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ORIGINAL ARTICLE

How did the COVID-19 pandemic affect older adults? Investigation in terms of disability, state–trait anxiety and life satisfaction: Samsun, Turkey example

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'Getting old is a privilege…'

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Abstract

Background: The COVID-19 pandemic has adversely affected the physical and mental health of individuals. The elderly are a special group that is affected by this condition. The aim of this study was to investigate the effect of the COVID-19 pandemic on older adults in terms of disability, state–trait anxiety and life satisfaction.

Methods: The population of this cross-sectional study consisted of individuals aged 65 and over who presented to a family health centre in Samsun a province of Turkey on the Black Sea coast ($N = 3950$). The study data were collected with the following five forms: Personal Information Form, Quality of Life Questionnaire, State–Trait Anxiety Inventory, Brief Disability Questionnaire and Life Satisfaction Scale. In the analysis of the study data, descriptive statistics, Student's t-test, paired t-test, analysis of variance, Pearson correlation and multiple regression analysis were used.

Results: The mean age of the participants was 70.88 ± 4.818 years. There was a significant difference between the participants' pre- and post-pandemic health status and quality of life levels. In the study, a significant relationship was determined between the scores obtained from the State–Trait Anxiety Inventory, and the Brief Disability Questionnaire and between the scores obtained from the State–Trait Anxiety Inventory and the variables such as income and marital status ($P < 0.05$).

Conclusion: A significant result of the study is that the older adults' perceptions of health status and quality of life were adversely affected by the pandemic. Another significant result is that disability increased the level of anxiety. The other significant result of the study is that socioeconomic status was an important determinant of anxiety.

INTRODUCTION

Ageing is an irreversible functional change in the organism with the passage of time. With this change, physical and cognitive functions regress, and an individual's potential to establish a balance between the systems decreases. 'Old age' is defined as 'being old and showing the effects of increased age'.[1]

The size of elderly population in the world is increasing as the fertility and mortality rates have decreased, and living conditions and health services have improved thanks to advances in technology. Data indicate that 9.5% of the world population, and that of the Turkish population, consisted of individuals over the age of 65 in 2020.[2] According to population projections, it is predicted that the percentage of the elderly population in our country, Turkey, will be 11.0% in 2025, 12.9% in 2030, 16.3% in 2040, 22.6% in 2060 and 25.6% in 2080.[3]

It is desirable for people to live long; however, people who live for a long time have several health problems, which increases their need for health services and negatively affects their quality of life. With advancing age, several physiological changes occur in the

organism and the risk of non-communicable diseases such as heart and respiratory diseases, cancer and diabetes increases. Physiological changes and diseases may also occur haphazardly, which may lead to disability. However, not everyone who gets older has a health problem; some people can lead a healthy life despite their advanced age, or they can live in harmony with simple problems that do not affect their quality of life.[4]

Disability is a significant health problem that increases with age. According to the report released by the World Health Organization in 1998, ageing is defined as increases in disability and dependence on others. Among the results of disability are the impairment of the quality of daily life, adversely affected public health, and increased health expenditures. Disability also causes loss of independence, increased stress and anxiety levels, and decreased life satisfaction and quality of life levels.[5–8]

Quality of life generally refers to 'well-being', which includes being happy and satisfied with life.[9] Life satisfaction, on the other hand, represents the cognitive aspect of subjective well-being, which is one of the concepts of human happiness. In other words, life satisfaction is the subjective evaluation of a person's decisions about overall life satisfaction including certain areas of life or quality of life.[10–12]

The COVID-19 infection, which emerged in Wuhan, China in December 2019, was declared a pandemic by the World Health Organization in March 2020.[13–15] Infections are the primary cause of death in one-third of individuals aged 65 and over and lead to death in many older people.[16] Infections also have an obvious effect on morbidity in older adults, and lead to increased secondary risk and functional decline in the elderly by exacerbating underlying diseases. Among the top 10 causes of death in people aged 65 and over are pneumonia, influenza and hospital infections.[17] Although the COVID-19 pandemic caused millions of people to be infected and many people to die all over the world, those who were most frequently affected by it were middle-aged and older individuals.[18] In several studies conducted with hospitalised patients with confirmed COVID-19, their age ranged from 49 to 56 years.[13,19,20] Similarly, in a study based on Chinese data, it was reported that the hospitalisation rates among those with the diagnosis of COVID-19 increased with age. While the rate was 1% for those aged 20 to 29 years, it was 4% for those aged 50 to 59 years, and 18% for those older than 80 years.[21]

