

ORIGINAL ARTICLE

Mental health and factors related to life satisfaction in nursing home and community-dwelling older adults during COVID-19 pandemic in Turkey

Selim ARPACIOĞLU ¹, Murat YALÇIN ², Fatih TÜRKMEÑOĞLU,³ Başak ÜNÜBOL² and Oya ÇELEBI ÇAKIROĞLU ⁴

¹Department of Psychiatry, School of Medicine, Altınbaş University, ²Department of Psychiatry, University of Health Sciences, Erenköy Mental Health and Neurological Diseases Training and Research Hospital, ³Istanbul Kent University and ⁴Department of Nursing Administration, Faculty of Health Sciences, Istanbul Medeniyet University, Istanbul, Turkey

Correspondence: Dr Murat Yalçın, Erenköy Mental Health and Neurological Diseases Training and Research Hospital, 19 Mayıs, Sinan Ercan Cd. No: 23, 34736 Kadıköy/İstanbul, Turkey. Email: muratyalcin@gmail.com

Disclosure: The authors declare they have no conflicts of interest in the research.

Received 27 June 2021; revision received 12 August 2021; accepted 30 August 2021.

Key words: COVID-19, depression, geriatric mental health, life satisfaction, nursing home, older adults.

INTRODUCTION

The coronavirus disease (COVID-19) started in China, spread throughout the world, and was announced as a pandemic on 11 March 2020, by the World Health Organization (WHO).¹ Although COVID-19 has been reported to have an asymptomatic or mild course in the majority of the general population, the infection may cause higher morbidity and mortality rates in the

Abstract

Background: The geriatric population is supposed to be at high risk for psychological distress as well as adverse outcomes and mortality during the COVID-19 pandemic. This study aimed to investigate the levels of depression, anxiety, death anxiety and life satisfaction levels and factors related to life satisfaction in individuals aged 65 years and older during the pandemic and to compare these variables between nursing home (NH) and community-dwelling older adults.

Method: This study has a cross-sectional and descriptive design, and a total of 133 nursing NH and community-dwelling older adults were enrolled in the study. Turkish death anxiety scale (TDAS), life satisfaction scale (SLS) and depression anxiety stress scale-21 (DASS-21) were used for the assessment.

Results: The majority of the older adults had no or mild depression, anxiety and stress symptoms in spite of the prolonged confinements, and were slightly satisfied with their lives. However, depression, anxiety, stress and TDAS levels were higher in participants aged 80 years and older. Residents of NHs had higher TDAS, depression and anxiety levels and lower SLS levels than community-dwelling older adults. Participants who were meeting their children and/or grandchildren less than 2 h a week, were found to have significantly lower SLS and higher depression scores. The increase in depression and TDAS scores predicted a decrease in SLS scores in older adults.

Conclusions: As NH resident older adults have higher psychological distress and decreased life satisfaction due to the social isolation caused by the prolonged confinements, NH staff should be regularly informed on both preventive measures and mental health consequences of the pandemic, and should be trained for basic therapeutic interventions. Older adults should be supported to use telecommunication technologies to contact their families and friends, and participate in safe and accessible person-centred activity programs.

geriatric population and individuals with chronic medical illnesses than the general population. Hence, governments in many countries have considered to implement confinements to contain COVID-19 transmission. It has been reported that individuals aged 80 and older were in the most risky group in which the mortality rate was 14.8% while the mortality rate was around 1% in individuals aged 65 and

younger.^{2,3} Living in nursing homes (NHs) was also found to be a risk factor for mortality due to COVID-19.^{4,5} Accordingly, in Turkey, a curfew was imposed by the government for individuals aged 65 years and older, as of 22 March 2020, as well as in many European countries, and it became a partial curfew at 1 June 2020 due to the decreased rates of contraction in the first wave of the pandemic. The authorised hours varied according to the regions and the contraction rates of the infection during the pandemic. As of 22 November 2020, individuals aged 65 years and over have been allowed to go out between 10:00–13:00 hours.

The rapid spread of the pandemic, relatively higher mortality rates and the uncertainty of the course were reported to cause fear of death and contracting virus, and to have negative impact on mental health in the general population.^{6–8} The pandemic also caused psychological distress and new onset or relapsed mental disorders which have resulted from prolonged social distancing, and also through the negative effects of health-related anxiety, confinements and adverse economic consequences.^{9–11} The prolonged confinements were expected to negatively affect mental health and to cause psychological distress and decrease in life satisfaction for the elderly, and those who are residents in NHs were suggested to be at higher risk during the COVID-19 which has been described as the ‘perfect storm’ for mental health of older people.¹² Physical health conditions which are common in older adults were also considered as risk factors for psychological distress during the pandemic.¹³ The WHO has warned that the risks posed by COVID-19 pandemic and related confinements may cause greater distress and withdrawal in older people, as this population is at high risk for mental disorders such as depression and anxiety, when socially isolated.^{14,15}

Life satisfaction, as the subjective expression of the quality of life, is a concept related to how positively individuals evaluate the quality of their life as a whole. Life satisfaction has been suggested as an important factor for successful ageing and also taken as an indicator of the efficacy in old age.¹⁶ The COVID-19 pandemic and related preventive measures were found to reduce life satisfaction in the general population.^{17,18} Yet, there are still scarce data on the mental health and life satisfaction in both the NH and community-dwelling older adults and related factors such as living environment, and social relations as well as sociodemographic characteristics.

This study aimed: (i) to investigate the levels of depression, anxiety, stress, death anxiety and life satisfaction in individuals aged 65 and older; (ii) to compare these variables regarding sociodemographic characteristics and also between NH and community-dwelling older adults; (iii) and to determine the sociodemographic and psychological factors related to life satisfaction during the COVID-19 pandemic.

METHODS

Study design and sample

This study has a descriptive and cross-sectional design. Two out of 43 elderly NHs in the Asian side of Istanbul were randomly selected, and the older adults staying in these NHs were enrolled in the study. We also included community-dwelling older adults who were living in the same street with the selected NHs as the mental health of elderly individuals could be influenced by area-level factors such as neighbourhood poverty or population density.¹⁹ Among the individuals living in NHs and those who were living in the same street, 72 individuals out of 86 and 78 out of 128, respectively, accepted participation into the study. Seventeen individuals were excluded from the study due to impaired cognition and/or severe medical condition (e.g., cancer, chronic organ failure, neurological disorders) that may cause psychological burden and/or death anxiety. Finally, a total of 133 individuals were enrolled in the study. The data were collected between 1 and 15 December 2020, and the interviews with the participants were conducted remotely via telephone calls.

