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## Geriatric Nursing

journal homepage: [www.gnjournal.com](http://www.gnjournal.com)

# The effects of fear of COVID-19, loneliness, and resilience on the quality of life in older adults living in a nursing home

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## ARTICLE INFO

## Article history:

Received 26 July 2021

Received in revised form 17 September 2021

Accepted 17 September 2021

Available online 25 September 2021

## Keywords:

COVID-19

Fear

Loneliness

Resilience

Older adults

Nursing home

Quality of life

## ABSTRACT

This study aimed to evaluate the fear of COVID-19, loneliness, resilience, and quality of life levels in older adults in a nursing home during the pandemic, and the effects of these variables and descriptive characteristics on their quality of life.

Data were collected using a participant information form, the Mini Mental State Exam (MMSE), the Brief Resilience Scale, the Fear of COVID-19 Scale (FCV-19S), the Loneliness Scale for Elderly (LSE), and the World Health Organization Quality of Life-BREF Turkish Version (WHOQOL-BREF-TR). Regarding the WHOQOL-BREF-TR scale, being male, history of chronic disease, MMSE score, and the changes in sleep pattern significantly affected the physical dimension ( $R^2=0.353$ ,  $p<0.01$ ) while age, and MMSE and LSE scores significantly affected the psychological dimension ( $R^2=0.364$ ,  $p<0.01$ ). Also, the MMSE, FCV-19S, and LSE scores significantly affected the social relations dimension ( $R^2=0.234$ ,  $p<0.01$ ) while MMSE, FCV-19S, and LSE scores significantly affected the environmental dimension ( $R^2=0.351$ ,  $p<0.01$ ).

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## Introduction

COVID-19 spread quickly across the world following the first outbreak in Wuhan, China in December 2019. The World Health Organization (WHO) declared the COVID-19 infectious disease a pandemic on March 11, 2020.<sup>1</sup> Older adults are the most vulnerable age group in terms of experiencing more severe symptoms due to physiological causes (such as decline in immune function, malnutrition, etc.) and comorbidities (such as hypertension, cardiovascular disease, diabetes, chronic respiratory disease, and chronic kidney disease, etc.), and having a higher risk of death from COVID-19.<sup>2-5</sup> In Turkey, individuals aged 65 and over constitute 11% of the reported patient numbers and 72% of deaths.<sup>6</sup> The risk has been reported to be even higher for older adults living in nursing homes<sup>7</sup>, where approximately two-thirds of them are infected with COVID-19 within three weeks, and the mortality rate is 33%.<sup>8</sup>

The combined effects of the media's constant focus on mortality rates, especially the high mortality rates in older adults, and the social isolation, quarantine, and physical distancing measures applied to

prevent the transmission of the disease can adversely affect the psychological health of older adults<sup>9,10</sup> and can be cause various problems, such as fear, anxiety, and loneliness.<sup>2,11,12</sup> Studies have reported that all older adults groups experienced depression and anxiety during the COVID-19 pandemic,<sup>13</sup> and the rate of reporting the fear of COVID-19 increased with age.<sup>14</sup> It has been reported that the older adults are the age group that is most affected by the fear of COVID-19 and loneliness in all countries regardless of the levels of COVID-19 cases and deaths.<sup>15</sup> Studies have indicated that the long-term restrictive measures implemented around the world, including Turkey, may lead to increased incidences of loneliness in older adults living in nursing homes<sup>16</sup> and at home.<sup>9,17</sup> The restrictive measures, fear, and loneliness could adversely affect the physical, psychological, mental health, life style, and quality of life (QOL) of older adults.<sup>5,17-20</sup>

The term psychological resilience is defined as the ability to adapt to challenging circumstances in a positive manner.<sup>21</sup> It has been reported that the restrictions imposed on individuals aged 65 and over during the COVID-19 pandemic, and the social difficulties,<sup>22</sup> fear, stress, and loneliness that the pandemic has generated may weaken the resilience of older adults and thereby endanger their health and QOL.<sup>23</sup>

According to the WHO, QOL refers to individuals' perceptions of their position in life and their expectations, standards, and concerns.<sup>24</sup> The concept of QOL in old age has become a major topic of