The COVID-19 pandemic has adversely affected not only the mental health of elderly individuals but also their physical health. It especially increased the level of fear, stress and anxiety in individuals.[22–24] All countries of the world have taken some measures to reduce the contagion and to control the pandemic. These measures have primarily involved older adults, disabled individuals and children, who are at a greater risk. Individuals over the age of 65 and under the age of 18 are prohibited from going out.[11,25–27] Their being prohibited from going out leads to a serious traumatic life event. Those older people with health problems are not able to get response to their needs. And subsequently suffer from stress and anxiety. Further, those older people who do not have health problems are prevented from displaying healthy life behaviours which protect their physical / mental health.

In this difficult process, older individuals should maintain their psychological stability and well-being. In order to achieve this, it is important to understand how older people are affected by the pandemic and its determinants. Our search for studies on how elderly people are affected by the pandemic demonstrates that no studies have been conducted on this issue in our province, Samsun. Therefore, in the present study, we aimed to investigate the effect of the COVID-19 pandemic on older adults in terms of disability, state–trait anxiety and life satisfaction.

METHOD

Study population and sample

The population of this cross-sectional study consisted of individuals over the age of 65 registered in a family health centre located in Samsun city centre ($N = 3950$). The sample size was determined as 350 using the Open Epi Calculator program (unknown prevalence: 50%, margin of error: 5%, power: 80%).[28] The study data were collected using the face-to-face interview technique between May 1, 2021 and July 15, 2021. The study data were collected from individuals aged 65 and over who presented to the family health centre for any reason and agreed to participate in the study.

Data collection tools

The following five forms were used to collect the study data: Personal Information Form, Quality of Life

Questionnaire, State–Trait Anxiety Inventory, Brief Disability Questionnaire and Life Satisfaction Scale.

Personal Information Form

This form consists of 16 items questioning sociodemographic and health-related characteristics of the participants.

Quality of Life Questionnaire

The participants' quality of life was assessed by asking the following two questions: 'How do you perceive your quality of life?' and 'How do you perceive your health?'. The answers given to the questions were scored ranging from '1' (very bad) to '5' (very good).[9]

Participants' perceptions of their pre- and post-pandemic health status and quality of life were assessed asking the following questions: 'How do you perceive your health?' and 'How do you rate your quality of life?' Responses were rated on a five-point Likert-type scale ranging from '1' (very poor) to '5' (very good').

Brief Disability Questionnaire (BDQ)

The BDQ was developed in 1988 to assess participants' physical and social disability status. The validity and reliability study of the Turkish version of the BDQ was conducted by Kaplan in 1995. The BDQ consists of 11 items. The minimum and maximum possible scores to be obtained from the scale are 0 and 22 respectively. A score ranging from 0 to 4 indicates 'no disability', from 5 to 7 indicates 'mild disability', from 8 to 12 indicates 'moderate disability', and ≥13 indicates 'severe disability'.[29] The Cronbach's alpha value of the scale was 0.854 in the present study.

State–Trait Anxiety Inventory

The inventory was developed by Spielberger *et al.* in 1964. The validity and reliability study of the Turkish version of the inventory was conducted by Necla Öner and Le Compte in 1976. The 40-item inventory consists of two separate scales, each of which has 20 items: the State Anxiety Inventory (STAI-1) and the Trait Anxiety Inventory (STAI-2). While the STAI-1 is used to determine how an individual feels at a certain time and under certain conditions, the STAI-2 is used to determine how the individual feels in general, independent of the current situation and conditions.

The lowest and highest possible scores to be obtained from each inventory are 20 and 80 respectively. While a high total score indicates an increase in anxiety, a low score indicates a decrease in anxiety.[30] The Cronbach's alpha value of the inventory was 0.738 in the present study .

