

# Factors affecting the anxiety levels of adolescents in home-quarantine during COVID-19 pandemic in Turkey

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## Abstract

**Background:** The long-term closing of schools and home-quarantine during the COVID-19 pandemic cause negative effects on the physical and mental health of young people. Studies evaluating the mental health of adolescents during the pandemic are limited in the literature.

**Aim:** In our study, it was aimed to determine the results of home-quarantine measures taken for adolescents during the pandemic and the affecting factors.

**Method:** This study was conducted as an online cross-sectional self-report questionnaire and included children aged between 12 and 18 years. The data were obtained from the children of volunteer families via Facebook family groups, and Google Forms questionnaires sent by the child psychiatry clinic to their smartphones. Sociodemographic form, State-Trait anxiety scale, and UCLA loneliness survey were used as data collection tools.

**Results:** We examined the data of 745 adolescents. The average age of the study group was  $16.83 \pm 1.66$  years, and 69.5% were females. It was determined that 88.2% of the adolescents followed the developments in the COVID-19 process and obtained most information from the television. State anxiety was related to "Former psychiatric referral" by 4.39-fold, "Having a COVID positive patient in the family or your surroundings" by 3.81-fold, and "The most common medium for obtaining COVID-related information" by 2.41-fold.

**Conclusions:** Closure of schools and home-quarantine during pandemic causes anxiety and loneliness in young people. The identification of risky groups helps to properly support these individuals by various social connections, including healthcare professionals, families, and schools.

## KEYWORDS

child psychiatry, coronavirus, distance education, lockdown, loneliness

## 1 | INTRODUCTION

Coronavirus, which began in Wuhan, China at the end of 2019 and soon spread to cause a pandemic, was first observed in Turkey on

March 11, 2020. Many measures were taken to prevent the virus from spreading in Turkey following the first case: Schools were closed on March 12, 2020, and individuals under 20 years of age were forced to enter lockdown (Turkish Science Academy, 2020). According to UNESCO data, education has been suspended in 188 countries as of April 8, 2020, depriving more than 90% of students (1,5 billion young

people) of education worldwide (Lee, 2020). Education continued through alternative ways. In this context, the Ministry of Education courses online platform-Egitim Bilisim Agi (EBA-Network of Education Informatics) and a national television channel, TRT (Turkey Radio and Television Corporation), began to be used. Also, considering that these measures can cause psychological problems such as social distancing and anxiety and fear in young people, various psychosocial guides were prepared for students and families (Özer, 2020).

School routines are essential coping mechanisms, especially for young people with mental health problems. The length of the quarantine period, fear of infection, boredom, lack of information, being away from classmates and teachers, lack of personal space at home, and financial losses in the family cause stress in children and adolescents (Brazendale et al., 2017; Wang, Zhang, Zhao, Zhang, & Jiang, 2020). All these lifestyle changes may worsen the effects on young people's mental health and even lead to a problematic vicious cycle (Brooks et al., 2020). There is no official data on the number of symptomatic and asymptomatic individuals who are COVID-19 positive for under 18 years of age; also, children and adolescents may be asymptomatic if infected (Cai et al., 2020). For this reason, adults and adolescents can react differently to the Epidemic. Studies evaluating the mental health of adolescents during the pandemic are limited in the literature.

In our study, we aimed to determine the results of home-quarantine measures taken for adolescents during the pandemic and the factors affecting these results.

## 2 | METHOD

This study was conducted as an online cross-sectional self-report questionnaire and included children aged between 12 and 18 years. Data were obtained through Google Forms surveys (Google, California, USA) sent to individuals' smartphones through teachers and families from 13 different schools in Turkey/Sakarya.

## 3 | DATA COLLECTION TOOLS

### 3.1 | State-Trait Anxiety Inventory-STAI

Developed by Spielberger et al. (1983), the inventory has two 20-question scales. State Anxiety Inventory (STAI-S): It determines how the person feels at a certain time and condition. Trait Anxiety Scale (STAI-T): It determines how the person feels, regardless of the time and situation. The emotions or behaviors expressed on the STAI-S and STAI-T Scale are answered by choosing one of the "Not at all," "A little," "Somewhat," and "Very much so" options according to the severity of such experiences. The total score of the opposite expressive expressions is subtracted from the total score obtained for direct expressions, and a predetermined constant value is added to this number. The total value obtained shows the anxiety score of the individual. The total score value obtained from each scale varies between

20 and 80. The Turkish adaptation study was conducted by Öner and Le Compte, and the Cronbach alpha internal consistency coefficient of the scale was between 0.83 and 0.87, test-retest reliability was between 0.71 and 0.86, and item reliability was between 0.34 and 0.72 (Öner & LeCompte, 1985).