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interest on account of the current rising population of older adults and the increase in the length of life. Previous studies have shown that demographic characteristics,<sup>25</sup> a history of chronic disease,<sup>26</sup> and sleep quality<sup>27</sup> are among the variables that affect the quality of life of the older adults. A limited number of studies have evaluated the quality of life of the older adults during the COVID-19 pandemic; however, their study results have varied from study to study.<sup>1,2</sup> In one study, half of the older adults over the age of 70 who applied to the hospital as outpatients during the COVID-19 pandemic reported that their QOL decreased,<sup>1</sup> while in another study, it was reported that older adults considered their QOL to be higher compared to that of the young during the COVID-19 pandemic.<sup>2</sup> In the literature review conducted for the present study, there was no study found that evaluated the QOL and the affecting factors the QOL (such as fear of COVID-19, loneliness, resilience, age, gender, history of chronic disease, changing sleep pattern, and mental status, etc.) of older adults living in nursing homes during the pandemic. Determining the quality of life of nursing home older adults, one of the groups most vulnerable to COVID-19, and the factors that affect their quality of life will help with planning and implementing interventions to increase their quality of life. This study aimed to evaluate the fear of COVID-19, loneliness, resilience, and quality of life levels in older adults in a nursing home during the pandemic, and the effects of these variables and descriptive characteristics (age, gender, history of chronic disease, changing sleep pattern, and mental status) on their QOL.

In this study, the following questions were addressed: *i*) What are the fear of COVID-19, loneliness, resilience, and QOL levels of older adults in nursing homes during the pandemic? *ii*) Do fear of COVID-19, loneliness, resilience and descriptive characteristics (age, gender, history of chronic disease, sleep patterns, and mental health) affect the QOL of older adults in nursing homes during the pandemic?

## Materials and methods

### Study design and sample

This study was designed as a descriptive and correlational study. The study population included 440 older adults residing in a nursing home affiliated with the Istanbul Darulaceze Directorate of Hospice between April 5, 2021 and May 20, 2021. The inclusion criteria for the study were as follows: be over 65 years old, voluntarily agree to participate in the study, have a Standardized Mini Mental Test Score of 24 or higher, residence within the nursing home for at least one year, and speak and understand Turkish. Of the population of 440 older adults, 230 did not agree to voluntarily participate in the study, 47 had MMSE test scores below 24, 33 had been living in the nursing home for less than a year, and 27 had communication problems, and therefore these individuals were excluded from the study. The final sample consisted of the remaining 103 individuals who met the inclusion criteria for the study.

The older adults residing in the institution where the study was conducted were housed in a two-storey building that had rooms for 3, 4, 6, 7, and 8 people. A total of 28 nurses, 9 physicians, 2 physiotherapists, 2 social workers, and 1 food engineer were working in the nursing home at the time of the study. The in-house psychologist had recently left the institution at the time of the study. Routine examinations and treatments of the older adults living in the nursing home were performed in-house, but in cases of emergency or when further examination was needed, they were referred to the hospital. The nursing home features a rehabilitation unit where the older adults are able to socialize, spend their free time, and ply their respective skills to produce items (knitting, carpet weaving, painting, etc.), for which they get paid. However, during the collection of the study data, this unit was closed as a result of the restrictive measures imposed during the pandemic. The institution has been closed to

visitors during the pandemic, and the older adults residing in the nursing home have been only allowed to contact their relatives by telephone.

### Data collection forms

The data of the study were collected using a participant information form, the Mini Mental State Exam (MMSE), the Brief Resilience Scale (BRS), the Fear of COVID-19 Scale (FCV-19S), the Loneliness Scale for Elderly (LSE), and the World Health Organization Quality of Life-BREF Turkish Version (WHOQOL-BREF-TR). The participating older adults were asked to respond to the questions and scale items in a manner that best reflected their experiences during the pandemic.

Participant Information Form: This form consists of 11 items related to the descriptive characteristics of the older adults, including age, gender, marital status, educational status, economic status, presence of children, duration of stay in the institution, number of people in the residing room, history of chronic disease, history of COVID-19, and sleep patterns during the COVID-19 pandemic.