Life Satisfaction Scale (LSS)

The LSS developed by Diener *et al*. in 1985 was adapted into Turkish by Köker in 1991. The validity and reliability studies of the five-item scale were performed by Dağlı and Baysal in 2016. Responses given to the items are rated on a five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). While the highest score to be obtained from the scale is 25, the lowest score is 5. The lower the score obtained from the scale, the lower the level of life satisfaction. The Cronbach's alpha value of the scale was 0.848 in the present study.[31]

Analysis of the data

In the analysis of the study data, descriptive statistics, Student's *t*-test, paired *t*-test, analysis of variance, Pearson correlation and multiple regression analysis were used.

Ethical issues

Before the study was conducted, ethics approval was obtained from Alanya Alaaddin Keykubat University Health Field Scientific Ethics Committee (Dated April 28, 2021; No: E-70561447-050.99-17 055).

RESULTS

The mean age of the participants was 70.88 ± 4.818 years. Of them, 59.4% were men, 71.7% were married, 35% were primary school graduates, 96.1% had a regular monthly income, 54.6% had an income equal to or more than their expenses, 91% lived with their spouse or children, and 56.9% had social security and received their pension from the Government Retirement Fund of Civil Servants (Table 1).

As for the general health status of the participants, 53.3% wore glasses, 89.9% had no disability, 76.4% had a chronic disease, 56.7% had more than two chronic diseases and 45.5% had hypertension (Table 2).

Table 1 Sociodemographic characteristics ($N = 357$)

Variables	n	%
Age		
65–74 years	278	77.8
75–84 years	79	22.2
Gender		
Men	212	59.4
Women	145	40.6
Marital status		
Married	256	71.7
Single	101	28.3
Educational status		
Literate but not a graduate of any school	48	13.4
Primary school	125	35.0
High school	109	30.5
College/University	75	21.1
Having a regular income		
Yes	343	96.1
No	14	3.9
Perception of income level		
Income less than expenses	162	45.4
Income equal to or more than expenses	195	54.6
The person lived with		
Alone	32	9.0
Spouse or children	325	91.0
Social security		
Social Security Organization for Workers / Social Security Organization for Artisans and the Self-Employed / General Health Insurance	154	43.1
Government Retirement Fund of Civil Servants	203	56.9

Table 2 Data on the general health of the participants

Variables	n	%
Do you use glasses. hearing aids or something similar?		
No	142	39.7
Glasses	190	53.3
Hearing aid	25	7.0
Do you have a disability that makes your life difficult?		
No	321	89.9
Orthopaedic disability	3	0.8
Disability due to chronic disease	33	9.3
Do you have any chronic disease?		
No	84	23.6
Yes	273	76.4
Number of chronic diseases		
One	96	35.1
Two	155	56.7
Three or more	22	8.2
Chronic disease		
Hypertension	214	45.5
Diabetes	203	43.1
Heart diseases	30	6.5
Respiratory system diseases	20	4.7
Neurological-psychiatric diseases	5	0.2

The mean scores the participants obtained from the data collection tools given in Table 3 are as follows: the State Anxiety Inventory: 47.59 ± 7.494, the Trait Anxiety Inventory: 47.63 ± 6.503, the LSS: 12.99 ± 3.708 and the BDQ: 19.64 ± 4.238 (Table 3).

In Table 4, the correlation between the scales is presented. As is seen in Table 4, there is a strong and positive relationship between the State Anxiety Inventory and Trait Anxiety Inventory, a positive and moderate relationship between the State Anxiety Inventory and BDQ, and a positive and weakly significant relationship between the Trait Anxiety Inventory and BDQ ($P < 0.01$). No statistically significant relationship was determined between the LSS and State Anxiety Inventory, and between the Trait Anxiety Inventory, and BDQ. These results indicate that as the score obtained from the BDQ increased, so did the scores obtained from the State Anxiety Inventory and the Trait Anxiety Inventory (Table 4).