### 3.2 | UCLA loneliness scale

Developed by Russell, Peplau, and Cutrona (1980), it is a Likert-type self-assessment questionnaire that helps to determine the general loneliness of the individual. It has a four-point Likert-type rating with a total of 20 items, 10 of which do not contain positive loneliness, and the other 10 directed at identifying negative, namely, lonely individuals. The validity and reliability studies of the scale in our country were performed by Demir (1989). The Cronbach alpha internal consistency coefficient was calculated as 0.96, and the test-retest reliability coefficient was calculated as 0.94 (Demir, 1989).

### 3.3 | Statistical analysis

SPSS 22.0 package program was used for statistical analysis of the data. The results were expressed using mean  $\pm$  SD, median (minimum-maximum), and number (%) for ease of understanding. The suitability of variables to normal distribution was examined using visual (histogram and probability graphs) and analytical methods (Kolmogorov-Smirnov/Shapiro-Wilk tests). Pearson correlation analysis was used for the correlations. Participants with state anxiety levels  $>+2SD$  separated from the group. Logistic regression analysis with backward elimination method including sociodemographic and clinical variables used to predict the group with high state anxiety.  $P < .05$  was considered statistically significant.

### 3.4 | Ethics statement

Approval for the study was granted by the Sakarya University Ethical Committee with Approval no:71522473/050.01.04, dated April 27, 2020. All patients signed informed consent for participation in this study, and their anonymity is preserved.

## 4 | RESULTS

The data of 745 adolescents were examined in our study. The mean age of all participants was  $16.83 \pm 1.66$  years, 69.5% of whom were females. The majority (53.7%) lived in the city center, and 85.8% attended high school. About 5.9% of participants had a chronic disease, 11.3% had previous psychiatric referrals, and 18.4% had a family member diagnosed with COVID-19. The sociodemographic and clinical data of the group are presented in Table 1.

**TABLE 1** Sociodemographic and clinical data

Study parameters		(n: 745)
Age		16.83 ± 1.66
Gender		69.5% Females (n: 518)
Place of residence	Town/village	15.3 (n: 114)
	City center	53.7 (n: 400)
	District center	31.0 (n: 231)
Education levels	Secondary school	2.8% (n: 21)
	High school	85.8% (n: 639)
	University	11.4% (n: 85)
Attendance to distant learning		87.1% (n: 649)
Chronic diseases		5.9% (n: 44)
Previous psychiatric referral		11.3% (n: 84)
Those in need of psychiatric support during the pandemic		11.1% (n: 83)
Those with a family member diagnosed with COVID-19		18.4% (n:137)

**TABLE 2** The distribution of information sources during the COVID-19 process

Study parameters		(n: 745)
Following the data regarding COVID-19		88.2% (n: 657)
Which source do you use to obtain information regarding COVID-19?	TV	48.7% (n: 363)
	Social media	35.0% (n: 261)
	Internet apart from social media (search engines, news sites, and so forth)	12.2% (n: 91)
	People I am in touch with	2.1% (n: 16)
	I do not follow COVID-19 from any information source	1.9% (n: 14)

About 88.2% of adolescents followed the developments in the COVID-19 process and obtained the most information from the television. The distribution of information sources during COVID-19 is presented in Table 2.

56.4% of the adolescents stated that the level of anxiety did not change after the information they obtained. In the quarantine process, 58.1% reported that they had health concerns. They most chose the "I am a little concerned" option regarding future school life, while 15.2% stated they were "very worried". Among all, 14.5% chose the "I am very worried" option regarding social and economic life. The change of anxiety levels in different areas related to COVID-19 is presented in Table 3. State, trait anxiety, and loneliness scale scores are shown in Table 4.

A positive correlation was detected between loneliness and state anxiety scale ( $r: 0.175, P: .001$ ), and the trait anxiety scale ( $r: 0.194, P: .000$ ). Correlation analysis between state, trait anxiety, and loneliness scales were presented in Table 5.

**TABLE 3** The change of anxiety levels in different areas related to COVID-19

Study parameters		(n: 745)
How did the information you obtained on COVID-19 affect your anxiety level?	It did not affect.	56.4% (n: 420)
	Increased my anxiety.	37.4% (n: 279)
	Decreased my anxiety.	6.2% (n: 46)
Did your health-related concerns increase during the quarantine?	Yes	58.1% (n: 433)
How concerned are you with the possible effects of COVID-19 disease on your future school life?	Somewhat worried	34.4% (n: 256)
	Significantly worried	26.7% (n: 199)
	Very worried	15.2% (n: 113)
	Not worried at all	12.6% (n: 94)
	A little worried	11.1% (n: 83)
What is your level of concern about the possible effects of COVID-19 on your future social life?	Somewhat worried	32.3% (n: 241)
	Significantly worried	19.3% (n: 144)
	A little worried	18.3% (n: 136)
	Not worried at all	15.6% (n: 116)
	Very worried	14.5% (n: 108)
What is your level of concern about the effect of COVID-19 disease on your and your family's future economic life?	Somewhat worried	26.3% (n: 196)
	Not worried at all	20.5% (n: 153)
	A little worried	20.3% (n: 151)
	Significantly worried	18.4% (n: 137)
	Very worried	14.5% (n: 108)

