Received: 27 February 2021 | Accepted: 25 June 2021

DOI: 10.1002/gps.5600

RESEARCH ARTICLE

International Journal of Geriatric Psychiatry WILEY

# Assessment of anxiety in elderly population during the COVID-19 pandemic and the impact of compulsory home-stay in the central districts of Ankara, Turkey: A quantitative, qualitative mixed method study

Hulya Sirin[1] | Ahmad Abed Ahmadi[1] | Gamze Ketrez[1] | Cagri Ozbeyaz[1] | Asiye Ugras Dikmen[2] | Secil Ozkan[2]

[1]Public Health Department, University of Health Sciences, Ankara, Turkey

[2]Public Health Department, Gazi University, Ankara, Turkey

**Correspondence**
Hulya Sirin, Public Health Department, University of Health Sciences, Ankara 06520, Turkey.
Email: hulya.sirin@sbu.edu.tr

## Abstract

**Objective:** This study aimed to determine the level of anxiety in elderly individuals during the COVID-19 pandemic in Ankara province of Turkey and determine its associated factors.

**Methods:** A quantitative, qualitative mixed-method study performed in 1–10 June 2020 during the compulsory home-stay for elderly people in Turkey. The quantitative study was conducted using a structured online questionnaire with 278 participants aged 65 or older. The Geriatric Anxiety Inventory (GAI) was used to assess the anxiety. An in-depth interview with 20 participants was used to fill the gap of face-to-face interview due to pandemic situation and strengthen the results of quantitative survey. Qualitative and quantitative data were analyzed separately.

**Results:** Of all participants, 88 (31.7%) had a score above the cut-off point for GAI. The prevalence of Generalized Anxiety Disorder (GAD) was significantly higher in female (37.8%) than in male (23.8%). Female gender, economic loss, uncertainty, and the time participants expend to follow news about COVID-19 pandemic were risk factors of GAD. On the other hand, higher education level, hobbies, and regular physical activity were protective factors against GAD.

**Conclusion:** During the pandemic, social isolation and lockdown for elderly people make serious risk factor for their mental well-being. Measures must be taken to support the psychological well-being of elderly by promoting physical activity and hobbies at home, and reducing their economic concerns.

KEYWORDS
anxiety, compulsory home-stay, COVID-19 pandemic, elderly

## Key points

- The measures taken against the pandemic have important effects on the mental health of the elderly population. The most important psychological consequences of isolation are loneliness, uncertainty, and anxiety.
- It was seen in this study that the anxiety level of the elderly population was affected by various factors, including social and psychological, during the pandemic period.

 © 2021 John Wiley & Sons Ltd. 

- We have found in this study that having a hobby, high education level, and regular physical activity were protective in terms of anxiety level in pandemic conditions for the elderly population.
- Considering that the elderly population is increasing in developing countries, especially in Turkey, it is crucial to protect the mental health of the elderly population under pandemic conditions.

## 1 | INTRODUCTION

The novel coronavirus disease (COVID-19), which emerged in Wuhan, China, in December 2019, was declared as a pandemic by WHO on 11 March 2020.[1] Recent studies show that the prognosis of COVID-19 disease is more severe in those with chronic illness and the elderly; especially individuals over 60 years old, moreover; those with serious chronic diseases such as heart disease, hypertension, diabetes, chronic respiratory disease, cancer is considered as the risk group.[2,3] Since the elderly population has dramatically increased in developed countries and Turkey, as well in recent decades, they become an important part of the general community, which requires the provision of special care along with the development of health policies. According to the Turkish Statistical Institute data, the population aged 65 and over increased from 8.0% in 2014 to 9.1% in 2019 compared to the general population.[4]

Due to increased fatality rate of COVID-19 in elderly people, the Turkish government took some measures including the lockdown for citizens aged 65 and over to mitigate the adverse health problems.[5] This lockdown for elderly people put into effect in the middle of March. It was applied 7/24 till the 1st of June, afterwards it was loosened, and forced at fewer hours (10:00 AM–08:00 PM).[5]

The lockdown for people aged 65 and over is a successful application in terms of breaking transmission chain and reducing mortality from COVID-19, but it can also impact the mental health of individuals staying at home for a long time. The most important psychological consequences of isolation are loneliness, uncertainty, and anxiety. The anxiety in this group can be attributed to both the fear of contamination of disease and the uncertainty about the daily life and socialization activities as the process prolongs.[6] Uncertainty as an emotion is directly associated with negative affect.[7]

In the studies conducted to determine the stress, anxiety, and depression levels of the society during the COVID-19 pandemic, it was observed that the epidemic had a negative effect on the mental health of the society.[8,9] It is anticipated that both the uncertainty caused by the epidemic, the disease or death, and the concerns about compulsory home-stay can increase the level of anxiety on the individuals aged 65 and over. In addition to the measures implemented during the pandemic, the need to provide psychological and social support has been noticed to be essential for ensuring the mental, physical, and social well-being of individuals aged 65 and over.

In the light of existing studies, we assumed that the compulsory home-stay during the COVID-19 pandemic negatively affects the mental well-being and is associated with the level of anxiety in the elderly population. This study aimed to determine the level of anxiety in elderly individuals during the pandemic in the central district of Ankara, and determine its associated factors.