In Table 5, the participants' pre- and post-pandemic perceptions of their health and quality of life are presented. The participants' mean pre- and post-pandemic health scores were 3.82 ± 0.591 and 2.18 ± 0.745 respectively, and their mean pre- and post-pandemic quality of life scores were

Table 3 Mean scores for the State–Trait Anxiety Inventory, Life Satisfaction Scale, and Brief Disability Questionnaire

Scale	Min-Max values	Mean $\pm$ SD
State Anxiety Inventory	0–80	47.59 ± 7.494
Trait Anxiety Inventory	0–80	47.63 ± 6.503
Life Satisfaction Scale	5–25	12.99 ± 3.708
Brief Disability Questionnaire	0–22	19.64 ± 4.238

Table 4 Results of correlation analysis between the Life Satisfaction Scale, State–Trait Anxiety Inventory, and Brief Disability Questionnaire

Scales		State Anxiety Inventory	Trait Anxiety Inventory	Brief Disability Questionnaire
Life Satisfaction Scale	r	−0.025	0.003	0.084
	P	0.642	0.995	0.112
	N	357	357	357
State Anxiety Inventory	r		0.708**	0.317**
	P		0.000	0.000
	N		357	357
Trait Anxiety Inventory	r			0.228**
	P			0.000
	N			357

Brief Disability Questionnaire. **$P < 0.001$.

Table 5 Participants' perceptions of pre- and post-pandemic health status and quality of life

'1' Very bad – '5' very good	Mean ± SD	t	P
How do you perceive your health?			
Before the pandemic	3.82 ± 0.591	28.991	0.000
After the pandemic	2.18 ± 0.745		
How do you perceive your quality of life?			
Before the pandemic	3.88 ± 0.928	32.978	0.000
After the pandemic	2.04 ± 0.789		

3.88 ± 0.928 and 2.04 ± 0.789 respectively. A statistically significant difference was determined between the participants' pre-pandemic health and quality of life scores and their post-pandemic health and quality of life scores. Their mean pre-pandemic health and quality of life scores decreased after the pandemic ($P < 0.005$) (Table 5).

In Table 6, the analysis of the mean scores obtained from the State–Trait Anxiety Inventory and influencing factors performed with the multiple regression model is given. The results of the analysis demonstrated that the regression model was statistically significant ($F(7.350) = 9.981$, $P < 0.05$), and that the independent variables accounted for 15% of the changes in the State–Trait Anxiety Inventory. According to the results of this analysis, there was a significant relationship between the scores obtained from the State–Trait Anxiety Inventory and the BDQ, and between the scores obtained from the State–Trait Anxiety Inventory and the variables such as income and marital status. However, the relationship between the scores obtained from the State–Trait Anxiety Inventory and the other variables was insignificant. According to these results, as the participants' income level decreased, their mean State–Trait Anxiety Inventory score increased. On the other hand, as their BDQ score increased, do did their State–Trait Anxiety Inventory score (Table 6).

DISCUSSION

Although the current COVID-19 pandemic affecting all the world threatens public health in general, it has created a great depression especially in older adults, who are thought to constitute the biggest risk group and who are subject to curfew in this process.[32] In this difficult process, it is important to understand how older adults are affected by the pandemic and what the determinants of the pandemic are if the psychological stability and well-being of older adults are to be ensured.

In the present study, it was determined that the quality of life and health status levels of older adults decreased significantly compared to their pre-pandemic levels. With the declaration of the pandemic, the elderly population over the age of 65 was the first group in the world to leave social environments. Thus, from the first week, they were isolated in their homes. Their isolation has greatly reduced the spread of COVID-19 and mortality in older adults; however, the extension of the isolation period has had negative effects on their mental health, functionality and physical health. For example, changes in foodstuffs or types of food eaten, or changes in fluid consumption during home isolation can accelerate the exacerbation of heart failure. Muscle weakness due to lack of exercise at home can lead to falls. Decreases in cognitive stimulation provided by social relationships and being connected to the outside world may lead to cognitive and behavioural problems or exacerbate dementia and other existing mental disabilities.[33,34] Therefore, this situation deteriorates older people's health and decreases