**TABLE 4** State, trait anxiety and loneliness scale scores

Study parameters		(n: 745)
STAI-S		43.17 ± 5.86
STAI-T		51.53 ± 5.19
UCLA		41.89 ± 9.81

**TABLE 5** Correlation analysis between state, trait anxiety, and loneliness scales

Study parameters		STAI-S	STAI-T	UCLA Loneliness
STAI-S	<i>r</i>	—	—	—
	<i>P</i>	—	—	—
STAI-T	<i>r</i>	−0.037	—	—
	<i>P</i>	.314	—	—
UCLA loneliness	<i>r</i>	0.175	0.194	—
	<i>P</i>	.001	.001	—

Logistic regression analysis was performed with the backward elimination method to determine the effects of chronic disease history, psychiatric referral history, COVID disease in the family, information sources, place of residence, age, education status, and loneliness on persistent anxiety score and state anxiety scale being above +2SD

**TABLE 6** Logistic regression model with backward elimination method in patients grouped according to the state anxiety scale

Study parameters	$\chi^2$	R <sup>2</sup>	P	OR	%95 CI
Model	48.402	0.159	.022		
Previous psychiatric referral			.012	4.39	2.48-25.30
Having a COVID-19 positive patient in the family or entourage			.020	3.81	1.78-13.57
I mostly use the television to obtain information on COVID-19			.036	2.41	1.10-6.70

Abbreviations: CI, confidence interval; OR, odds ratio.

(*n*: 120). The logistic regression model was statistically significant ( $\chi^2$ : 20.403, *P*: .022). The model explained 30.0% (Nagelkerke *R*<sup>2</sup>) of the variance in the State anxiety scale and correctly classified 88.2% of the cases. Among the variables remaining in the model, it was found that "Previous psychiatric referral" was 4.39 times, "Having a COVID positive patient in the family or your environment" was 3.81 times, and "television as the most common source of information for COVID" was 2.41 times related (Table 6).

## 5 | DISCUSSION

In our study, the data of 745 adolescents were examined. The mean age of the study group was 16.83 ± 1.66 years, among which 69.5% were female. Participants mostly lived in the city center (53.7%), and 85.8% of them attended high school.

It was determined that 88.2% of the adolescents followed the developments in the COVID-19 process and obtained information mostly from television. During the pandemic, the agenda changes rapidly, and television and social media largely consist of news about the disease. Therefore, it is critical that the state establishes a close relationship with the media. However, some resources may not be appropriate in terms of public health policy (Fineberg, 2008). In our study, it was observed that the state anxiety scores increased 2.41 times more in the group, using mostly television as a source of information about COVID. These results show that exposing children to excessive information causes elevated levels of stress and anxiety. In a study conducted among families with children who went to school during the H1N1 pandemic, families stated that they received the most information from television, but 60% did not find it illuminating. Instead, they relied more on information provided by schools and healthcare units. The importance of understandability regarding compliance with the measures taken is emphasized in the same study. These results underline the importance of giving clear messages about home-quarantine

and suggest that it may have a significant impact on compliance in controlling the outbreak (Kavanagh et al., 2011). Another study conducted after the SARS epidemic in Toronto showed that the factors which affect the confusion in the society stemmed from the differences in the style, approach, and content of the government's messages (DiGiovanni, Conley, Chiu, & Zaborski, 2004). The lack of clear information has led the public to think the worst and increase their anxiety (Desclaux, Badji, Ndione, & Sow, 2017). Since young people mostly use the television as a source of information, authorities need to work closely and coordinate well with this source to provide accurate and easy-to-understand information about preventive strategies.