The Mini Mental State Exam (MMSE): MMSE, which was developed by Folstein et al. in 1975, is a short, standardized questionnaire that can be used to evaluate global cognition. The MMSE includes a total of 11 items arranged under five sub-dimensions, namely, orientation (10 points), recording memory (3 points), attention and accountability (5 points), recall (3 points), and language (9 points), and it is evaluated over a total of 30 points. Scores between “24–30” indicate normal cognitive level, scores between “21–23” indicate mild cognitive impairment, and scores of “20” and below indicate moderate to severe cognitive impairment.<sup>28,29</sup> The MMSE was adapted to the educated portion of Turkish society by Güngen et al. in 2002,<sup>28</sup> and to the uneducated portion of Turkish society by Ertan et al. in 1999.<sup>30</sup> In this study, only those older adults with an MMSE score of 24 and above were included in the study.

Fear of COVID-19 Scale (FCV-19S): The FCV-19S was developed by Ahorsu et al.<sup>31</sup> to measure COVID-19-induced fear levels. Designed as a five-point Likert-type scale, the FCV-19S has seven items, with total possible scores from the FCV-19S ranging between 7 and 35 points. High scores indicate higher levels of COVID-19 fear. The Cronbach's alpha coefficient of the original scale was reported to be .82, while in the Turkish validity and reliability study conducted by Ladiikli et al.,<sup>32</sup> the coefficient was .80. In this study, the Cronbach's alpha coefficient was .81.

Loneliness Scale for Elderly (LSE): This 24-question scale, which was developed by Gierveld and Kamphuis in 1985,<sup>33</sup> was revised by van Tilburg and de Jong Gierveld in 1999.<sup>34</sup> The 3-point Likert-type scale, consisting of 11 items arranged two sub-dimensions, emotional loneliness and social loneliness, was developed to measure the loneliness levels of adults and the elderly. The lowest and highest scores possible from the scale are 0 and 22, respectively. The level of loneliness increases as the scale score increases. In the Turkish validity and reliability study of the scale performed by Akgül and Yeşilyaprak in 2015, the internal consistency coefficients were reported as .79 for emotional loneliness, .81 for social loneliness, and .75 for the total scale.<sup>35</sup> In this study, the Cronbach's alpha internal consistency coefficients were .76 for emotional loneliness, .81 for social loneliness, and .75 for the total scale.

The Brief Resilience Scale (BRS): This scale was developed by Smith et al. in 2008 to measure the psychological resilience of individuals. BRS is a 5-point Likert-type, 6-item, self-report measurement tool. The total possible scores obtainable from the scale vary between 6 and 30, with higher scores indicating higher psychological resilience.<sup>36</sup> In the Turkish validity and reliability study of the scale performed by Doğan in 2015, the Cronbach's alpha coefficient of the scale was .83.<sup>37</sup> In this study, the Cronbach's alpha coefficient was .89.

World Health Organization Quality of Life-BREF Turkish Version (WHOQOL-BREF-TR): This scale was created based on the results of pilot studies performed in 15 centres around the world. From these pilot studies, the 5-point Likert-type WHOQOL-BREF, consisting of 26

questions selected from the 100-question WHOQOL-100 scale, was developed. Physical, psychological, social, and environmental dimension scores are calculated for all items, except for the first two general items. The physical, psychological, social, and environmental dimension scores calculated using a formula vary between 0–100%, and the QOL increases as the score increases.<sup>38</sup> The internal consistency coefficients of the scale adapted to Turkish were reported as .76, .67, .56 and .74 for the physical, psychological, social, and environmental dimensions, respectively.<sup>39</sup> In this study, the internal consistency coefficients were .68, .78, .61 and .76 for the physical, psychological, social, and environmental dimensions, respectively.