## 2 | MATERIALS AND METHODS

### 2.1 | Participants

The methodological framework of this study was established as a mixed-method study, including both quantitative and qualitative surveys. The qualitative study was developed in order to fill the gap of face-to-face interview due to pandemic situation and strengthen the results of quantitative survey.

In the quantitative component, we performed a cross-sectional survey design to evaluate the anxiety level of people aged 65 or over during the COVID-19 pandemic in the central district of Ankara. The study was conducted with people who were selected by random sampling method from the population aged 65 and over, and registered with family physicians living in central districts of Ankara.

For the qualitative component, structured In-Depth Interview (IDI) were held for people to generate information regarding their perceptions and opinions, as well as their thoughts on COVID-19 pandemic. Among the participants of the study, 20 volunteers were interviewed one-to-one. COVID-19 disease, the compulsory home-stay process and anxiety levels were inquired with open-ended questions.

### 2.2 | Procedure

The number of the population aged 65 years and over who live in the central district of Ankara is reported to be 486,811 in 2019 (Turkish Statistical Institute, 2019). Based on 95% confidence interval, Type-1 error of $\alpha = 0.05$, total population of N = 486,811 and population proportion of $p = 0.18$,[10] we estimated a minimal sample size of 227 participants. In case, not reaching the required number of correspondents, the number of sample group was increased by 30–295. A total of 278 participants completed the questionnaire, corresponding rate was 94.2%.

Considering the extraordinary situation of COVID-19 and the lockdown for people aged 65 or over, conducting a face-to-face interview was not practical. The selected 295 elderly people were called by phone, their consents were obtained, and the survey was

conducted. Those who could not be reached by phone and did not want to participate in the study were excluded.

A request statement was placed at the end of the quantitative questionnaire asking the participants whether they want to participate in the qualitative study. IDIs were carried out with 20 elderly people who wanted to participate in the qualitative study using a structured interview form. These face-to-face interviews took place outdoors during the curfew-free hours for elderly people. The qualitative study was conducted by responsible researcher as a moderator, and two of the co-authors as reporters.

## 2.3 | Measures

The questionnaires were developed by authors after a comprehensive literature review on the subject of interest.

The structured quantitative questionnaire consisted of questions on socio-demographic characteristics of participants, knowledge and concerns about COVID-19, the psychological and social impact of COVID-19. We did our best to keep the questionnaire simple, short, and understandable for elderly people.

Socio-demographic data were collected on gender, age, education, employment status, whether they live alone or with his/her family, hobby, frequency of physical exercise, smoking status, and chronic disease. The psychological and social impact of COVID-19 includes economic loss, financial aid, the effect of COVID-19 on daily communications with family and friends, and the daily time (hours) expended to follow news about the COVID-19 pandemic. The concerns about COVID-19 were investigated with two questions; whether Turkey can successfully control the pandemic or not, also the lockdown for people aged 65 or over is the right decision. Knowledge about COVID-19 included five questions on main transmission ways, symptoms, risk groups, non-symptomatic cases, and isolation.

The level of anxiety was measured using the Geriatric Anxiety Inventory (GAI). GAI included 20 items and was designed particularly for elderly adults.[11] The inventory assesses the anxiety symptoms of participants in the past seven days based on a dichotomous response scale. It has a simple language that would be easily understood by elderly adult people. Regarding internal consistency, Cronbach's alpha was 0.91 among healthy community-dwelling elderly adults and 0.93 in the psychogeriatric sample.[11] In a combined sample of clinical and non-clinical elderly adults, a cut-off score of 10 yielded specificity of 84% and sensitivity of 75% for detecting Generalized Anxiety Disorder (GAD), and a cut-off score of 8 was optimal for detecting any anxiety disorder.[11,12] In this study, we used a cut-off point of 10. The validity tests of the Turkish version of the GAI are done by Duygu Pamir AKIN in her master's thesis, and the Cronbach's alpha was 0.91.[13]

The qualitative questionnaire consisted of six questions inquired the knowledge of participants about COVID-19, healthy lifestyle practices (physical activity, hobby, diet) during COVID-19 pandemic, social impact of COVID-19, participants' thoughts about the compulsory home-stay during COVID-19 pandemic, and the reliability of COVID-19 related news in mass media. During the individual interviews, follow-up questions and probes were used to deepen the participants' answers. On several occasions during the interviews, the participants shifted focus and talked in-depth about their personal experiences of a certain event, and the interviewer sometimes had to lead the interviews back to the subject of interest.

## 2.4 | Statistical analysis

Qualitative and quantitative data collected by the mixed-method approach were analyzed separately. Qualitative data were analyzed and reported by the moderator and the reporter.

Descriptive analyses were conducted to describe the socio-demographic characteristics and COVID-19 related knowledge and concerns of participants. Using the cut-off point for GAI, the prevalence of GAD was stratified by socio-demographic characteristics and other independent variables, and Chi-square test, was used to compare the difference between the groups. A binary logistic regression was developed to explore potential influence factors for GAD. All variables with a $p$-value of less than 0.25[14–16] were imported in the logistic regression model and then a backward elimination method was used to achieve the best model fit possible. All analysis was performed in the Statistical Package for Social Sciences (SPSS) version 25.0. $p$-values of less than 0.05 were considered statistically significant.