Studies performed in the previous SARS and H1N1 pandemics reported an increase in fear, anxiety, and panic in the society (Zhu, Wu, Miao, & Li, 2008). Although there is much information about children's responses to trauma, data on their response to epidemics are limited. In many studies, side effects of psychological stress due to adverse events such as anxiety, depression, impaired social interaction, and decreased appetite have been reported in children (Klein, Devoe, Miranda-Julian, & Linas, 2009). Among our participants, 56.4% reported that their anxiety level did not change after the information they obtained, while concerns about health in the quarantine process were noted in 58.1%. Regarding future school life, participants mostly marked the "I am a little concerned" option (34.4%), while 15.2% reported that "They were very worried". Regarding social and economic life, 14.5% were "very worried." The anxiety and depression levels of 2330 students attending second and sixth grades were measured to determine the psychological effects of COVID-19 on children in China, and the rate of anxiety symptoms were reportedly 18.9% (Xie et al., 2020). In a preliminary study on 320 children and adolescents (168 females and 142 males) aged 3-18 years conducted in the second week of February 2020, psychological and behavioral problems such as distraction, nervousness, and fear of asking about the Epidemic were observed (Jiao et al., 2020). In another study involving 7143 university students, anxiety symptoms were not found in 75.1%. The rate of students with mild, moderate, and severe anxiety was 21.3%, 2.7%, and 0.9%, respectively. Another remarkable finding in this study is that living in the urban area was a protective factor from anxiety (Cao et al., 2020). The low rate of anxiety about economic life in our study may be due to our participants mostly living in the city center.

In their report published on January 26, 2020, the Chinese National Health Commission stated that people in the quarantine might experience emotions such as anxiety, discrimination, boredom, loneliness, guilt, and stigmatization after the SARS-CoV-2 infection (Lei et al., 2020). Our correlation analysis revealed positive correlations between loneliness and state (*r*: 0.175, *P*: .001) and trait anxiety scales. Sprang et al. showed that children who were isolated and quarantined during the pandemic developed adjustment and acute stress disorders, while 30% of children were diagnosed with posttraumatic stress disorder (Sprang & Silman, 2013). Loss of routines and reduced social and physical contact with others often cause distress, disappointment, and an annoying sense of isolation during quarantine (Hawryluck et al., 2004). Friendships are especially crucial for the healthy psychological development of children (World Health

Organization, 2004). In addition, schools have been providing mental health services to children and adolescents for a long time. Data from the National Survey of Drug Use and Health (NSDUH) show that children between the ages of 12 and 17 years have reduced access to mental health services with the closure of schools (Burns et al., 1995). On the other hand, children and young people are significantly affected by the emotional state of adults. Exposure to unexplained and unpredictable behavior of adults may cause an increase in the feeling of anxiety (Dalton, Rapa, & Stein, 2020). They may refrain from sharing their feelings to ensure that they do not have emotion-oriented conversations, cause anxiety about the condition of adults, deal with their concerns, and that they protect others (Dalton et al., 2019). This can make young people feel lonely in their family. Parents' talking to the youth and establishing a sensitive and effective communication about the disease have great benefits in terms of the mental health of adolescents.

COVID-19 pandemic can worsen existing mental health problems (Golberstein, Gonzales, & Meara, 2019). In our study, it was determined that the state anxiety scores were 4.39 times higher in adolescents who were previously referred for psychiatric treatment. One of the reasons that led to this consequence is that economic downturns and unemployment of parents can affect parental mental health so that they can mistreat their children. This may lead to increased mental health problems in young people. Adolescents are generally healthy individuals. They do not need care other than regular follow-ups due to their chronic diseases. However, ignoring the immediate and psychological effects of the current situation can lead to more serious health and social problems (Shevlin et al., 2020). Understanding their reactions and emotions is particularly important in meeting their needs and may help to reduce anxiety and depressive symptom in home-quarantine times.

Having a positive COVID positive patient in or around the family caused a 3.81-fold increase in state anxiety scores. In the study conducted in England, the risk of getting infected reportedly increased the likelihood of anxiety and depression (Ko, Yen, Yen, & Yang, 2006). Higher levels of anxiety and depression were detected in people who were quarantined during the SARS outbreak due to suspicion of infection (Norredam, Nellums, Nielsen, Byberg, & Petersen, 2018). Another reason is that a COVID positive family member necessitates the isolation of the family. Separation from loved ones causes a crisis in young people and may increase the risk of psychiatric disorders (Golberstein, Wen, & Miller, 2020).

Our study has some limitations. Mental health assessment was based on self-report reports instead of clinician interviews. This may lead to higher reporting rates of psychiatric symptoms. Another limitation is that the social and economic conditions of families were not evaluated in our study. The condition of the family during a pandemic may render children more vulnerable.

## 6 | CONCLUSION

In our study, anxiety and loneliness levels of young people between the ages of 12-18 years were examined, and some affecting factors were discussed. During the pandemic, the closure of schools and

home-quarantine increases the level of anxiety and loneliness among young people. The identification of risky groups helps to properly support these individuals by various social connections, including healthcare professionals, families, and schools.

## CONFLICT OF INTEREST

The authors have no affiliations or financial interests that might pose a conflict of interest. The authors alone are responsible for the content and writing of the paper.

## AUTHOR CONTRIBUTIONS

S.K., O.K.: conceptualization, data collection, and writing; M.B.U.: statistical analysis, supervision, and writing; G.M., A.A.: conceptualization, data collection, and writing.

## DATA AVAILABILITY STATEMENT

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

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