Ethical statement

This study was conducted in accordance with the Declaration of Helsinki and its later amendments. All participants gave informed consent and the study was approved by the local Ethics Committee and COVID-19 Scientific Review Board of Ministry of Health of the Turkish Republic.

Data collection instruments

Sociodemographic data questionnaire

This questionnaire, which was developed by the researchers for this study, includes questions regarding the sociodemographic information of participants, such as age, gender, marital status, living environment,

number of children and grandchildren, weekly meeting hours with children and grandchildren, chronic physical illness (e.g., hypertension, diabetes mellitus, cardiovascular illness, asthma), financial difficulty and hobby activities.

Turkish death anxiety scale (TDAS)

It is a 20-item self-assessment scale developed by Sarıkaya and Baloglu. The scale has three subscales: thinking and witnessing death, ambiguity of death, and pain. The items of the scale were of the five-point Likert type. The scale is scored between 0 and 80, and high scores indicate high levels of death anxiety.²⁰

Satisfaction with life scale (SLS)

This scale, developed by Diener *et al.*, evaluates the satisfaction that an individual obtains from life.²¹ The response options of the scale that consists of five questions were of the seven-point Likert type. The scale was adapted into Turkish by Dağlı and Baysal.²²

Depression, anxiety and stress scale-21 (DASS-21)

The scale consists of 21 items measuring levels of depression, anxiety, and stress with seven items in each subscale. Ratings are made on a series of four-point Likert scales. The validity and reliability studies of the Turkish version of the DASS-21 were performed by Sarıçam *et al.* in 2018. The calculation table could be used to rate the severity of each subscale.^{23,24}

Data analysis

Statistical analysis was conducted using SPSS version 24.0 (IBM Corp., Armonk, NY, USA). Participants' sociodemographic characteristics were determined using descriptive statistics. The comparison of the groups regarding sociodemographic characteristics and scales was analysed with independent samples *t*-test and one-way analysis of variance (ANOVA). We also conducted multiple linear regression analysis to determine the factors related to SLS scores. A value of $P < 0.05$ was considered as statistically significant.

RESULTS

Participants' characteristics

Among the participants, 89 out of 133 (66.9%) were between ages 65 and 79 and 44 (33.1%) were aged 80 years and older. The majority of the participants were female (%58.6%). Nearly half of the participants (49.6%) were living in NHs, and 56.4% were meeting their children and grandchildren more than 2 h a week, and 54.9% were having chronic physical illness. Table 1 shows the sociodemographic characteristics of the participants.

TDAS, SLS and DASS-21 total and subscales scores

TDAS scores of the participants were 44.82 ± 21.34 while mean SLS scores were 4.34 ± 1.59 . DASS-21

Table 1 Sociodemographic characteristics

Variables	Categories	Number	Percentage
Age	65–79	89	66.9
	80 and older	44	33.1
Gender	Male	55	41.4
	Female	78	58.6
Living environment	Alone	32	24.1
	Nursing home	66	49.6
	With the family	35	26.3
Having children	Yes	115	86.5
	No	18	13.5
Having grandchildren	Yes	88	66.2
	No	45	33.8
Weekly meeting hours with children and grandchildren	Less than 2 h	58	43.6
	More than 2 h	75	56.4
Chronic physical illness	Yes	73	54.9
	No	60	45.1
Financial difficulty	Yes	84	63.2
	No	49	36.8
Time spent with a hobby (daily hours)	Less than 2 h	66	49.6
	More than 2 h	67	50.4

Table 2 SLS, TDAS and DASS-21 total and subscale scores

	Mean	SD
SLS	4.34	1.59
TDAS	44.82	21.34
Ambiguity of death	45.06	23.26
Thinking and witnessing death	42.69	22.41
Pain	48.63	22.04
DASS-21	19.19	13.83
Depression	5.60	4.91
Anxiety	6.65	5.32
Stress	6.79	4.48

SLS, satisfaction with life scale; TDAS, Turkish death anxiety scale; DASS-21, depression, anxiety and stress scale-21.

Table 3 DASS-21 subscales

	Normal <i>n</i> (%)	Mild <i>n</i> (%)	Moderate <i>n</i> (%)	Severe <i>n</i> (%)	Extremely severe <i>n</i> (%)
Depression	56 (42.2%)	23 (17.3%)	22 (16.5%)	17 (12.8%)	15 (11.2%)
Anxiety	56 (42.2%)	20 (15.0%)	16 (12.0%)	14 (10.5%)	27 (20.3%)
Stress	88 (66.2%)	12 (9.0%)	17 (12.8%)	9 (6.8%)	7 (5.2%)

DASS-21, depression, anxiety and stress scale-21.

Table 4 Comparison of TDAS, SLS and DASS-21 total and subscale scores regarding sociodemographic characteristics

