

ORIGINAL ARTICLE

Determining the relationship between loneliness and depression in adolescents during the COVID-19 pandemic: A cross-sectional survey

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Abstract

Purpose: The aim of the present study is to determine the relationship between loneliness and depression felt by adolescents during the COVID-19 pandemic.

Design and Methods: The study sample consisted of 423 adolescents who volunteered to participate in the study. All participants had internet access and the cognitive ability to express themselves. The participants filled out the Google Documents form that included the “Socio-demographic Data Form,” “Children’s Depression Inventory,” and “Short-form UCLA Loneliness Scale” to collect data.

Findings: It was determined that the depression inventory total mean score of the adolescents participating in the study was 55.15 ± 2.88 (high) and the loneliness scale total mean score was 16.43 ± 4.93 (medium). A statistically positive high correlation was found between the depression total mean scores and the loneliness total mean scores of the adolescents ($p < 0.05$). As the loneliness levels of the adolescents increased, their depression levels increased.

Practice Implications: Adolescents were more likely to experience mental disorders such as loneliness and depression during and after the pandemic. Governments should focus on the mental health of adolescents in the management of COVID-19. Clinical services should plan and implement prevention activities, support programs, and services to replace early diagnosis and intervention.

KEYWORDS

adolescent, COVID-19, depression, loneliness

1 | INTRODUCTION

COVID-19 has caused major changes in all aspects of life around the world. Imposed restrictions and social isolation have negatively affected mental health at the global level (Magson et al., 2021; Octavius et al., 2020). The pandemic has disproportionately influenced adolescents among vulnerable groups (Octavius et al., 2020) and has imposed a risk factor for mental health problems (Qu et al., 2020; Seçer & Ulaş, 2020; Zhou et al., 2020). In addition, adolescents may experience the psychosocial effects of COVID-19 more severely than adults (Magson et al., 2021). Factors that impose risk for adolescents

include mental health, lockdown, social distancing (Fegert et al., 2020; Guessoum et al., 2020; Hafstad et al., 2021), uncertainty of lockdown duration, stressful life events, domestic violence, excessive internet use (Guessoum et al., 2020), fear of exposure to infection, and failure to see friends and teachers and continue school life (Ellis et al., 2020; Odriozola-González et al., 2020).

Depression has been reported to be common in adolescents during the pandemic (Murata et al., 2021; Zhou et al., 2020). Lockdowns (Loades et al., 2020), intense use of social media (Ellis et al., 2020), and exposure to newspapers about the pandemic (C. Wang et al., 2020) increase the risk of depression in adolescents.

Loneliness is a common experience during adolescence and is associated with mental health problems (Cooper et al., 2021). In addition, adolescents establish intense and complex peer relationships compared to other age groups (Orben et al., 2020). The restrictions imposed during the COVID-19 period are challenging for adolescents who need peer relationships for emotional support (Magson et al., 2021). Pandemic circumstances can affect peer relationships (Fegert et al., 2020) and increase feelings of loneliness among adolescents (Cooper et al., 2021). Loneliness is associated with problems, such as depression, anger, fear, stress, and anxiety in adolescents (Ellis et al., 2020; Orben et al., 2020).

In the literature, there are studies examining the relationship between loneliness and depression in adolescents in the prepandemic period (Alpaslan et al., 2016; Baker & Bugay, 2011; Baskin et al., 2010; Danneel et al., 2019; Hudson et al., 2000; Koenig et al., 1994; Lau et al., 1999; Purwono & French, 2016; Spithoven et al., 2017). It is believed that loneliness during the pandemic may increase the risk of depression in adolescents (Ellis et al., 2020; Loades et al., 2020). Only one study was found in the literature examining the correlation between loneliness and depression in adolescents during the pandemic period (Zhang et al., 2021).

2 | MATERIALS AND METHODS

This study was a descriptive and correlational study. The population of the study consisted of 856 students studying in a high school in Turkey. The sample size of the study was calculated based on the known sample calculation formula. After the relevant values ($n = 856$, $p = 0.5$, $q = 0.5$, $d = 0.05$, and $t = 1.96$) were entered in the formula, the minimum sample size of the study was calculated as 266. Four hundred and twenty-three high school students, who volunteered to participate were included in the present study. Inclusion criteria were: (a) being aged between 10 and 19 years; (b) having the cognitive competence to express themselves; and (c) having internet access. Exclusion criteria were: (a) not willing to participate in the study; (b) having a diagnosed physical and mental illness; and (c) having vision and hearing problems.