#### Ethical considerations

This study was conducted in accordance with the principles outlined in the Declaration of Helsinki. Ethics committee approval (30.12.2020/47) and institutional permission (01.04.2021/730.10-E.2127) were obtained for the implementation of the study. The third researcher, who is a nurse in the institution, shared the Google survey form link with the 333 older adults in nursing homes who met the inclusion criteria by mobile phone (e-mail or WhatsApp) in accordance with the principle of voluntary participation. In the e-mail/ WhatsApp, participants were informed about the purpose of the study, and those that marked the "I agree with participating in the survey" expression at the top of the Google Form were requested to fill out the form. The researcher, who works at this institution, helped 70 adults who wanted to complete the form but could not do so on their own and verbally asked for the help of the researcher, to partially or fully complete the form. The study was completed with 103 older adults.

#### Data analysis

To analyse the data, the SPSS 22 (Statistical Package for Social Sciences Inc, IL, USA) package program was used. Number, percentage, mean, standard deviation, and minimum and maximum values were calculated in descriptive statistics for categorical and continuous variables. Shapiro Wilks, skewness and kurtosis values were used to determine the conformity of the data to the normal distribution, and Pearson correlation coefficient was used to examine the relationship between two normally distributed quantitative variables. Multiple linear regression analysis was performed to determine the factors associated with the physical, psychological, social, and environmental dimensions of the QOL. The level of significance was considered as  $p < 0.05$ .

## Results

#### Participant characteristics

The age of the participants ranged from 65 to 94 years, with the mean age being  $73.33 \pm 6.66$  years, and the MMSE scores were between 24 and 30, with a mean score of  $27.40 \pm 1.90$ . Furthermore, 79.6% of the participants were male, 95.1% were single, 39.8% were primary school graduates, and 86.4% had a moderate economic status. The duration of stay in the institution for 54.4% of the participants was 1–5 years, only 17.5% of the participants had children, and 90.3% of them stayed in a room with four or more people. Of the almost half (45.6%) the participants who had COVID-19, 79.6% had a history of chronic disease, and 81.6% of the participants had no change in sleep patterns during the pandemic (Table 1).

#### Distribution of the mean FCV-19S, LSE, BRS, and WHOQOL-BREF-TR scores

The mean FCV-19S score of the participants was  $19.13 \pm 4.28$  (11–29), the mean LSE score was  $8.92 \pm 4.56$  (0–20), and the mean BRS score was

**Table 1**  
Characteristics of the participants (N=103).

Characteristics	Mean±SD	Min-Max
Age (year)	73.33±6.66	(65–94)
MMSE score	27.40±1.90	(24–30)

  

Characteristics	n	%
<b>Gender</b>		
Male	82	79.6
Female	21	20.4
<b>Marital status</b>		
Married	5	4.9
Single (never married, widowed, divorced)	98	95.1
<b>Educational status</b>		
Literate	8	7.8
Primary school	41	39.8
Secondary school	23	22.3
High school	24	23.3
Undergraduate	7	6.8
<b>Economic status</b>		
Good	11	10.7
Moderate	89	86.4
Poor	3	2.9
<b>Presence of children</b>		
Yes	18	17.5
No	85	82.5
<b>Duration of stay in the institution</b>		
1–5 years	56	54.4
6–10 years	24	23.3
More than 11 years	23	22.3
<b>Number of people in the shared room</b>		
Three	10	9.7
Four or more	93	90.3
<b>History of chronic disease</b>		
Yes	82	79.6
No	21	20.4
<b>History of COVID-19</b>		
Yes	47	45.6
No	56	54.4
<b>Sleep patterns during the COVID-19 pandemic</b>		
No change.	84	81.6
I sleep less.	11	10.7
I sleep more.	2	1.9
I wake up frequently at night.	2	1.9
I have difficulty falling asleep.	4	3.9
<b>Total</b>	103	100

$18.25 \pm 1.73$  (15–22). The mean scores on the physical dimension, mental dimension, social relations dimension, and environmental dimension of the Short Form WHOQOL-BREF-TR were  $60.47 \pm 13.06$  (17.86–82.14),  $67.19 \pm 13.52$  (33.33–100),  $56.71 \pm 16.75$  (8.33–100), and  $66.74 \pm 11.10$  (37.50–96.88), respectively (Table 2).