	(n)	TDAS	SLS	DASS-21			
				Anxiety	Depression	Stress	DASS-21 total
Variables		Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
Gender							
Female	78	45.6 ± 22.8	4.32 ± 1.57	5.46 ± 5.11	6.65 ± 5.39	6.93 ± 4.62	19.11 ± 14.28
Male	55	43.4 ± 19.6	4.37 ± 1.62	5.74 ± 4.62	6.65 ± 5.25	6.65 ± 4.41	19.11 ± 13.44
	<i>P</i> :	0.55	0.85	0.75	0.98	0.78	0.99
Age							
65–79	89	41.20 ± 19.40	4.27 ± 1.57	7.76 ± 4.48	6.09 ± 0.490	6.23 ± 4.27	17.22 ± 12.81
80 and older	44	51.8 ± 24.12	4.48 ± 1.64	7.21 ± 5.32	7.70 ± 5.95	7.91 ± 4.83	22.89 ± 15.54
	<i>P</i> :	0.01	0.46	0.01	0.03	0.04	0.02
Having children							
No	18	50.21 ± 25.43	4.16 ± 1.87	6.23 ± 6.65	7.49 ± 6.79	7.70 ± 4.76	21.42 ± 17.64
Yes	115	43.84 ± 20.87	4.37 ± 1.55	5.46 ± 4.55	6.51 ± 5.04	6.65 ± 4.48	18.69 ± 13.23
	<i>P</i> :	0.25	0.61	0.56	0.46	0.33	0.42
Meeting with children and/or grandchildren (including online or phone call communication)							
Less than 2 h	58	46.47 ± 23.81	4.03 ± 1.70	6.19 ± 5.74	7.56 ± 6.23	7.56 ± 4.97	21.21 ± 16.17
More than 2 h	75	43.42 ± 19.66	4.57 ± 1.46	5.18 ± 4.13	5.88 ± 4.41	6.23 ± 4.06	17.22 ± 11.76
	<i>P</i> :	0.44	0.05	0.25	0.04	0.10	0.11
Chronic physical illness							
No	60	37.6 ± 15.83	4.59 ± 1.49	3.50 ± 3.78	4.55 ± 4.41	5.39 ± 4.34	13.44 ± 11.76
Yes	73	50.63 ± 23.66	4.13 ± 1.64	7.28 ± 5.04	8.33 ± 5.39	7.98 ± 4.34	23.52 ± 14.07
	<i>P</i> :	<0.001	0.10	<0.001	<0.001	<0.001	<0.001
Financial difficulty							
No	84	40.12 ± 19.23	4.80 ± 1.48	4.34 ± 3.99	5.32 ± 4.48	5.74 ± 4.13	15.33 ± 11.55
Yes	49	50.67 ± 24.01	3.54 ± 1.45	7.70 ± 5.53	8.89 ± 5.88	8.61 ± 4.55	25.20 ± 15.54
	<i>P</i> :	0.01	<0.001	<0.001	<0.001	<0.001	<0.001
Total time spent with a hobby (daily)							
No hobby, less than 2 h	66	53.06 ± 22.68	3.90 ± 1.62	8.33 ± 4.97	9.1 ± 5.46	8.89 ± 4.34	26.25 ± 14.07
More than 2 h	67	36.69 ± 16.83	4.76 ± 1.44	2.94 ± 2.94	4.20 ± 3.85	4.76 ± 3.64	11.76 ± 9.45
	<i>P</i> :	<0.001	0.03	<0.001	<0.001	<0.001	<0.001
Living environment							
Alone	32	40.67 ± 21.22	4.33 ± 1.55	4.41 ± 4.62	5.95 ± 5.39	6.30 ± 5.04	16.59 ± 14.28
With family	35	39.66 ± 17.12	4.89 ± 1.39	3.92 ± 3.71	4.76 ± 4.34	6.02 ± 4.20	14.70 ± 11.34
Nursing home	66	49.48 ± 22.83	4.05 ± 1.65	7.00 ± 5.18	7.98 ± 5.46	7.42 ± 4.34	22.47 ± 14.28
	<i>P</i> :	0.04	0.04	<0.001	0.01	0.25	0.01

SLS, satisfaction with life scale; TDAS, Turkish death anxiety scale; DASS-21, depression, anxiety and stress scale-21. Bold print indicates statistical significance at level 0.05.

total scores were 19.19 ± 13.83 . Table 2 shows the participants' SLS, TDAS and DASS-21 total and also depression, anxiety and stress subscale scores. Regarding the severity of DASS-21 subscales, 59.5% of the participants had mild or no symptoms of depression, while 57.2% and 75.2% had mild or no symptoms of anxiety and stress, respectively. The data on the severity of DASS-21 subscales are provided in Table 3.

Comparison of the TDAS, SLS and DASS-21 total and subscale scores

Regarding sociodemographic characteristics

TDAS, SLS, depression, anxiety and stress scores did not differ regarding the gender of the participants while all scales and subscale scores were found to be significantly higher in the 80 years and older individuals except for SLS ($P < 0.05$ for each). Our results indicated that those with financial difficulties had

Table 5 Factors related to SLS

Variables	B	SE	β	P
Age	2.539	1.377	0.151	0.067
Depression	-0.657	0.248	-0.439	0.009
Anxiety	-0.023	0.277	-0.014	0.934
Stress	0.286	0.290	0.986	0.326
TDAS	-0.079	0.039	-0.213	0.047

SLS, satisfaction with life scale; TDAS, Turkish death anxiety scale. Bold print indicates statistical significance at level 0.05.

significantly higher TDAS scores ($P < 0.01$), and also higher depression, anxiety and stress scores, and lower SLS scores ($P < 0.001$ for each). Similarly, those with no hobby or who were spending less than 2 h a day for a hobby had higher TDAS, depression, anxiety and stress scores ($P < 0.001$ for each), and lower SLS scores ($P < 0.05$). Participants with chronic physical illness had significantly higher TDAS and depression, anxiety and stress scores ($P < 0.001$ for each). Residents of NHs had significantly higher TDAS, depression and anxiety scores ($P < 0.05$, $P < 0.01$, $P < 0.001$, respectively) and lower SLS scores ($P < 0.05$) than community-dwelling older adults. We also found that SLS scores were significantly higher in those meeting children and/or grandchildren more than 2 h a week, those with no financial difficulty, those who spend more than 2 h a day with a hobby and those who live with their family ($P < 0.05$, $P < 0.001$, $P < 0.05$, $P < 0.05$, respectively). Table 4 shows the results of comparison of mean scores of SLS, TDAS and DASS-21 total and subscale scores regarding sociodemographic characteristics.

Sociodemographic and psychological factors related to SLS scores

The variables that were considered predictive for participants' SLS scores were evaluated using multiple linear regression analysis, and the analysis revealed that the increase in depression and TDAS scores predicted a decrease in SLS scores (β : -0.439, $P < 0.01$; β : -0.213, $P < 0.05$, respectively) (Table 5).

DISCUSSION

It has been suggested that older adults are at higher risk of mental health deterioration due to social isolation and increased rates of negative course of the infection during the pandemic. Understanding the psychosocial implications of these measures and

other sociodemographic factors would contribute to tailor better mental healthcare policies for the older population. The present study aimed to provide insight into the mental health of older adults during the later stage confinements of the pandemic, based on data obtained from NHs and community-dwelling older adults.

The main findings of our study were as follows: (i) the majority of older adults did not report depression, anxiety or stress in spite of the prolonged confinements, and were slightly satisfied with their life; (ii) those older than 80 years had higher depression, anxiety, stress and death anxiety levels; (iii) residents of NHs had higher death anxiety, depression and anxiety, and lower life satisfaction levels than community-dwelling older adults; and (iv) increase in depression and death anxiety was found to predict the decrease in life satisfaction in older adults.