# 3 | RESULTS

## 3.1 | Quantitative results

The socio-demographic characteristics of participants are shown in Table 1. Of all 278 participants in the study, 156 (56.1%) were female. The mean age of the respondents was 72.64 (SD ± 6.323) years, 166 (59.7%) had university and higher education level, and only 46 (16.5%) were currently employed. Most of the participants (79.9%) lived with their family. Of all participants, 93 (33.5%) stated that they do physical exercise at least for 3 days in a week, and most participants (72.7%) expressed that they had a hobby to spend their time during home-stay. Two hundred and eight (74.8%) participants thought that their communications with their friends and relatives decreased comparing to non-pandemic period and only 49 (17.6%) faced financial loss during the COVID-19 pandemic.

The average time participants allocated to follow news regarding COVID-19 on TV or social media was 2.74 (SD ± 2.107) hours/day. One hundred and six (38.1%) believed that lockdown for people aged ≥65 during COVID-19 pandemic is not a correct decision and 129 (46.4%) believed that the pandemic will not be successfully controlled in Turkey. One hundred and ninety-six (70.5%) participants correctly answered all the five knowledge questions about COVID-19.

**TABLE 1** Socio-demographic characteristics of participants ($n$ = 278)

| Variables | *n* (%) |
|---|---|
| Gender | |
| Male | 122 (43.9) |
| Female | 156 (56.1) |
| Age (mean ± SD) | (72.64 ± 6.323) |
| Educational level | |
| Secondary school and lower | 69 (24.8) |
| High school | 43 (15.5) |
| University and higher | 166 (59.7) |
| Working status | |
| Working | 46 (16.5) |
| Not working | 232 (83.5) |
| Who do you live with? | |
| Living with family | 222 (79.9) |
| Living alone | 56 (20.1) |
| Physical exercise | |
| At least 3 days in a week | 93 (33.5) |
| Less than 3 days in a week | 68 (24.5) |
| Do not exercise | 117 (42.1) |
| Is there anything you do as a hobby while you are at home? | |
| Yes | 202 (72.7) |
| No | 76 (27.3) |
| Smoking status | |
| Smoker | 27 (9.7) |
| Non-smoker | 251 (90.3) |
| Chronic disease | |
| Have chronic disease | 190 (68.3) |
| Don't have chronic disease | 88 (31.7) |
| Financial loss during the COVID-19 pandemic | |
| Yes | 49 (17.6) |
| No | 229 (82.4) |
| Getting financial support during the COVID-19 pandemic | |
| Yes | 9 (3.2) |
| No | 269 (96.8) |
| Communication status during the COVID-19 pandemic | |
| No difference compared to the pre-epidemic period | 32 (11.5) |
| Increased compared to the pre-epidemic period | 38 (13.7) |
| Decreased compared to the pre-epidemic period | 208 (74.8) |
| The daily time (hours) allocated to follow the news about the COVID-19 pandemic (mean ± SD) | (2.73 ± 2.107) |
| Do you think it is a right decision for people aged 65 and above to stay at home during the pandemic? | |

**TABLE 1** (Continued)

| Variables | *n* (%) |
|---|---|
| Yes, I think so | 168 (60.4) |
| No, I don't think so | 106 (38.1) |
| I don't have any idea | 4 (1.4) |
| Do you believe that the COVID-19 pandemic will be successfully controlled in our country? | |
| Yes, I believe | 113 (40.6) |
| No, I don't | 129 (46.4) |
| I don't have any idea | 36 (12.9) |
| Knowledge about the COVID-19 disease | |
| Answered less than five questions correctly | 82 (29.5) |
| Answered all five questions asked in the questionnaire about the COVID-19 disease correctly | 196 (70.5) |

The prevalence of GAD stratified by participants characteristics were shown in Table 2. Of all participants, 88 (31.7%) had a score above the cut-off point for GAI. The prevalence of GAD was significantly higher in female (37.8%) than in male (23.8%) as well as in high school graduated participants (46.5%) compared to the participants with a university degree or higher (21.1%) with a $p$ value of <0.05 and <0.001 respectively. Participants with no physical exercise had a higher prevalence of GAD (38.5%) compared to participants with a physical exercise of at least 3 days/week (22.6%), the difference was statistically significant ($p < 0.05$). Similarly, the prevalence of GAD was significantly ($p < 0.05$) higher in participants who stated that they do not have a hobby (43.4%) than participants with a hobby (27.2%). There was no significantly difference in GAD prevalence regarding other independent variables ($p > 0.05$).

The associations of potential influence factors with GAD were presented in Figure 1. In the bivariate logistic regression model, gender was a positive and significant ($b = 0.822$, SE = 0.329, $p = 0.013$) predictor of GAD with an OR of 2.275 for female gender. Participant's education level ($b = -1.437$, SE = 0.403, $p < 0.001$), and their hobby status ($b = -0.786$, SE = 0.375, $p = 0.036$) were negative and significant predictors of GAD with an OR of 0.238 for participants with an education level of university or higher and OR of 0.456 for participants' with a hobby respectively. Financial loss (b = 0.837, SE = 0.384, $p = 0.029$), knowledge of participants about COVID-19 ($b = 1.114$ SE = 0.387, $p = 0.004$), and the belief of whether Turkey can successfully control or not COVID-19 pandemic ($b = 0.918$ SE = 0.347, $p = 0.008$) were also positive and significant predictors of GAD with an OR of 2.310 for participants who stated financial loss during COVID-19 pandemic, with an OR of 3.046 for participants who answered all five knowledge questions correctly, and OR of 2.503 for participants who believed that COVID-19 will not be successfully controlled in Turkey respectively.