**Table 2**  
Distribution of the mean FCV-19S, LSE, BRS, and WHOQOL-BREF-TR scores.

Scales	Min	Max	Mean±SD
Fear of COVID-19 Scale	11.00	29.00	19.13±4.28
Loneliness Scale for Elderly	0.00	20.00	8.92±4.56
The Brief Resilience Scale	15.00	22.00	18.25±1.73
WHOQOL-BREF-TR			
Physical dimension	17.86	82.14	60.47±13.06
Mental dimension	33.33	100.00	67.19±13.52
Social relations dimension	8.33	100.00	56.71±16.75
Environmental dimension	37.50	96.88	66.74±11.10

FCV-19S: Fear of COVID-19 Scale; LSE: Loneliness Scale for Elderly; BRS: The Brief Resilience Scale; WHOQOL-BREF (TR): World Health Organization Quality of Life BREF Turkish Version (TR).

**Table 3**

Correlation between Age and the mean MMSE, FCV-19S, LSE, BRS, and Short Form WHOQOL-BREF-TR scores.

		Physical dimension	Mental dimension	Social relations dimension	Environmental dimension
Age	r	-.095	-.354**	-.150	-.234*
	p	.339	.000	.130	.017
MMSE	r	.469***	.432***	.328**	.365***
	p	<.001	<.001	.001	<.001
FCV-19S	r	-.109	.118	.173	.221*
	p	.274	.236	.081	.025
LSE	r	-.233*	-.312**	-.223*	-.354***
	p	.018	.001	.024	<.001
BRS	r	.117	.133	-.067	.103
	p	.239	.179	.499	.302

Pearson Correlation.

\*\* \*\*\*p&lt;0.001, \*\*p&lt;0.01

\* p&lt;0.05, MMSE: The Mini Mental State Exam; FCV-19S: Fear of COVID-19 Scale; LSE: Loneliness Scale for Elderly; BRS: The Brief Resilience Scale; WHOQOL-BREF-TR: World Health Organization Quality of Life BREF - TR.

**Correlation between Age, MMSE, FCV-19S, LSE, BRS, and short form WHOQOL-BREF-TR**

There was a weak, negative correlation between age and the mean scores on the mental dimension and environmental dimension of the Short Form WHOQOL-BREF-TR ( $p<0.05$ ) and a positive correlation between the MMSE and the mean scores on all dimensions of the Short Form WHOQOL-BREF-TR ( $p<0.01$ ). A positive, weak correlation was found between FCV-19S and the mean scores on the environmental dimension of the Short Form WHOQOL-BREF-TR ( $p<0.05$ ) and a weak, negative correlation between the mean total score of the LSE and the mean scores on all dimensions of the Short Form WHOQOL-BREF-TR ( $p<0.05$ ). There was no statistically significant correlation between the BRS and Short Form WHOQOL-BREF-TR dimensions (Table 3).

**The factors affecting quality of life**

Being male ( $\beta$ : -.045), history of chronic disease ( $\beta$ : -.236), MMSE score ( $\beta$ : .387), and changes in sleep pattern ( $\beta$ : -.198) significantly affected scores on the physical dimension of the QOL scale ( $R^2=0.353$ ,  $p<0.01$ ). Age ( $\beta$ : -.215), MMSE score ( $\beta$ : .354) and LSE score ( $\beta$ : -.234) significantly affected scores on the mental dimension ( $R^2=0.364$ ,  $p<0.01$ ). MMSE score ( $\beta$ : .277), FCV-19S score ( $\beta$ : .231), and LSE score ( $\beta$ : -.264) significantly affected scores on the social relations dimension. Finally, MMSE score ( $\beta$ : .296), FCV-19S score ( $\beta$ : .319) and LSE score ( $\beta$ : -.336) significantly affected scores on the environmental dimension ( $R^2=0.351$ ,  $p<0.01$ ) (Table 4).

**Table 4**

Multiple linear regression analysis of the factors that affect quality of life.