Participants' characteristics

In our study, the majority of the participants were female (58.6%), nearly two-thirds were between 65–80 years of age and 73 out of 133 (54.9%) participants were having chronic medical illness. Among the community-dwelling older adults, 32 out of 67 were living alone. Our results regarding the sociodemographic characteristics were similar with other studies conducted in Turkey and other countries.^{25–28}

TDAS, SLS and DASS-21 total and subscales scores

The mean of TDAS total scores in our study was 44.82 ± 21.34 which showed a moderate death anxiety.²⁰ Death anxiety is previously reported to be closely associated with depression and anxiety.^{29,30} Nevertheless, depression and anxiety rates were slightly lower in our sample. This discrepancy was probably due to the impact of COVID-19 pandemic, as the older adults were reported to increasingly experience severe death anxiety during COVID-19.³¹

The mean of SLS scores of the participants were 4.34 ± 1.59 . This result indicated that the participants were slightly satisfied with their life.³² Negative effects of the confinements on mental health and life satisfaction are well known.¹⁸ However, mental health and life satisfaction levels of our sample were slightly higher than the results reported in a study conducted in Turkey among the general population.³³ This probably resulted from different characteristics of the

samples of these studies, as the older adults were found to have higher life satisfaction levels than younger people during the pandemic.³⁴ The partial freedom during the curfew on which the individuals aged 65 years and older were allowed to go out between 10:00–13:00 hours could be another factor that contributed to improve the life satisfaction levels of the participants, since total lockdowns were previously reported to significantly decrease life satisfaction in contrast to lighter confinements.³⁵

There were conflicting studies for older adults' mental health in early stages of the pandemic and a considerable amount of studies have reported that there was no significant change in the mental health levels of older adults in that period.^{28,36,37} Older people have greater resilience than younger ones, which has been found to be associated with strong coping styles and optimism against stressful events, and also lower levels psychological distress.^{38,39} They could maintain well-being by selecting and optimising particular emotion regulation processes to compensate for stressful events.^{40,41} The rates of depression and anxiety were reported as 18.5% and 17.1%, respectively, in older adults in Turkey before the pandemic.^{42,43} In a study conducted with geriatric patients who were followed up in the outpatient clinic in Turkey in the early stages of the pandemic, the authors reported the rates of anxiety and depression as 25.7% and 16.9%, respectively.⁴⁴ The rates in our study were 40.5% and 42.8% for moderate and higher levels of depression and anxiety, respectively. Although higher psychological distress is expected in clinical settings, in contrast, these results indicate higher rates in non-clinical settings. These higher rates in our study probably resulted from increased psychological distress due to prolonged social isolation in the later stages of the pandemic. On the other hand, our results indicated that the majority of older adults still did not report depression, anxiety or stress despite the prolonged confinements, and this was consistent with other recent studies showing that geriatric populations have a lower risk of developing mental disorders than the general population.^{28,45,46}

Comparison of the TDAS, SLS and DASS-21 total and subscale scores regarding sociodemographic characteristics

Older age is reported as an independent risk factor for a negative course regarding COVID-19 and older adults with chronic physical illnesses are more

vulnerable for negative consequences. It has been reported that individuals aged 65 years and older have the highest rates of admission to intensive care units and mortality due to having higher rates of comorbid medical conditions.^{47,48} Therefore, having a medical condition was previously reported to increase COVID-19 related fear and psychological distress as it was reported to be related to adverse health outcomes.^{45,49} Accordingly, our results indicated higher depression, anxiety, stress and death anxiety levels in older adults with chronic physical illness.

The pandemic has caused an interruption in social connection which is closely associated with higher risk of depression and anxiety in older adults.¹⁵ Furthermore, this population is more prone to feelings of isolation and loneliness which are among the main adverse consequences of preventive measures, and these negative emotions were found to be higher in the oldest groups (80 years and older).⁵⁰ Accordingly, in our study, the comparison regarding age indicated that death anxiety, DASS-21 total, and depression, anxiety, and stress subscales scores were found to be significantly higher in individuals aged 80 years and older and these results were consistent with the literature. Social support has been previously reported to be associated with life satisfaction in older adults and was determined as a protective factor for life satisfaction and subjective well-being in this population.^{51–53} Nevertheless, residents of NHs were broadly influenced by preventive measures during the COVID-19 pandemic. Many social activities were cancelled, visits of family members were banned and even the meals were consumed alone in residents' rooms in NHs as social distancing is essential for reducing the risk of contraction. However, this had a negative effect on health consequences including deaths from all causes,^{54,55} and it has been reported that social participation has positive effects on both physical and mental health.^{56,57} Consequently, it has been of great concern to older people that their regular communication with families and friends was banned or restricted. Telecommunication was suggested as an important alternative to provide the contact between the older adults who live in NHs and their the families and friends, that could improve emotional well-being when in-person visits are restricted during the pandemic.⁵⁸ Accordingly, our results confirmed this suggestion as the older

people who 'live with family members' and 'have meetings more than 2 h a week (including online and phone call communication) with their children and/or grandchildren' had higher levels of life satisfaction and lower levels of depression.

Individuals living in NHs had higher death anxiety levels than those who were not living in NHs. Living in an institutional setting may also occur as a result of physical or psychological problems.⁵⁹ Although the lockdown is a crucial method in the fight against COVID-19, it has been reported as an important cause of social isolation that result in loneliness, which is an independent risk factor for depression, anxiety disorders, and suicide in environments such as long-term care facilities.^{55,60,61} These results are likely related to the higher age of NH residents, as increasing age is also associated with increased morbidity in mental and physical health problems. As expected, in our study, individuals who were residents in NHs during the pandemic had higher levels of death anxiety, DASS-21 total, 'depression', and 'anxiety' subscales levels than others, as they were isolated in the setting.

Higher life satisfaction is associated with less loneliness and better well-being.^{33,62} Accordingly, loneliness was found to be closely related to living alone and depression, and experienced more frequently by older people living in long-term care settings than those living in their own homes.^{63,64} Our results showed that elderly individuals living in NHs had significantly lower life satisfaction as expected in the pandemic period which has severely exacerbated the feel of loneliness, especially for older adults. In order to keep an adequate level of life satisfaction, telecommunication appears to be crucial while staying physically distant as mentioned below. Hence, usage of telecommunication technologies should be promoted by policy-makers for NH and community-dwelling older adults to have contact with long-distance relatives even in non-pandemic times, as well as local family and friends in times of crisis such as disasters.⁵⁸

Low income is another important risk factor for the decline in mental health and the pandemic has led to serious adverse economic consequences all over the world.^{8,65} Older adults who have no financial problems have higher life satisfaction, and those who are independent from their children's support feel better.⁶⁶ A previous study conducted in Hong Kong

reported that participants with lower economic status are more prone to report physical illnesses and somatic complaints, to have worse health status, and more psychological symptoms.⁶⁷ Similarly, in our study, those who have reported to have financial difficulties had higher 'death anxiety' and 'depression', 'anxiety', and 'stress' levels.