Table 6 Multiple regression results between the variables

Variables	B	SE	β	t	P
Constant	82.54	5.028		16.417	0.000*
Brief Disability Questionnaire	0.579	0.181	0.188	3.562	**0.000***
Life Satisfaction Scale	−0.102	0.181	−0.029	−0.563	0.574
Age	−1.691	1.801	−0.49	−0.939	0.348
Gender	2.181	1.374	0.082	1.587	0.114
Educational status	−1.185	1.455	−0.046	−0.814	0.416
Marital status	3.843	1.602	0.133	2.398	0.017*
Income level	−5.453	1.451	−0.209	−3.758	**0.000***
Adjusted R^2 = 0.150	**F = 9.981**		***P < 0.05**		
Dependent variable: State–Trait Anxiety Inventory					

*$P < 0.05$.

their quality of life. In many national and international studies, it has been determined that the quality of life of individuals over the age of 65 has decreased and their health has worsened during the pandemic.[25,33,35–38] This result is consistent with the result of our study.

The mean score of older adults participating in the study obtained from the LSS was 12.99 ± 3.708. This result is lower than the life satisfaction levels of older adults determined in many studies conducted in Turkey during the pre-pandemic period.[39–43] However, in studies conducted in Turkey during the pandemic, it has been demonstrated that life satisfaction and quality of life levels of older adults decreased due to the concern of Coronavirus disease,[43–46] which is consistent with the results of the present study. Empirical studies conducted at the international level show that the pandemic has negatively affected life satisfaction and quality of life of people.[47–50] The results of both national and international studies are consistent with the results of the present study.

According to the results of the present study, the mean scores the participants obtained from the State Anxiety Inventory and Trait Anxiety Inventory were 47.59 ± 7.494 and 47.63 ± 6.503 respectively. These results indicate that the participating older adults' anxiety levels were mild. During the pandemic, individuals over the age of 65 have been subjected to social isolation for a long time due to factors such as having a chronic disease, physiological reasons and high death rates from Coronavirus disease. The rate of anxiety and depression has increased in older adults due to social isolation.[25,35] In studies conducted with older adults during the COVID-19 pandemic in Turkey, it has been determined that their anxiety levels have increased due to fear of death, loneliness, hopelessness and fear of getting sick.[51,52] The review of the international literature demonstrated that in studies conducted during the pandemic, Coronavirus disease increased their levels of anxiety, fear and depression.[53–56]

According to the results of the present study, the mean score the participants obtained from the BDQ was 19.64 ± 4.238, which is high. In Kaçan Softa and Ulaş Karaahmetoğlu's study conducted with 144 older adults (2016), the participants' disability level was determined as moderate.[57] The mean score the elderly participants obtained from the BDQ was

10.25 ± 5.03 in Yiğitbaş and Deveci's study (2018), and 16.20 ± 6.27 in Mollaoğlu and Yanmış's study (2018).[58–60] According to the review of the foreign literature, in Tan et al.'s study conducted in Australia, the mean score the participants obtained from the BDQ was 11.37 ± 5.36.[59] The analysis of these results demonstrates that the mean score the older participants obtained from the BDQ during the pandemic was high. This is probably because physical activity levels of individuals over the age of 65 were limited and they were isolated for a long time during the pandemic.

In the present study, as the mean score for the BDQ increased, so did the State–Trait Anxiety Inventory score. Staying indoors for a long time during the pandemic led to increases in older adults' disability, anxiety, and depression levels. The results of many studies in the literature[54–56,61–63] are consistent with the findings of our study.

Another significant result is that as the participants' income levels increased, the mean score they obtained from the State–Trait Anxiety Inventory decreased. Having a good income level can enable individuals to access more opportunities and reduce health risks. In many studies in the literature, it has been determined that socioeconomic factors are effective on anxiety.[48,50,51,64] In the study conducted by Yönder Ertem (2021) on the elderly during the pandemic process in our country, a significant relationship was determined between the income level, and anxiety and depression levels.[65]

An important result of the present study is that the participating older adults' perceptions of their health status and quality of life were negatively affected by the pandemic. Another important result is that disability increased the level of anxiety. The third important result of the study is that socioeconomic status is an important determinant of anxiety.

STUDY LIMITATIONS
This study has potential limitations due to it being cross-sectional study and a single-centre study.

ETHICS APPROVAL
All procedures performed in this study involving human participants were in accordance with the

ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Acknowledgments: none

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