	Physical dimension $\beta$	Mental dimension $\beta$	Social relations dimension $\beta$	Environmental dimension $\beta$
Age	-.055****	-.215***	-.006****	-.076****
Gender	-.045***	.030****	.026****	-.027****
History of chronic disease	-.236**	-.149****	-.134****	-.126****
MMSE	.387*	.354*	.277**	.296**
FCV-19S	-.013****	.140****	.231***	.319**
Change in sleep pattern	-.198***	.041****	-.103****	-.112****
LSE	-.155****	-.234***	-.264***	-.336**
BRS	-.015****	.090****	-.145****	.031****
R	.594	.603	.484	.593
R <sup>2</sup>	.353	.364	.234	.351
$\Delta R^2$	.298	.310	.169	.296
F	6.407*	6.727*	3.599**	6.358*
p	<.001	<.001	.001	<.001

\* p&lt;0.001.

\*\* p&lt;0.01.

\*\*\* p&lt;0.05.

\*\*\*\* p&gt;0.05, Codes are as follows: 0=Female, 1=Male for sex; 0= no change, 1= there is a change for sleep pattern, 0=no, 1=yes for chronic disease.

**Discussion**

The mean FCV-19S score of the older adults residing in a nursing home in Turkey during the COVID-19 pandemic was  $19.13\pm 4.28$ , which means that their fear was moderate considering the minimum and maximum values that the scale can take. In a study conducted in Greece at the beginning of the COVID-19 pandemic, the FCV-19S score of older adults was reported to be  $18.48\pm 5.32$ .<sup>40</sup> In another study conducted in Turkey in June 2020, it was reported that individuals over the age of 65 had a moderate level of fear of COVID-19.<sup>41</sup> The results of both studies are similar to the results of the present study. The moderate level of fear experienced by the older adults in the present study could be attributed to the facts that the data for this study were collected in the latter stages of the pandemic, that the older adults in the nursing home had information about COVID-19, that vaccination studies had started, and that approximately half of them had had COVID-19.

In this study, the older adults had a mean LSE score of  $8.92\pm 4.56$ , indicating, based on the minimum and maximum values that the scale can take, that the older adults' level of loneliness was low. Previous studies conducted in Turkey before the onset of COVID-19 reported that the level of loneliness of older adults in nursing homes was low,<sup>42</sup> while studies on this subject conducted during the pandemic reported that the loneliness levels of older adults was moderate in Turkey,<sup>43</sup> low in Greece,<sup>40</sup> and moderate in Australia.<sup>44</sup> A study conducted in the USA reported that 26% of individuals aged 60 and over experienced loneliness.<sup>45</sup> Although all these results support to some degree the results obtained from the present study, contrary to

the present study's results, one study reported that 57% of people over 70 years of age who were hospitalized during the COVID-19 pandemic experienced loneliness.<sup>46</sup> On the dates during which the study was conducted, the institution was completely closed to visitors within the scope of the restrictive measures applied to nursing homes. Moreover, the psychologist had recently left the institution, and the rehabilitation centre, which plays a key role in the ability of the older adults living in the nursing home to socialize, was closed. Such factors could have negatively impacted the QOL of the older adults in the nursing home. According to a study, in nursing homes, sharing a room with three to five friends and having the opportunity to engage in daily conversations with roommates support social interaction.<sup>47</sup> Phone calls and video calls involving discussion of positive topics to make up for the absence of physical visits for older adults in nursing homes has been reported to be a good form of social support to eliminate the feeling of loneliness.<sup>48</sup> The fact that the older adults included in this study stayed in the same room with at least three people, had social interaction with the personnel who provide health care, food, and cleaning services in the nursing home, and had opportunities to communicate with their families and loved ones with the help of technological tools may have contributed to their low levels of loneliness.

In this study, the mean BRS score was  $18.25 \pm 1.73$ , indicating, based on the minimum and maximum values that the scale can take, that the resilience of the older adults was moderate. Similar to the results obtained from the present study, one study reported that the mean BRS score was  $19.41 \pm 2.67$  in individuals over the age of 65 during the COVID-19 process.<sup>19</sup> Psychological resilience refers to an individual's ability to successfully overcome adverse conditions and adapt to a new situation.<sup>36</sup> While loneliness, negative feelings, and mental illness negatively affect resilience,<sup>45,49,50</sup> well-being, social networking, and positive feelings positively affect resilience.<sup>49,50</sup> The moderate level of psychological resilience seen in this study corresponded with the older adults' mean MMSE scores of 24 and above, their moderate fear of COVID-19 and low levels of loneliness, and the negative circumstances they faced during the pandemic, such as separation from loved ones.