Daily activities and hobbies are substantial in order to maintain psychological well-being for older adults. In a study conducted in a NH, authors reported that residents who had more daily activity options felt more satisfied and having no satisfactory activities may worsen the feel of loneliness.⁶⁸ Therefore, participating in the activities helps individuals to cope with their loneliness and increase functionality through the stress-buffering protective effect of hobbies. Previous studies on older adults report that high participation in hobbies is also significantly related to decreased mortality, and less cognitive decline during the pandemic.^{4,57,69} It has also been reported that sport practice and increase in physical activity, may result in positive psychological states leading to the protection of mental health and age-related functional decline.^{70,71} In our study, regarding hobby activities, individuals who regularly spent more than 2 h a day for a hobby had higher life satisfaction and lower levels of death anxiety and DASS-21 anxiety, depression, and stress subscales. Since group activities have been cancelled, our results suggest that hobby activities, online group activities or outdoor sports groups in accordance with social distancing at least 2 h a day could improve mental health of older adults during the pandemic.

Sociodemographic and psychological factors related to life satisfaction

Our results revealed that the increase in depression levels could be a risk factor when it comes to life satisfaction of participants during COVID-19. The confinements and social distancing are closely associated with depressive symptoms and decreased life satisfaction in older adults.^{10,18,72} Studies from Europe have reported that life satisfaction decreased during the lockdowns in early stages of the pandemic except for Sweden which did not impose lockdown, and older age and male gender were reported to be related to higher levels of life satisfaction.³⁵ In our study the age was not found to be related to life

satisfaction while gender was not included in the regression model as there was no significant difference in SLS scores of the participants regarding gender. In pre-pandemic studies conducted on older adults, depression was reported as one of the strongest predictors of life satisfaction,^{53,73,74} and physical and mental health was found to mediate the relation between depression and life satisfaction.⁷⁵ In our study death anxiety was found to be slightly related to life satisfaction in older adults. As of 1 June 2021, we did not find any study focusing on the relation between life satisfaction and death anxiety in older adults during COVID-19. However, the fear of COVID-19 which is associated with health-related anxiety was also found to be associated with psychological distress and life satisfaction in a study conducted in Turkey.⁷⁶ Accordingly, as the older adults are more vulnerable to death anxiety,³¹ our results suggest that it should be considered as a risk factor for lower life satisfaction in older adults during the pandemic period. Overall, these results suggest that depression and death anxiety should be closely monitored in older adults, especially on those with pre-existing physical or mental illnesses in order to achieve better life satisfaction levels in this population during the pandemic.

Limitations

There are some limitations in our study. First, the data of the study were derived from self-report scales which have well-known method biases. The study design was cross-sectional, thus it was not possible to make definitive conclusions regarding the cause and effect correlations, and longitudinal studies are needed to determine the direction of the relationships. Another limitation was the relatively small number of older adults interviewed due to the difficulties of the pandemic period. Finally, our data were collected from two NHs in the same city and were not nationally representative.

Conclusions

Preventive measures for the geriatric population during COVID-19 mean not only protecting them from the infection, but also taking into account their needs such as autonomy, social relations and individual understanding of life satisfaction. Meeting the needs of individuals in NHs and presenting them with broader options may result in higher life satisfaction.

Our results suggested that living in NH, older age, having chronic physical illness, less social interaction, financial problems and lack of hobbies may cause higher levels of death anxiety, depression, anxiety, and decreased life satisfaction.

Policy-makers should organise and support screening programs for early diagnosis of mental disorders in the geriatric population, and also provide public support for older adults and their relatives in order to improve the life satisfaction of this population. We suggest that NH staff should be regularly informed on both preventive measures and mental health consequences of the pandemic for the residents, and should be trained for basic non-pharmacological approaches including organising therapies and counselling which improve coping, psychological resilience, life satisfaction, and reduce anxiety and loneliness. Older adults should be supported to communicate with their family and friends, and participate in safe and accessible person-centred activity programs in order to enhance social participation that could contribute to mitigating depressive conditions. Further research is warranted to determine the factors that might influence the mental health and life satisfaction of older adults during the COVID-19 confinements to mitigate the adverse mental health consequences.

ACKNOWLEDGMENT

None.

FUNDING

This research received no specific grant from any funding agency, commercial or not-for-profit sectors.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

REFERENCES

- 1 Bao Y, Sun Y, Meng S, Shi J, Lu L. 2019-nCoV epidemic: address mental health care to empower society. *Lancet* 2020; **395**: e37–e38. [https://doi.org/10.1016/S0140-6736\(20\)30309-3](https://doi.org/10.1016/S0140-6736(20)30309-3).
- 2 Lippi G, Plebani M. Laboratory abnormalities in patients with COVID-2019 infection. *Clin Chem Lab Med* 2020; **58**: 1131–1134. <https://doi.org/10.1515/cclm-2020-0198>.