2.1 | Measures

The data were collected using the "Socio-demographic Data Form," "Children's Depression Inventory," and "UCLA Loneliness Scale-Short Form." The sociodemographic data form included questions about sociodemographic characteristics of the adolescents, such as gender, age, income status, and the number of people with whom they live.

2.2 | Children's Depression Inventory

The Children's Depression Inventory was developed by Kovacs (1981) to determine depression in children. The scale consists of

27 items and can be applied to participants aged 6–17 years. This study was conducted with adolescents between the ages of 13–18 and therefore it is appropriate to use this scale. Each item gets 0, 1, or 2 points according to the severity of the symptom. The lowest and highest scores on the scale are 0 and 54. Higher scores signify higher levels of depression. Öy (1991) conducted its Turkish validity and reliability study and determined the Cronbach's α internal consistency coefficient as 0.80. In this study, Cronbach's α coefficient of the scale was found to be 0.71.

2.3 | UCLA Loneliness Scale short-form

The scale, which is a short form of the UCLA Loneliness Scale revised by Hays and DiMatteo (1987), consists of eight items. The items are rated with four options: (1) Never, (2) Rarely, (3) Sometimes, and (4) Always. Yildiz and Duy (2014) conducted the Turkish adaptation of the scale for use in adolescents and found the Cronbach's α internal consistency coefficient as 0.74. Exploratory Factor Analysis showed that factor loading of the third item ("I am an extrovert person") was 0.15. Since this was lower than the critical loading value of 0.30, the third item was excluded and analyses were done with the remaining items. Due to the removal of one item, the scale consists of seven items. The lowest possible and highest scores on the scale are 7 and 28. The fifth item of the scale, "I can find friends whenever I want" is reversely scored. The higher the score, the more lonely the person felt. In this study, Cronbach's α coefficient of the scale was found to be 0.76.

2.4 | Data collection

After obtaining the ethics committee's approval, the survey containing the questions of "Socio-demographic Data Form," "Children's Depression Inventory," and "UCLA Loneliness Scale Short-form" was prepared using Google Forms. First, high school students and their parents were informed online about the study. Then, the survey link, which also included the informed consent form, was sent to the adolescents via e-mail. It took approximately 10–12 min for the participants to complete the survey.

2.5 | Data analysis

In the data assessment, IBM SPSS Statistics 25 (IBM SPSS, Turkey) program was employed for statistical analysis. The Kolmogorov–Smirnov test was used to assess the compatibility of the variables to the normal distribution and it was determined that the data were normally distributed. Sociodemographic data were shown with descriptive statistical methods, such as mean, standard deviation, and frequency. While t -test was used to compare independent two groups, analysis of variance and Tukey test were used to compare more than two groups. Pearson test was used for

TABLE 1 Distribution of adolescents based on their descriptive characteristics

Descriptive characteristics	n	%
Gender		
Male	154	36.4
Female	269	63.6
Economic income level		
Low	40	9.5
Middle	309	73.0
High	74	17.5
Number of people living in the house		
1	0	0
2-3	83	19.6
3+	340	18.4
Age		
Mean ± SD	15.53 ± 2.23	

TABLE 2 Total score averages of the scales

	Min-max score	Mean ± SD
Depression	47-67	55.15 ± 2.88
Loneliness	7-52	16.43 ± 4.93

correlation. A p value of <0.05 was accepted as statistically significant.

3 | RESULTS

The study sample consisted of 423 adolescents who volunteered to participate in the study. The mean age of the adolescents participating in the study was 15.53 ± 2.23 . 63.6% ($n = 269$) of the adolescents were girls and 36.4% ($n = 154$) were boys. 9.5% ($n = 40$) of the adolescents described their income level as "low," 73.0% ($n = 309$) as "moderate," and 17.5% ($n = 74$) as "good." 80.4% ($n = 340$) of the adolescents were living in the same house with "4 or more" individuals (Table 1). It was determined that the depression inventory total mean score of the adolescents was 55.15 ± 2.88 (high) and their loneliness scale total mean score was 16.43 ± 4.93 (medium) (Table 2). Table 3 compares the descriptive characteristics and depression total mean scores of the adolescents. While a statistically significant difference was found between gender and depression total mean score ($p < 0.05$), no statistically significant difference was found between the other descriptive characteristics and depression total mean score ($p > 0.05$).

