Fatti, L. M., Danesi, L., Gazzano, G., Croci, M., Vitale, G., ... & Bonomi, M. (2020). Mortality in an Italian nursing home during COVID-19 pandemic: correlation with gender, age, ADL, vitamin D supplementation, and limitations of the diagnostic tests. *Aging (Albany NY)*, *12*(24), 24522.
4. Mayr, V., Nußbaumer-Streit, B., & Gartlehner, G. (2020). Quarantine Alone or in Combination with Other Public Health Measures to Control COVID-19: A Rapid Review (Review). *Gesundheitswesen (Bundesverband der Arzte des Offentlichen Gesundheitsdienstes (Germany))*, *82*(6), 501-506.
5. Lee, K., Jeong, G. C., & Yim, J. (2020). Consideration of the psychological and mental health of the elderly during COVID-19: A theoretical review. *International journal of environmental research and public health*, *17*(21), 8098.
6. Gardiner, C., Geldenhuys, G., & Gott, M. (2018). Interventions to reduce social isolation and loneliness among older people: an integrative review. *Health & social care in the community*, *26*(2), 147-157.
7. Herbolsheimer, F., Mosler, S., & Peter, R. (2017). Relationship between social isolation and indoor and outdoor physical activity in community-dwelling older adults in Germany: Findings from the ActiFE study. *Journal of aging and physical activity*, *25*(3), 387-394.
8. Kirwan, R., McCullough, D., Butler, T., Perez de Heredia, F., Davies, I. G., & Stewart, C. (2020). Sarcopenia during COVID-19 lockdown restrictions: long-term health effects of short-term muscle loss. *GeroScience*, *42*(6), 1547-1578.
9. Herbolsheimer, F., Ungar, N., & Peter, R. (2018). Why is social isolation among older adults associated with depressive symptoms?

The mediating role of out-of-home physical activity. *International journal of behavioral medicine*, *25*, 649-657.

10. Fábrega-Cuadros, R., Hita-Contreras, F., Martínez-Amat, A., Jiménez-García, J. D., Achalandabaso-Ochoa, A., Lavilla-Lerma, L., ... & Aibar-Almazán, A. (2021). Associations between the severity of sarcopenia and health-related quality of life in community-dwelling middle-aged and older adults. *International Journal of Environmental Research and Public Health*, *18*(15), 8026.
11. Beaudart, C., Locquet, M., Reginster, J. Y., Delandsheere, L., Petermans, J., & Bruyère, O. (2018). Quality of life in sarcopenia measured with the SarQoL®: impact of the use of different diagnosis definitions. *Aging clinical and experimental research*, *30*, 307-313.
12. Erdogan, T., Eris, S., Avci, S., Oren, M. M., Kucukdagli, P., Kilic, C., ... & Bahat, G. (2021). Sarcopenia quality-of-life questionnaire (SarQoL)®: translation, cross-cultural adaptation and validation in Turkish. *Aging Clinical and Experimental Research*, 1-10.
13. Yesavage, J. A., & Sheikh, J. I. (1986). 9/Geriatric depression scale (GDS) recent evidence and development of a shorter version. *Clinical gerontologist*, *5*(1-2), 165-173.
14. Durmaz, B., Soysal, P., Ellidokuz, H., & Isik, A. T. (2018). Validity and reliability of geriatric depression scale-15 (short form) in Turkish older adults. *North Clin Istanb*, *5*(3), 216-220.
15. Karahan, F. S., Hamarta, E., & Karahan, A. Y. (2018). The Turkish adaptation and psychometric properties of the Geriatric Anxiety Scale. *Mental Illness*.
16. Mijnarends, D. M., Koster, A., Schols, J. M., Meijers, J. M., Halfens, R. J., Gudnason, V., ... & Harris, T. (2016). Physical activity and incidence of sarcopenia: the population-based AGES—Reykjavik Study. *Age and ageing*, *45*(5), 614-620.
17. Patel, H. P., Syddall, H. E., Jameson, K., Robinson, S., Denison, H., Roberts, H. C., ... & Aihie Sayer, A. (2013). Prevalence of sarcopenia in community-dwelling older people in the UK using the European Working Group on Sarcopenia in Older People (EWGSOP) definition: findings from the Hertfordshire Cohort Study (HCS). *Age and ageing*, *42*(3), 378-384.
18. Ammar, A., Brach, M., Trabelsi, K., Chtourou, H., Boukhris, O., Masmoudi, L., ... & Hoekelmann, A. (2020). Effects of COVID-19 home confinement on physical activity and eating behaviour Preliminary results of the ECLB-COVID19 international online-survey. *MedRxiv*, 2020-05.
19. Lei, L., Huang, X., Zhang, S., Yang, J., Yang, L., & Xu, M. (2020). Comparison of prevalence and associated factors of anxiety and depression among people affected by versus people unaffected by quarantine during the COVID-19 epidemic in Southwestern China. *Medical science monitor: international medical journal of experimental and clinical research*, *26*, e924609-1.
20. Silva Meneguelli, T., Viana Hinkelmann, J., Hermsdorff, H. H. M., Zulet, M. Á., Martínez, J. A., & Bressan, J. (2020). Food consumption by degree of processing and cardiometabolic risk: a systematic review. *International journal of food sciences and nutrition*, *71*(6), 678-692.
21. Abadi, A., Glover, E. I., Isfort, R. J., Raha, S., Safdar, A., Yasuda, N., ... & Tarnopolsky, M. (2009). Limb immobilization induces a coordinate down-regulation of mitochondrial and other metabolic pathways in men and women. *PloS one*, *4*(8), e6518.
22. Sun, S., Folarin, A. A., Ranjan, Y., Rashid, Z., Conde, P., Stewart, C., ... & RADAR-CNS Consortium. (2020). Using smartphones and wearable devices to monitor behavioral changes during COVID-19. *Journal of medical Internet research*, *22*(9), e19992.
23. Tsekoura, M., Kastrinis, A., Katsoulaki, M., Billis, E., & Gliatis, J. (2017). Sarcopenia and its impact on quality of life. *GeNeDis 2016: Genetics and Neurodegeneration*, 213-218.
24. Dzhus, M., Dzhus, M., Masnyi, M., Kulyk, M., Mostbauer, H., Ivashkivsky, O., ... & Beaudart, C. (2020). Cross-sectional Evaluation of the Sarcopenia Quality of Life (SarQoL) questionnaire: translation and validation of its psychometric properties. *Annals of geriatric medicine and research*, *24*(2), 139.
25. Aagaard, P., Magnusson, P. S., Larsson, B., Kjaer, M., & Krustrup, P. (2007). Mechanical muscle function, morphology, and fiber type in lifelong trained elderly. *Medicine & Science in Sports & Exercise*, *39*(11), 1989-1996.
26. Shin, Y. (1999). The effects of a walking exercise program on physical function and emotional state of elderly Korean

women. *Public Health Nursing*, *16*(2), 146-154.

27. Nelson, M. E., Layne, J. E., Bernstein, M. J., Nuernberger, A., Castaneda, C., Kaliton, D., ... & Fiatarone Singh, M. A. (2004). The effects of multidimensional home-based exercise on functional performance in elderly people. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, *59*(2), M154-M160.
28. Lee, H. S., & Park, J. H. (2015). Effects of Nordic walking on physical functions and depression in frail people aged 70 years and above. *Journal of physical therapy science*, *27*(8), 2453-2456.
29. Mowla, A., Ghaedsharaf, M., & Pani, A. (2022). Psychopathology in elderly COVID-19 survivors and controls. *Journal of geriatric psychiatry and neurology*, *35*(3), 467-471.