The daily amount of time participants allocated to follow the news about COVID-19 was the only continuous covariate in the model, and it was a positive and significant ($b = 0.172$, SE = 0.071, $p = 0.016$) predictor of GAD, with the OR indicating that for everyone unit (hour) increase on this predictor the odds of GAD change by a factor of 1.188.

## 3.2 | Qualitative results

Of the 20 people who participated in in-depth interviews, 10 were women and 10 men. The average age was 69. The education level of the participants: eleven people have a bachelor's degree and above, five people are high school graduates, four people are graduates of secondary school and below. Some statements of the participants in the interviews are presented below.

When the knowledge about the novel coronavirus disease was questioned in the IDI, it was observed that the general knowledge level was as good as the survey results. Especially, most of them reported that the most common symptoms were fever, dry cough, and shortness of breath, as well as the high burden of death in the elderly people and people with comorbidities.

> ID-18 (65 years old, woman): I heard that this disease causes high fever. They also say it leads to cough and shortness of breath. They say it is like the flu; however, my neighbour across was hospitalized with a heavy condition. But he was already receiving cancer treatment. As they said on TV, they are heavily affected by this situation. This disease reminded us of the importance of healthcare professionals.

> ID-7 (84 years old, man): This disease is exaggerated. I think it is no different from the flu. It causes coughing and sneezing. They never think of us and keep us home for nothing.

**TABLE 2** Prevalence of GAD stratified by socio-demographic characteristics of participants ($n$ = 278)

| Variables, $n$ (%) | GAD[a] | | $X^2$ | $p$-value |
|---|---|---|---|---|
| | No | Yes | | |
| Gender | | | | |
| Male | 93 (76.2) | 29 (23.8) | 6.247 | **0.012** |
| Female | 97 (62.2) | 59 (37.8) | | |
| Educational level | | | | |
| Secondary school and below | 36 (52.2) | 33 (47.8) | 21.301 | **<0.001** |
| High school | 23 (53.5) | **20 (46.5)** | | |
| University and higher | 131 (78.9) | **35 (21.1)** | | |
| Working status | | | | |
| Working | 33 (71.7) | 13 (28.3) | 0.293 | 0.588 |
| Not working | 157 (67.7) | 75 (32.3) | | |
| Who do you live with? | | | | |
| Living with family | 148 (66.7) | 74 (33.3) | 10.435 | 0.231 |
| Living alone | 42 (75) | 14 (25) | | |
| Physical exercise | | | | |
| At least 3 days in a week | 72 (77.4) | **21 (22.6)** | 6.061 | **0.048** |
| Less than 3 days in a week | 46 (67.6) | 22 (32.4) | | |
| Do not exercise | 72 (61.5) | **45 (38.5)** | | |
| Is there anything you do as a hobby while you are at home? | | | | |
| Yes | 147 (72.8) | 55 (27.2) | 6.693 | **0.010** |
| No | 43 (56.6) | 33 (43.4) | | |
| Cigarette smoking status | | | | |
| Smoker | 22 (81.5) | 5 (18.5) | 2.385 | 0.122 |
| Non-smoker | 168 (66.9) | 83 (33.1) | | |
| Chronic disease | | | | |
| Have chronic disease | 125 (65.8) | 65 (34.2) | 10.812 | 0.178 |
| Don't have chronic disease | 65 (73.9) | 23 (26.1) | | |
| Economic loss during the COVID-19 pandemic | | | | |
| Yes | 30 (61.2) | 19 (38.8) | 1.394 | 0.238 |
| No | 160 (69.9) | 69 (30.1) | | |
| Getting financial support during the COVID-19 pandemic | | | | |
| Yes | 6 (66.7) | 3 (33.3) | 0.012 | 0.583 |
| No | 184 (68.4) | 85 (31.6) | | |
| Communication status during the COVID-19 pandemic | | | | |
| No difference compared to the pre-epidemic period | 23 (71.9) | 9 (28.1) | 0.673 | 0.714 |
| Increased compared to the pre-epidemic period | 24 (63.2) | 14 (36.8) | | |
| Decreased compared to the pre-epidemic period | 143 (68.8) | 65 (31.3) | | |
| Do you think it is a right decision for people aged 65 and above to stay at home during the pandemic? | | | | |
| Yes, I think so | 115 (68.5) | 53 (31.5) | 0.056 | 0.813 |
| No, I don't think so | 74 (69.8) | 32 (30.2) | | |
| I don't have any idea | 115 (68.5) | 53 (31.5) | 0.056 | 0.813 |

**TABLE 2** (Continued)

| Variables, *n* (%) | GAD[a] No | GAD[a] Yes | $X^2$ | *p*-value |
|---|---|---|---|---|
| Do you believe that the COVID-19 pandemic will be successfully controlled in our country? | | | | |
| Yes, I believe | 82 (72.6) | 31 (27.4) | 4.800 | 0.091 |
| No, I don't | 80 (62.0) | 49 (38.0) | | |
| I don't have any idea | 28 (77.8) | 8 (22.2) | | |
| Knowledge about the COVID-19 disease | | | | |
| Answered less than five questions correctly | 60 (73.2) | 22 (26.8) | 10.252 | 0.263 |
| Answered all five questions asked in the questionnaire about the COVID-19 disease correctly | 130 (66.3) | 66 (33.7) | | |

Abbreviation: GAD, Generalized Anxiety Disorder.