In this study, the QOL of the older adults in the nursing home was slightly above average according to their scores on the physical dimension, mental dimension, social relations dimension, and environmental dimension of the Short Form WHOQOL-BREF-TR. While the dimensions of the QOL most affected by the pandemic were the social relations and physical dimensions, the least affected were the mental dimension and the environmental dimension. In three studies conducted with older adults living in nursing homes before the pandemic in Turkey<sup>51,52</sup> and in a study conducted with older adults during the pandemic in Australia, it was reported that the older adults had an above average score on the QOL scale, with the highest scores being in the environmental and physical dimensions and the lowest score being in the social relations dimension.<sup>44</sup> According to the results of the present study, the older adults' social QOL was least affected by the pandemic, while their mental and environmental QOL were most affected. The social relations dimension of the scale, which was a factor used to evaluate the QOL in this study, addresses relations with other people, sexual life, and satisfaction with the support of friends. In evaluating the frequency of the responses to these specific areas, it was determined that the relations with other people and the level of satisfaction with the support of friends were high, whereas satisfaction with sexual life was low. These results were attributed to the fact that 95.1% of the older adults living in the nursing home were single. In this study, the physical dimension was the second most affected area of QOL during the COVID-19 pandemic. The physical dimension of the scale addresses the ability to maintain daily life and the level of satisfaction with this ability. The curfews and prolonged lockdowns applied to older adults during the

pandemic likely affected their daily life and contributed to their decrease in the quality of physical life. According to the results of the study, the older adults' mental and environmental QOL scores after COVID-19 were at the highest level. The mental dimension of the scale addresses physical and mental satisfaction with life and self-satisfaction in general. Under the environmental dimension of the scale, satisfaction with the opportunities offered in the living environment, the feeling of safety in this environment, and the opportunities to meet physical, intellectual, and mental needs are addressed in general. The activities and care services provided in the nursing home where the study was conducted and the sharing of a room with at least three people or living with peers likely contributed to meeting the physical, intellectual, and mental needs of the older adults in the study, and therefore, their mental and environmental dimension scores were high.

In the study, while being male, having a history of chronic disease, and experiencing a change in sleep patterns negatively affected the physical dimension of the QOL, high MMSE score had a positive effect on this dimension. Contrary to the present study's results, other studies have reported no indication of there being a relationship between gender and physical health in older adults during the pandemic<sup>44</sup> or of men having better physical health than that of women.<sup>51,52</sup> The results from the present study could be attributed to the fact that the majority of the participating older adults were male. In a study conducted in a nursing home before the pandemic, it was reported that the physical QOL of those without chronic diseases was higher, which supports the present study's results.<sup>52</sup> The mean MMSE score of above 24 obtained by the older adults in the present study indicates that they easily understood and complied with the information and measures related to COVID-19, which positively affected their physical QOL. Older people need fewer hours of sleep. However, they do need sufficient sleep for physiological and psychological functions and to keep their quality of life at optimum levels.<sup>53</sup> In a study conducted at an adult day care centre before the pandemic, it was found that the older adults with sleep disorders were inadequately able to maintain their physical functions and had physical and emotional role difficulties.<sup>54</sup> Based on this, it could be argued that the lack of change in sleep patterns of the older adults in this study during the pandemic helped to sustain their physical ability and satisfaction with their daily lives in the nursing home.

In the study, age and LSE score negatively affected the mental dimension of the QOL, while MMSE score positively affected it. The low mental QOL was believed to be due to the difficulties that the decrease in physical and mental functions attending old age create in adapting to an adverse situation like the pandemic. In one study, it was reported that loneliness negatively affected mental health,<sup>44</sup> in another study, it was reported that loneliness predicted the mental health dimension of QOL.<sup>52</sup> Accordingly, practices aimed at reducing loneliness and protecting and improving mental functions of older adults in nursing homes would be useful for keeping their mental health at a high level.