- 3 Wölfel R, Corman VM, Guggemos W *et al.* Virological assessment of hospitalized patients with COVID-2019. *Nature* 2020; **581**: 465–469. <https://doi.org/10.1038/s41586-020-2196-x>.
- 4 Dichter MN, Sander M, Seismann-Petersen S, Köpke S. COVID-19: it is time to balance infection management and person-centered care to maintain mental health of people living in German nursing homes. *Int Psychogeriatr* 2020; **32**: 1157–1160. <https://doi.org/10.1017/S1041610220000897>.
- 5 Bernadou A, Bouges S, Catroux M *et al.* High impact of COVID-19 outbreak in a nursing home in the Nouvelle-Aquitaine region, France, March to April 2020. *BMC Infect Dis* 2021; **21**: 1–6. <https://doi.org/10.1186/s12879-021-05890-6>.
- 6 Biswas A, Bhattacharjee U, Chakrabarti AK, Tewari DN, Banu H, Dutta S. Emergence of novel coronavirus and COVID-19: whether to stay or die out? *Crit Rev Microbiol* 2020; **46**: 182–193. <https://doi.org/10.1080/1040841X.2020.1739001>.
- 7 Nicola M, Alsafi Z, Sohrabi C *et al.* The socio-economic implications of the coronavirus pandemic (COVID-19): a review. *Int J Surg* 2020; **78**: 185–193. <https://doi.org/10.1016/j.ijisu.2020.04.018>.
- 8 Wang S, Li B, Ungvari GS *et al.* Poor mental health status and its associations with demographic characteristics and chronic diseases in Chinese elderly. *Soc Psychiatry Psychiatr Epidemiol* 2016; **51**: 1449–1455. <https://doi.org/10.1007/s00127-016-1271-y>.
- 9 Huang Y, Zhao N. Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 outbreak in China: a web-based cross-sectional survey. *Psychiatry Res* 2020; **288**: 112954. <https://doi.org/10.1016/j.psychres.2020.112954>.
- 10 Tull MT, Edmonds KA, Scamaldo KM, Richmond JR, Rose JP, Gratz KL. Psychological outcomes associated with stay-at-home orders and the perceived impact of COVID-19 on daily life. *Psychiatry Res* 2020; **289**: 113098. <https://doi.org/10.1016/j.psychres.2020.113098>.
- 11 Kämpfen F, Kohler IV, Ciancio A, de Bruin WB, Maurer J, Kohler HP. Predictors of mental health during the Covid-19 pandemic in the US: role of economic concerns, health worries and social distancing. *PLoS One* 2020; **15**: e0241895. <https://doi.org/10.1371/journal.pone.0241895>.
- 12 Webb L. COVID-19 lockdown: a perfect storm for older people's mental health. *J Psychiatr Ment Health Nurs* 2021; **28**: 300. <https://doi.org/10.1111/jpm.12644>.
- 13 Tyrrell CJ, Williams KN. The paradox of social distancing: implications for older adults in the context of COVID-19. *Psychol Trauma Theory, Res Pract Policy* 2020; **12**: S216–S216. <https://doi.org/10.1037/tra0000845>.
- 14 World Health Organization. *World Health Organization: Guidance on Routine Immunization Services during COVID-19 Pandemic in the WHO European Region*. World Health Organization, 2020. [Cited 9 June 2021.] Available from URL: <https://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/publications-and-technical-guidance/essential-health-services/guidance-on-routine-immunization-services-during-covid-19-pandemic-in-the-who-european-region,-20-march-2020-produced-by-who-europe>
- 15 Santini ZI, Nielsen L, Hinrichsen C *et al.* Social disconnectedness, perceived isolation, and symptoms of depression and anxiety among older Americans (NSHAP): a longitudinal mediation analysis. *Lancet Public Health* 2020; **5**: 62–70. [https://doi.org/10.1016/S2468-2667\(19\)30230-0](https://doi.org/10.1016/S2468-2667(19)30230-0).
- 16 Fernández-Ballesteros R, Zamarrón M, Society MR. The contribution of socio-demographic and psychosocial factors to life satisfaction. *Ageing Soc* 2001; **21**: 25–43. <https://doi.org/10.1017/S0144686X01008078>.
- 17 Duong CD. The impact of fear and anxiety of Covid-19 on life satisfaction: psychological distress and sleep disturbance as mediators. *Pers Individ Dif* 2021; **178**: 110869. <https://doi.org/10.1016/J.PAID.2021.110869>.
- 18 Ammar A, Chtourou H, Boukhris O *et al.* Covid-19 home confinement negatively impacts social participation and life satisfaction: a worldwide multicenter study. *Int J Environ Res Public Health* 2020; **17**: 1–17. <https://doi.org/10.3390/ijerph17176237>.
- 19 Hybels CF, Blazer DG, Pieper CF *et al.* Sociodemographic characteristics of the neighborhood and depressive symptoms in older adults: using multilevel modeling in geriatric psychiatry. *Am J Geriatr Psychiatry* 2006; **14**: 498–506. <https://doi.org/10.1097/01.JGP.0000194649.49784.29>.
- 20 Sankaya Y, Baloglu M. The development, validity and reliability of the death anxiety scale. Published online 2016. [Cited 9 June 2021.] Available from URL: <https://toad.halileksi.net/sites/default/files/pdf/olum-kaygisi-olcegi-oko-toad.pdf>
- 21 Diener E, Emmons RA, Larsen RJ, Griffin S. The satisfaction with life scale. *J Pers Assess* 1985; **49**: 71–75. https://doi.org/10.1207/s15327752jpa4901_13.
- 22 Dağlı A, Baysal N. Adaptation of the satisfaction with life scale into Turkish: the study of validity and reliability. *Electron J Soc Sci* 2016; **15**: 1250–1262. <https://doi.org/10.17755/esosder.75955>.
- 23 Henry JD, Crawford JR. The short-form version of the depression anxiety stress scales (DASS-21): construct validity and normative data in a large non-clinical sample. *Br J Clin Psychol* 2005; **44**: 227–239. <https://doi.org/10.1348/014466505X29657>.
- 24 Sançam H. The psychometric properties of Turkish version of depression anxiety stress scale-21 (DASS-21) in community and clinical samples. *J Cogn Psychother Res* 2018; **7**: 19–30. <https://doi.org/10.5455/jcbpr.274847>.
- 25 Çevik Akyıl R, Adıbelli D, Erdem N, Kırak N, Betül A, Karadakovan D. Relationship of the level of loneliness and perceived social support and happiness in elders staying at home and nursing home. *Anadolu Hemşirelik Ve Sağlık Bilim Derg* 2018; **21**: 33–41.
- 26 Bilir N, Aslan D, Güngör N *et al.* Determination of health status and some social conditions of people 65years of age and older in Sakarya neighbourhood, Altındağ Health Center Region in Ankara. *Turkish J Geriatr* 2002; **5**: 97–102.
- 27 Bobes-Bascarán T, Sáiz PA, Velasco A *et al.* Early psychological correlates associated with COVID-19 in a Spanish older adult sample. *Am J Geriatr Psychiatry* 2020; **28**: 1287–1298. <https://doi.org/10.1016/j.jagp.2020.09.005>.
- 28 Sams N, Fisher DM, Mata-Greve F *et al.* Understanding psychological distress and protective factors amongst older adults during the COVID-19 pandemic. *Am J Geriatr Psychiatry* 2021; **29**: 881–894. <https://doi.org/10.1016/j.jagp.2021.03.005>.
- 29 Lee SA, Jobe MC, Mathis AA, Gibbons JA. Incremental validity of coronaphobia: coronavirus anxiety explains depression, generalized anxiety, and death anxiety. *J Anxiety Disord* 2020; **74**: 102268. <https://doi.org/10.1016/j.janxdis.2020.102268>.
- 30 Mohammadpour A, Sadeghmoghadam L, Shareinia H, Jahani S, Amiri F. Investigating the role of perception of aging and associated factors in death anxiety among the elderly. *Clin Interv Aging* 2018; **13**: 405–410. <https://doi.org/10.2147/CIA.S150697>.
- 31 Khademi F, Moayedi S, Golitaleb M, Karbalaie N. The COVID-19 pandemic and death anxiety in the elderly. *Int J Ment Health Nurs* 2021; **30**: 346–349. <https://doi.org/10.1111/inm.12824>.