[a]GAD was defined as individuals who scored ≥10 points.

[b]The difference between categories are evaluated by adjusted *p*-value (Bonferroni method).

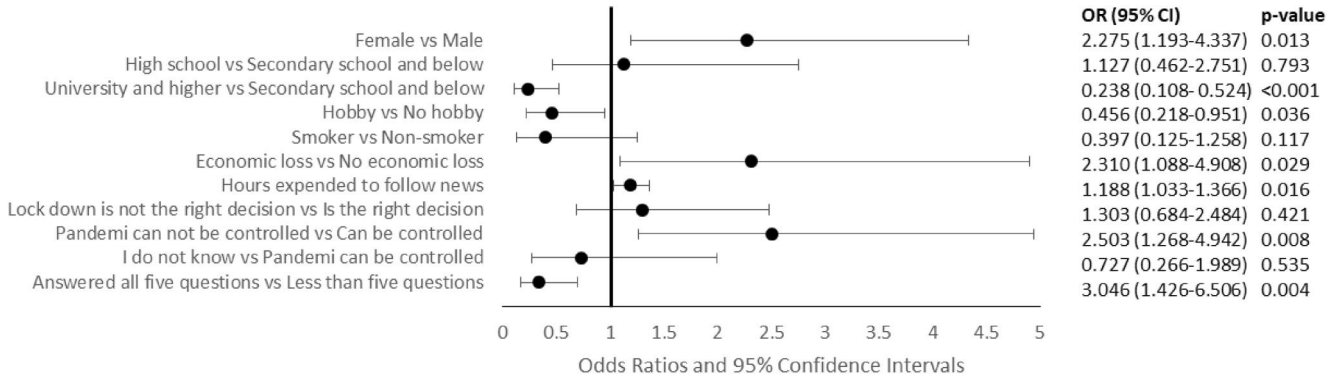



**FIGURE 1** Forest plot of odds ratios (with 95% confidence intervals) from bivariate logistic regression analysis for predictors of Generalized Anxiety Disorder ($n = 278$)

When the question "how was your healthy life practices during the epidemic period" asked, they said that they could not exercise in general, but they spent their time with such hobbies as knitting, card game, backgammon, painting, etc. They also stated that they generally consumed products with carbohydrates and could not go to regular visits to have their diseases checked. They also expressed that their level of communication with the people around decreased during the curfew period.

> ID-3 (69 years old, man): We were walking in the park across together with my friends every morning before the pandemic. Both doing sports and being with friends were feeling me psychologically well. But now this is not happening. We are completely closed to the houses. My wife is always cooking pastries during that period. That's why I'm afraid my blood pressure will increase. Moreover, we could not make our regular hospital visits for our control.

> ID-16 (67 years old, woman): I have hypertension. I must use hypertension medication regularly. When my medications are over, my pharmacist sends me my medications regularly. I spend more time knitting now at home. My only problem is not being able to see my grandchildren. It sometimes leads me to despair. What if I can't see them again … (said with tearful eyes).

Two of the interviewees stated that they were normally working but could not go to work during that period; therefore, suffered from an economic loss.

> ID-9 (66 years old, man): I have a workshop in the industrial site. I could not go to work during this compulsory home-stay period. In addition to my income loss, I had to support my employees financially due to a lack of work. I thank god that my wife and I can handle.

> ID-14 (75 years old, woman): I am a retired teacher. I had no loss during this period. On the contrary, I even saved because I spend nothing. I give plenty of pocket money to my son and his family with whom we live.

The interviewees stated that they were generally very bored during the lockdown while staying at home. While most said it was a necessary practice, some described it as an extreme precaution.

> ID-1 (68 years old, woman): For the first time in my life, I felt myself that much old. I don't feel like doing anything and I don't know how long it will continue like this. I hope we get back to our previous life as soon as possible.

> ID-19 (71 years old, man): This precaution is necessary. We shouldn't get sick. Even though I feel overwhelmed at times, my children often call me. When I drop a call to the municipality employees, they do the shopping in line with my requests and bring them to my door.

Most of the participants in the study, watch TV programs related to the epidemic. They stated they trust this information. Whether participants have ever heard of or have any idea about the words such as filiation, quarantine, isolation, surveillance, PCR, and antibody testing which are mostly used by scientists in discussion programs released on TV during the pandemic were questioned. Almost all the participants stated that they ever heard of these terms except the quarantine and isolation.

> ID-8 (65 years old, man): We see TV programs about coronavirus released on every channel. I don't understand at all what some are saying. It sounds very complicated. But I watch the ones released in a language that we can understand without getting bored. I generally trust. All are released to protect our health…

> ID-10 (71 years old, woman): Television is always on. There is nothing else to do at home. Inevitably, our whole life focused on coronavirus. The same people say the same things every evening. I want all people to obey the rules such as wearing a mask, washing the hands.