In this study, the MMSE score and FCV-19S score positively affected the scores on the social relations dimension of the QOL, while the LSE score had a negative effect. The participating older adults' MMSE scores of 24 and above suggest that they had positive relations with others. In one of the more surprising results, the older adults with a high fear of COVID-19 had high scores in the social relations dimension, which could be attributed to the sense of safety that these older adults felt as a result of the measures taken in the nursing home and to their physical, social, intellectual and mental needs being met in the nursing home. It was reported in one study that loneliness negatively affected the social health of older adults during the pandemic, which supports the results of the present study.<sup>44</sup> In a study conducted in a nursing home before the pandemic in Turkey, the mean social relations dimension score obtained by older adults

on the QOL was reported to be lower in those who were experiencing loneliness.<sup>52</sup> These results point to the importance of evaluating individuals who have a high level of loneliness, as indicated by low social QOL, and taking measures to reduce the level of loneliness in order to increase social QOL.

In this study, the MMSE score and the FCV-19S score positively affected the environmental dimension of the QOL, whereas the LSE score had a negative effect. The study participants' mean MMSE score of 24 and above suggests that they were adept at making lifestyle changes and adapting to the environment. The older adults who had a high fear of COVID-19 also had a high score in the environmental dimension, which was surprising. This high environmental QOL of the older adults who had a fear of COVID-19 could be attributed to the feeling of safety they had due to the COVID-19-related restrictions and measures implemented in the nursing home environment. Contrary to the present study's results, it was reported in one study that loneliness was not associated with environmental health.<sup>44</sup>

#### Limitations and strengths of the study

This study has a single-center design and is limited by its small sample size. The participants includes older adults who are able to fill out the Google survey form link (sufficient cognitive levels, speak and understand Turkish) and, therefore, the results cannot be generalized to the overall of older adults in a nursing home during the pandemic. However, this study is the first to evaluate the fear of COVID-19, loneliness, resilience, and QOL levels in older adults in a nursing home during the pandemic, and the effects of these variables and descriptive characteristics on their QOL. The results of the study, therefore, will fill the gap in the research on this topic.

#### Conclusion

In this study, COVID-19 fear levels were moderate, loneliness levels were low, resilience levels were moderate, and all dimensions of QOL in the older adults living in the nursing home during the pandemic were slightly above the moderate level. The social relations and physical dimensions had the most impact on QOL, while the mental and environmental dimensions had the least. Being male, having a history of chronic disease, and experiencing a change in sleep patterns negatively affected the physical dimension of the QOL, while mental status had a positive effect on it. Age and loneliness negatively affected the mental dimension of QOL, whereas mental status had a positive effect, and lastly, mental status and fear of COVID-19 had positive effects on the social relations and environmental dimensions of QOL, while loneliness had a negative effect.

Based on these results, it is recommended that initiative be applied to protect the mental status, provide regular sleep patterns, and reduce loneliness levels in order to increase the QOL of older adults in nursing homes during the pandemic. It is further recommended that older adults living in nursing homes be provided with various means of communication, like the telephone, e-mail, and video chat and mobile applications, to prevent loneliness and increase QOL. Lastly, due to the positive effect that a high level of fear was shown to have on the social relations and environmental dimensions of the QOL, it is recommended that fear should be considered as a protective health factor as opposed to viewing it in the traditional way as a factor that negatively affects health.

#### Financial disclosure

The authors declared that this study has received no financial support.

#### Note

Research has not been published in Turkey or abroad, in Turkish or any other language, or has not been sent to a journal for publication. It has not been previously communicated at a congress.

#### Authorship statement

This study was designed and conceptualized by CS, ACA, SYU, FK. Analysis of research data was done by CS, ACA and CS, ACA, SYU, FK contributed in data gathering and interpretation, agreeing on the design and scrutinizing the technical content and write ups of the full manuscript. CS, ACA, SYU, FK after final review of the revised version of the manuscript agreed and approved to be submitted for publication.

#### Ethical considerations

This study was conducted in accordance with the principles outlined in the Declaration of Helsinki. Ethics committee approval (30.12.2020/47) and institutional permission (01.04.2021/730.10-E.2127) were obtained for the implementation of the study.

#### Declaration of Competing Interest

The authors declare that there is no conflict of interest.

#### Acknowledgement

The authors would like to thank all participating in this study.

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