- 32 Pavot W, Diener E. Review of the satisfaction with life scale. *Psychol Assess* 1993; **5**: 164–172. <https://doi.org/10.1037/1040-3590.5.2.164>.
- 33 Özmen S, Özkan O, Özer Ö, Yanardağ MZ. Investigation of COVID-19 fear, well-being and life satisfaction in Turkish Society. *Soc Work Public Health* 2021; **36**: 164–177. <https://doi.org/10.1080/19371918.2021.1877589>.
- 34 Kivi M, Hansson I, Bjälkebring P. Up and about: older adults' well-being during the COVID-19 pandemic in a Swedish longitudinal study. *J Gerontol B Psychol Sci Soc Sci* 2021; **76**: 4–9. <https://doi.org/10.1093/geronb/gbaa084>.
- 35 Anastasiou E, Duquenne M-N. First-wave COVID-19 pandemic in Greece: the role of demographic, social, and geographical factors in life satisfaction during lockdown. *Soc Sci* 2021; **10**: 186. <https://doi.org/10.3390/socsci10060186>.
- 36 Vahia IV, Jeste DV, Reynolds CF. Older adults and the mental health effects of COVID-19. *JAMA* 2020; **324**: 2253–2254. <https://doi.org/10.1001/jama.2020.21753>.
- 37 Bäuerle A, Steinbach J, Schweda A et al. Mental health burden of the COVID-19 outbreak in Germany: predictors of mental health impairment. *J Prim Care Community Health* 2020; **11**: 2150132720953682. <https://doi.org/10.1177/2150132720953682>.
- 38 Southwick SM, Bonanno GA, Masten AS, Panter-Brick C, Yehuda R. Resilience definitions, theory, and challenges: interdisciplinary perspectives. *Eur J Psychotraumatol* 2014; **5**: 25338. <https://doi.org/10.3402/ejpt.v5.25338>.
- 39 MacLeod S, Musich S, Hawkins K, Alsgaard K, Wicker ER. The impact of resilience among older adults. *Geriatr Nurs* 2016; **37**: 266–272. <https://doi.org/10.1016/j.gerinurse.2016.02.014>.
- 40 Urry HL, Gross JJ. Emotion regulation in older age. *Curr Dir Psychol Sci* 2010; **19**: 352–357. <https://doi.org/10.1177/0963721410388395>.
- 41 Schirda B, Valentine TR, Aldao A, Prakash RS. Age-related differences in emotion regulation strategies: examining the role of contextual factors. *Dev Psychol* 2016; **52**: 1370–1380. <https://doi.org/10.1037/dev0000194>.
- 42 Yaka E, Keskinoglu P, Ucku R, Yener GG, Tunca Z. Prevalence and risk factors of depression among community dwelling elderly. *Arch Gerontol Geriatr* 2014; **59**: 150–154. <https://doi.org/10.1016/j.archger.2014.03.014>.
- 43 Kirmizioglu Y, Doğan O, Kuğu N, Akyüz G. Prevalence of anxiety disorders among elderly people. *Int J Geriatr Psychiatry* 2009; **24**: 1026–1033. <https://doi.org/10.1002/gps.2215>.
- 44 Yurumez Korkmaz B, Gemci E, Cosarderelioglu C et al. Attitudes of a geriatric population towards risks about COVID-19 pandemic: in the context of anxiety and depression. *Psychogeriatrics* 2021; **21**: 730–737. <https://doi.org/10.1111/psyg.12731>.
- 45 Gorrochategi MP, Munitis AE, Santamaria MD, Etxebarria NO. Stress, anxiety, and depression in people aged over 60 in the COVID-19 outbreak in a sample collected in northern Spain. *Am J Geriatr Psychiatry* 2020; **28**: 993–998. <https://doi.org/10.1016/j.jagp.2020.05.022>.
- 46 García-Portilla P, de la Fuente TL, Bobes-Bascarán T et al. Are older adults also at higher psychological risk from COVID-19? *Aging Ment Health* 2021; **25**: 1297–1304. <https://doi.org/10.1080/13607863.2020.1805723>.
- 47 Guan W, Ni Z, Hu Y et al. Clinical characteristics of coronavirus disease 2019 in China. *N Engl J Med* 2020; **382**: 1708–1720. <https://doi.org/10.1056/nejmoa2002032>.
- 48 Garg S, Kim L, Whitaker M et al. Hospitalization rates and characteristics of patients hospitalized with laboratory-confirmed coronavirus disease 2019 – COVID-NET, 14 states, March 1–30, 2020. *MMWR Morb Mortal Wkly Rep* 2020; **69**: 458–464. <https://doi.org/10.15585/mmwr.mm6915e3>.
- 49 Figliozzi S, Masci PG, Ahmadi N et al. Predictors of adverse prognosis in COVID-19: a systematic review and meta-analysis. *Eur J Clin Invest* 2020; **50**: e13362. <https://doi.org/10.1111/eci.13362>.
- 50 Pinquart M, Sorensen S. Influences on loneliness in older adults: a meta-analysis. *Basic Appl Soc Psychol* 2001; **23**: 245–266. <https://doi.org/10.1207/153248301753225702>.
- 51 Li C, Jiang S, Li N, Zhang Q. Influence of social participation on life satisfaction and depression among Chinese elderly: social support as a mediator. *J Community Psychol* 2018; **46**: 345–355. <https://doi.org/10.1002/jcop.21944>.
- 52 Tsuji K, Khan HTA. Exploring the relationship between social support and life satisfaction among rural elderly in Japan. *Ageing Int* 2016; **41**: 414–426. <https://doi.org/10.1007/s12126-016-9254-6>.
- 53 Adams TR, Rabin LA, Da Silva VG, Katz MJ, Fogel J, Lipton RB. Social support buffers the impact of depressive symptoms on life satisfaction in old age. *Clin Gerontol* 2016; **39**: 139–157. <https://doi.org/10.1080/07317115.2015.1073823>.
- 54 Rico-Urbe LA, Caballero FF, Olaya B et al. Loneliness, social networks, and health: a cross-sectional study in three countries. *PLoS One* 2016; **11**: e0145264. <https://doi.org/10.1371/journal.pone.0145264>.
- 55 Steptoe A, Shankar A, Demakakos P, Wardle J. Social isolation, loneliness, and all-cause mortality in older men and women. *Proc Natl Acad Sci U S A* 2013; **110**: 5797–5801. <https://doi.org/10.1073/pnas.1219686110>.
- 56 Aroogh MD, Shahboulaghi FM. Social participation of older adults: a concept analysis. *Int J Community Based Nurs Midwifery* 2020; **8**: 55–72. <https://doi.org/10.30476/IJCBNM.2019.82222.1055>.
- 57 Tomioka K, Kurumatani N, Hosoi H. Social participation and cognitive decline among community-dwelling older adults: a community-based longitudinal study. *J Gerontol B Psychol Sci Soc Sci* 2018; **73**: 799–806. <https://doi.org/10.1093/geronb/gbw059>.
- 58 Monin JK, Ali T, Syed S et al. Family communication in long-term care during a pandemic: lessons for enhancing emotional experiences. *Am J Geriatr Psychiatry* 2020; **28**: 1299–1307. <https://doi.org/10.1016/j.jagp.2020.09.008>.
- 59 Azaiza F, Ron P, Shoham M, Gigini I. Death and dying anxiety among elderly Arab muslims in Israel. *Death Stud* 2010; **34**: 351–364. <https://doi.org/10.1080/07481181003613941>.
- 60 Robb CE, de Jager CA, Ahmadi-Abhari S et al. Associations of social isolation with anxiety and depression during the early COVID-19 pandemic: a survey of older adults in London, UK. *Front Psychiatry* 2020; **11**. <https://doi.org/10.3389/fpsy.2020.591120>.
- 61 Abbasi J. Social isolation - the other COVID-19 threat in nursing homes. *JAMA* 2020; **324**: 619–620. <https://doi.org/10.1001/jama.2020.13484>.
- 62 de Guzman AB, Maravilla KN, Maravilla VAM, Marfil JDV, Mariñas JAR, Marquez JMB. Correlates of geriatric loneliness in Philippine nursing homes: a multiple regression model. *Educ Gerontol* 2012; **38**: 563–575. <https://doi.org/10.1080/03601277.2011.645443>.
- 63 Simard J, Volicer L. Loneliness and isolation in long-term care and the COVID-19 pandemic. *J Am Med Dir Assoc* 2020; **21**: 966–967. <https://doi.org/10.1016/j.jamda.2020.05.006>.
- 64 Nyqvist F, Cattan M, Andersson L, Forsman AK, Gustafson Y. Social capital and loneliness among the very old living at home