## 4 | DISCUSSION

COVID-19, as a crisis, has given us a valuable opportunity to observe how the psychological status is affected in the absence of modern-day routines. As applied in many countries, the target audience of the measures taken for COVID-19 in Turkey was especially the elderly population.[17] In this study, we investigate the effects of the pandemic measures on the mental health status of the elderly population in Turkey. Since the mental status is closely related to socio-cultural parameters, it is necessary to emphasize the demographic characteristics of the elderly population in the focus of our research.

In a study conducted in the pre-pandemic period, the prevalence of GAD status among the elderly population in Turkey has found 18.6%.[10] Our study was conducted during the pandemic period after the announcement of lockdown for elderly people, and 31.7% of the participants scored above the threshold value for GAD. Based on this comparison our study shows that compulsory home-stay period during the pandemic has increased anxiety levels in elderly population. GAD is the most common anxiety disorder among the elderly population.[18] It is important to note that perceived isolation and social disconnectedness play a vital role in the elderly population at the time of crises. One study has shown us that perceived isolation and social disconnectedness are associated with both depression and anxiety.[19]

In our study, the prevalence of GAD was higher in women, and female GAD risk was 2.27 times compared to males. Several previous studies in Turkey and other countries have shown that the GAD is more frequent in women, and the risk of GAD is higher in female gender.[8,10,20] It suggests that the psychiatric impact during the COVID-19 pandemic may be greater on women.

According to our results, most of the participants (79.9%) reported that they live with their families, but there was no significant association between loneliness and GAD level. Considering previous studies, living alone is a negative indicator of psychological well-being, and loneliness, a more reliable predictor, worsened the psychological effects of living alone.[21] Based on the cultural norms of Turkish society elderly individuals most of the times live with their family. According to the Turkish Statistical Institute elderly households constituted 5.4% of total households.[4] This may be the reason for absence of association between loneliness and GAD in our study.

In our study, the prevalence of GAD is significantly lower in those who exercise at least 3 days a week than those who do not exercise at all. A recent meta-analysis suggests that exercise significantly decreased anxiety symptoms and has a positive impact on mental health.[22] Physical activity is particularly important during social isolation and quarantine.[23] It is essential to carry out campaigns that support physical activity in terms of the mental health of the elderly in the quarantine period on a global scale.[24]

There is a negative relationship between education level and anxiety level in our study, and high education level plays a protective role against GAD. Previous studies have shown that high education levels and positive leisure attitudes are important parameters in terms of psychological well-being in the elderly population.[25] Another study from a sample of elderly subjects in the north of Portugal showed that elderly individuals with lower level of education tended to have higher values for both depression and anxiety.[26]

Positive perceptions and feelings experienced by individuals that result from leisure activities are called leisure satisfaction. Leisure satisfaction and leisure participation are associated with lower levels of anxiety.[27] We used the concept of "hobby" in our study to inquire about leisure attitude. According to our results, individuals who are doing something at home as a hobby during the quarantine period have lower anxiety levels, and hobby is a negative predictor for GAD A prospective observational study in Japan resulted that, having a hobby and/or a purpose in life has a positive impact on mental and physical well-being of elderly people.[28]

Financial loss during COVID-19 pandemic is another risk factor for GAD in our study population. Participants who stated a financial loss during pandemic had a GAD risk of 2.31 times than those with no financial loss. Other studies also suggested financial loss as a risk factor for mental disorders during Ebola, SARS, and MERS pandemic and their related isolation or quarantine processes.[29–31]

The daily amount of time participants allocated to follow the news about COVID-19 was another positive and significant predictor of GAD in our study. Using online social media can be very effective in the campaigns against pandemic, but sometimes it can cause harmful outcomes in audiences.[32] One of the biggest challenges of information and news in media is the problem of unreliability and fake information which can affect the mental health of population.[33,34] Let it not be unsaid that between 2013 and 2017, the rate of elderly people using the Internet increased 2.7 times in Turkey and may be further increased.[35]

According to our results, the odds of GAD for participants who do not believe that the COVID-19 pandemic can be controlled in Turkey is 2503 times than those who believe that COVID-19 can be controlled. This variable is related to the term of uncertainty which is negatively associated with affect disorders in older people.[7]

The participants taking part in in-depth interview also stated that walking, doing physical activity and handcrafts help them to relax. Some participants during the interviews used words and facial expressions, indicating that not being able to face-to-face meeting with their families increased their anxiety levels. The quantitative and qualitative findings in our study were compatible with each other in important points. Physical activity has been found to have a positive effect on anxiety levels, both quantitatively and qualitatively. In our study, it was observed that the anxiety level of individuals who have any hobbies was low in terms of both quantitative and qualitative evaluations.

### 4.1 | Strengths and limitations

Supporting the results of quantitative survey by conducting a qualitative study is one of the strength points of this study. The qualitative study is done by the same authors in quantitative study who have experience and were familiar enough with the concept and aims of the study.

Ankara is capital of Turkey, inhabitants are generally retired government officials hence education level of the city and the study sample have higher education and socio-economic status compared to the country average.

## 5 | CONCLUSION

It seems obvious that COVID-19 pandemic and its consequences will occupy the world public agenda for a long period.

Current study results may be weak in generalization for all elderly population. When the situation is evaluated in terms of anxiety in elderly, it may suggest that our findings present the tip of the iceberg.

During the pandemic, social isolation and lockdown for elderly people make serious risk factor for their mental well-being. Measures must be taken to support the psychological well-being of elderly by promoting physical activity and hobbies at home, and reducing their economic concerns. Mass communication tools such as TV, and social media platforms can be used to achieve this aim. Public authorities, non-government organizations and related parties are responsible for implementation of these interventions.

## ACKNOWLEDGMENTS

There are no funding sources available.

## CONFLICT OF INTEREST

The authors report no conflict of interest.

## ETHICAL STATEMENT

Expedited ethics approval was obtained from the ethical committee of the Gazi University (Decision Number: 2020-388) and all respondents provided informed consent. The data collection took place on June 1-10, 2020.

## DATA AVAILABILITY STATEMENT

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

## ORCID

*Hulya Sirin* https://orcid.org/0000-0001-8489-5005
*Ahmad Abed Ahmadi* https://orcid.org/0000-0002-0857-4557
*Gamze Ketrez* https://orcid.org/0000-0003-1572-7600
*Cagri Ozbeyaz* https://orcid.org/0000-0002-0395-6468
*Asiye Ugras Dikmen* https://orcid.org/0000-0002-3204-7562
*Secil Ozkan* https://orcid.org/0000-0003-1572-8777

## REFERENCES

1. WHO. *Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020*. 2020. https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020. Accessed January 31, 2021.
2. Republic of Turkey Ministry of Health. *COVID-19 Nedir?* 2020. https://covid19.saglik.gov.tr/TR-66300/covid-19-nedir-.html. Accessed October 10, 2020.
3. Zhou F, Yu T, Du R, et al. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. *Lancet*. 2020;395(10229):1054-1062. https://doi.org/10.1016/S0140-6736(20)30566-3
4. TUIK. *Türkiye İstatistik Kurumu, İstatistiklerle Yaşlılar*. 2016. https://tuikweb.tuik.gov.tr/HbPrint.do?id=24644. Accessed January 31, 2021.
5. Republic of Turkey Ministry of Interior. *65 Yaş ve Üstü ile Kronik Rahatsızlığı Olanlara Sokağa Çıkma Yasağı Genelgesi*. 2020. https://www.icisleri.gov.tr/65-yas-ve-ustu-ile-kronik-rahatsizligi-olanlara-sokaga-cikma-yasagi-genelgesi. Accessed January 31, 2021.
6. Steinman MA, Perry L, Perissinotto CM. Meeting the care needs of older adults isolated at home during the COVID-19 pandemic.