- and in institutional settings: a comparative study. *J Aging Health* 2013; **25**: 1013–1035. <https://doi.org/10.1177/0898264313497508>.
- 65 Godinic D, Obrenovic B, Khudaykulov A. Effects of economic uncertainty on mental health in the COVID-19 pandemic context: social identity disturbance, job uncertainty and psychological well-being model. *Int J Innov Econ Dev* 2020; **6**: 61–74. <https://doi.org/10.18775/ijied.1849-7551-7020.2015.61.2005>.
 - 66 Hsu YH, Hsing CH. Frailty, socioeconomic factors, and life satisfaction of the elderly. *J Psychol Behav Sci* 2020; **8**. <https://doi.org/10.15640/jpbs.v8n1a3>.
 - 67 Cheng YH, Chi I, Boey KW, Ko LSF, Chou KL. Self-rated economic condition and the health of elderly persons in Hong Kong. *Soc Sci Med* 2002; **55**: 1415–1424. [https://doi.org/10.1016/S0277-9536\(01\)00271-4](https://doi.org/10.1016/S0277-9536(01)00271-4).
 - 68 Brownie S, Horstmanhof L. The management of loneliness in aged care residents: an important therapeutic target for gerontological nursing. *Geriatr Nurs* 2011; **32**: 318–325. <https://doi.org/10.1016/j.gerinurse.2011.05.003>.
 - 69 Fushiki Y, Ohnishi H, Sakauchi F, Oura A, Mori M. Relationship of hobby activities with mortality and frailty among community-dwelling elderly adults: results of a follow-up study in Japan. *J Epidemiol* 2012; **22**: 340–347. <https://doi.org/10.2188/jea.JE20110057>.
 - 70 Lampinen P, Heikkinen RL, Ruoppila I. Changes in intensity of physical exercise as predictors of depressive symptoms among older adults: an eight-year follow-up. *Prev Med* 2000; **30**: 371–380. <https://doi.org/10.1006/pmed.2000.0641>.
 - 71 Paterson DH, Warburton DER. Physical activity and functional limitations in older adults: a systematic review related to Canada's physical activity guidelines. *Int J Behav Nutr Phys Act* 2010; **7**. <https://doi.org/10.1186/1479-5868-7-38>.
 - 72 Pfefferbaum B, North CS. Mental health and the Covid-19 pandemic. *N Engl J Med* 2020; **383**: 510–512. <https://doi.org/10.1056/nejmp2008017>.
 - 73 Zhi TF, Sun XM, Li SJ *et al*. Associations of sleep duration and sleep quality with life satisfaction in elderly Chinese: the mediating role of depression. *Arch Gerontol Geriatr* 2016; **65**: 211–217. <https://doi.org/10.1016/j.archger.2016.03.023>.
 - 74 Ghimire S, Baral BK, Karmacharya I, Callahan K, Mishra SR. Life satisfaction among elderly patients in Nepal: associations with nutritional and mental well-being. *Health Qual Life Outcomes* 2018; **16**: 1–10. <https://doi.org/10.1186/s12955-018-0947-2>.
 - 75 Swami V, Chamorro-Premuzic T, Sinniah D *et al*. General health mediates the relationship between loneliness, life satisfaction and depression: a study with Malaysia medical students. *Soc Psychiatry Psychiatr Epidemiol* 2007; **42**: 161–166. <https://doi.org/10.1007/s00127-006-0140-5>.
 - 76 Satıcı B, Gocet-Tekin E, Deniz ME, Satıcı SA. Adaptation of the fear of COVID-19 scale: its association with psychological distress and life satisfaction in Turkey. *Int J Ment Health Addict* 2020; **8**: 1–9. <https://doi.org/10.1007/s11469-020-00294-0>.