*JAMA Intern Med*. 2020;180(6):819-820. https://doi.org/10.1001/jamainternmed.2020.1661
7. Anderson EC, Carleton RN, Diefenbach M, Han PKJ. The relationship between uncertainty and affect. *Front Psychol*. 2019;10:12. https://doi.org/10.3389/fpsyg.2019.02504
8. Özdin S, Özdin ŞB. Levels and predictors of anxiety, depression and health anxiety during COVID-19 pandemic in Turkish society: the importance of gender. *Int J Soc Psychiatr*. 2020;66(5):504-511. https://doi.org/10.1177/0020764020927051
9. Torales J, O'Higgins M, Castaldelli-Maia JM, Ventriglio A. The outbreak of COVID-19 coronavirus and its impact on global mental health. *Int J Soc Psychiatr*. 2020;66(4):317-320. https://doi.org/10.1177/0020764020915212
10. Kirmizioglu Y, Doğan O, Kuğu N, Akyüz G. Prevalence of anxiety disorders among elderly people. *Int J Geriatr Psychiatr*. 2009;24(9):1026-1033. https://doi.org/10.1002/gps.2215
11. Pachana NA, Byrne GJ, Siddle H, Koloski N, Harley E, Arnold E. Development and validation of the Geriatric Anxiety Inventory. *Int Psychogeriatr*. 2007;19(1):103-114. https://doi.org/10.1017/S1041610206003504
12. Portman ME, Starcevic V, Beck AT. Challenges in assessment and diagnosis of generalized anxiety disorder. *Psychiatr Ann*. 2011;41(2):79-85. https://doi.org/10.3928/00485713-20110203-06
13. Akin DP. *Huzurevinde kalan yaşlılarda psikolojik kabul düzeyi ve kaygı belirtileri arasındaki ilişkiler (Yüksek lisans tezi)*. 2010. https://toad.halileksi.net/olcek/geriatrik-kaygi-olcegi. Accessed January 31, 2021.
14. Bendel RB, Afifi AA. Comparison of stopping rules in forward "stepwise" regression. *J Am Stat Assoc*. 1977;72(357):46-53. https://doi.org/10.1080/01621459.1977.10479905
15. Mickey RM, Greenland S. The impact of confounder selection criteria on effect estimation. *Am J Epidemiol*. 1989;129(1):125-137. https://doi.org/10.1093/oxfordjournals.aje.a115101
16. Zhang Z. Model building strategy for logistic regression: purposeful selection. *Ann Transl Med*. 2016;4(6):111. https://doi.org/10.21037/atm.2016.02.15
17. ElHayek S, Cheaito MA, Nofal M, et al. Geriatric mental health and COVID-19: an eye-opener to the situation of the Arab countries in the Middle East and North Africa region. *Am J Geriatr Psychiatr*. 2020;28(10):1058-1069. https://doi.org/10.1016/j.jagp.2020.05.009
18. Wittchen HU, Jacobi F, Rehm J, et al. The size and burden of mental disorders and other disorders of the brain in Europe 2010. *Eur Neuropsychopharmacol*. 2011;21(9):655-679. https://doi.org/10.1016/j.euroneuro.2011.07.018
19. Santini ZI, Jose PE, York Cornwell E, et al. Social disconnectedness, perceived isolation, and symptoms of depression and anxiety among older Americans (NSHAP): a longitudinal mediation analysis. *Lancet Public Heal*. 2020;5(1):e62-e70. https://doi.org/10.1016/S2468-2667(19)30230-0
20. Wang Y, Di Y, Ye J, Wei W. Study on the public psychological states and its related factors during the outbreak of coronavirus disease 2019 (COVID-19) in some regions of China. *Psychol Health Med*. 2021;26(1):13-22. https://doi.org/10.1080/13548506.2020.1746817
21. Lim LL, Kua EH. Living alone, loneliness, and psychological well-being of older persons in Singapore. *Curr Gerontol Geriatr Res*. 2011;2011:1-9. https://doi.org/10.1155/2011/673181
22. Stubbs B, Vancampfort D, Rosenbaum S, et al. An examination of the anxiolytic effects of exercise for people with anxiety and stress-related disorders: a meta-analysis. *Psychiatr Res*. 2017;249:102-108. https://doi.org/10.1016/j.psychres.2016.12.020
23. Chen P, Mao L, Nassis GP, Harmer P, Ainsworth BE, Li F. Coronavirus disease (COVID-19): the need to maintain regular physical activity while taking precautions. *J Sport Heal Sci*. 2020;9(2):103-104. https://doi.org/10.1016/j.jshs.2020.02.001
24. Goethals L, Barth N, Guyot J, Hupin D, Celarier T, Bongue B. Impact of home quarantine on physical activity among older adults living at home during the COVID-19 pandemic: qualitative interview study. *J Med Internet Res*. 2020;22(5):e19007. https://doi.org/10.2196/19007
25. Belo P, Navarro-Pardo E, Pocinho R, Carrana P, Margarido C. Relationship between mental health and the education level in elderly people: mediation of leisure attitude. *Front Psychol*. 2020;11:573. https://doi.org/10.3389/fpsyg.2020.00573
26. Teixeira CM, Vasconcelos-Raposo J, Fernandes HM, Brustad RJ. Physical activity, depression and anxiety among the elderly. *Soc Indicat Res*. 2013;113(1):307-318. https://doi.org/10.1007/s11205-012-0094-9
27. Ragheb MG, Tate RL. A behavioural model of leisure participation, based on leisure attitude, motivation and satisfaction. *Leisure Stud*. 1993;12(1):61-70. https://doi.org/10.1080/02614369300390051
28. Tomioka K, Kurumatani N, Hosoi H. Relationship of having hobbies and a purpose in life with mortality, activities of daily living, and instrumental activities of daily living among community-dwelling elderly adults. *J Epidemiol*. 2016;26(7):361-370. https://doi.org/10.2188/jea.JE20150153
29. Jeong H, Yim HW, Song YJ, et al. Mental health status of people isolated due to Middle East Respiratory Syndrome. *Epidemiol Health*. 2016;38:e2016048. https://doi.org/10.4178/epih.e2016048
30. Mihashi M, Otsubo Y, Yinjuan X, Nagatomi K, Hoshiko M, Ishitake T. Predictive factors of psychological disorder development during recovery following SARS outbreak. *Health Psychol*. 2009;28(1):91-100. https://doi.org/10.1037/a0013674
31. Pellecchia U, Crestani R, Decroo T, Van den Bergh R, Al-Kourdi Y. Social consequences of Ebola containment measures in Liberia. *PLoS One*. 2015;10(12):e0143036. https://doi.org/10.1371/journal.pone.0143036
32. Al-garadi MA, Khan MS, Varathan KD, Mujtaba G, Al-Kabsi AM. Using online social networks to track a pandemic: a systematic review. *J Biomed Inf*. 2016;62:1-11. https://doi.org/10.1016/j.jbi.2016.05.005
33. Depoux A, Martin S, Karafillakis E, Preet R, Wilder-Smith A, Larson H. The pandemic of social media panic travels faster than the COVID-19 outbreak. *J Trav Med*. 2020;27(3). https://doi.org/10.1093/jtm/taaa031
34. Shimizu K. 2019-nCoV, fake news, and racism. *Lancet*. 2020;395(10225):685-686. https://doi.org/10.1016/S0140-6736(20)30357-3
35. TUIK. *Türkiye İstatistik Kurumu. İstatistiklerle Yaşlılar*. 2017. https://tuikweb.tuik.gov.tr/HbPrint.do?id=27595. Accessed January 31, 2021.

**How to cite this article:** Sirin H, Ahmadi AA, Ketrez G, Ozbeyaz C, Dikmen AU, Ozkan S. Assessment of anxiety in elderly population during the COVID-19 pandemic and the impact of compulsory home-stay in the central districts of Ankara, Turkey: A quantitative, qualitative mixed method study. *Int J Geriatr Psychiatry*. 2021;1–10. https://doi.org/10.1002/gps.5600