Table 3 also compares the descriptive characteristics and loneliness total mean scores of the adolescents. While a statistically significant difference was found between gender, income level, age, and the loneliness total mean score ($p < 0.05$), no statistically

significant difference was found between the number of people they lived with and the loneliness total mean score of ($p > 0.05$). In further analysis, a moderate-level significant relationship was found between the levels of loneliness and income.

It was determined that there was a statistically positive high correlation between the depression total mean scores and the loneliness total mean scores of the adolescents ($p < 0.05$). As the loneliness levels of adolescents increased, their depression levels also increased (Table 4).

4 | DISCUSSION

The findings of the study, which was conducted to determine the depression and loneliness levels of adolescents during the COVID-19 infection, are discussed in line with the relevant literature. Our findings indicated that the adolescents obtained a high total mean score on the depression inventory (Table 2). Since the announcement of COVID-19 as a pandemic by the World Health Organization, adolescents have experienced dramatic disruptions in their daily lives, which, in turn, has constituted serious risk factors for their mental health. In their study, Murata et al. (2021) investigated the psychiatric sequelae of the COVID-19 pandemic in adolescents, adults, and healthcare professionals and found that adolescents reported significantly higher rates of moderate to severe depression compared to adults (55% vs. 29%; $p < 0.001$) during the COVID-19 pandemic. A study conducted in China to determine the mental health of children and adolescents during the pandemic revealed that depression and anxiety levels of children and adolescents increased (Liu et al., 2020). Another study conducted with adolescents aged 12-18 during the pandemic in China ($n = 8079$) reported that the prevalence of depressive and anxiety symptoms was 43.7% and 37.4%, respectively (Zhou et al., 2020). A study conducted by Al Azzam and Abuhammad (2021) during the pandemic examined anxiety and depression levels of high school senior students and the predictive factors affecting them. They found that almost two-thirds of the students reported depressive symptoms and anxiety (Alazzam & Abuhammad, 2021).

In their study, Zhang et al. (2021) examined loneliness and depression in adolescents during the COVID-19 pandemic and determined that 58.46% of the participants were depressed and 20.31% experienced moderate or more severe depression. Thus, the results of similar studies in the literature are compatible with this finding of the present study. Factors such as widespread social isolation measures taken by governments to prevent the spread of the pandemic, school closures, lockdown orders, increased family stress, reduced peer interactions, and increased feelings of loneliness are thought to be potential triggers for increased rates of depression in adolescents.

It was determined that the participants' loneliness total mean score was at a moderate level (Table 2). In the study conducted by Zhang et al. (2021), with university students during the COVID-19 pandemic, they found that university students felt alone during the lockdown period. In their longitudinal study, Cooper et al. (2021)

TABLE 3 Comparison of introductory features and scales

Descriptive characteristics	n	%	Depression		Loneliness	
			Mean ± SD	Test value and significance	Mean ± SD	Test value and significance
Gender						
Male	154	36.4	54.91 ± 2.94	$t = -1.178, p = 0.001$	15.44 ± 4.23	$t = 1.301, p = 0.022$
Female	269	63.6	55.57 ± 2.73		17.01 ± 5.22	
Economic income level						
Low	40	9.5	54.87 ± 3.55	$F = 1.270, p = 0.282$	19.15 ± 4.46	$F = 2.965, p = 0.001^*$
Middle	309	73.0	55.07 ± 2.90		16.33 ± 5.02	
High	74	17.5	55.62 ± 2.30		15.40 ± 4.32	
Number of people living in the house						
2-3	83	19.6	51.00 ± 1.97	$t = 1.537, p = 0.128$	22.00 ± 0.01	$t = 1.119, p = 0.266$
3+	340	80.4	55.59 ± 2.97		16.25 ± 5.10	
Age						
Mean ± SD	15.53 ± 2.23		$p:0.056, r:0.093$		15.53 ± 2.23	$p:0.001, r:0.981$

*Tukey, $p < 0.05$.

TABLE 4 Correlation between scales

	Depression
Loneliness	
<i>r</i>	0.084
<i>p</i>	0.03*

* $p < 0.05$.

reported that 11–16-year-old adolescents ($n = 894$) had a moderate level of loneliness. Sarialioğlu et al. (2021) examined the relationship between loneliness and internet addiction among adolescents during the COVID-19 pandemic and reported that adolescents had a moderate level of loneliness. Due to the COVID-19 pandemic, the governments had to take social distancing measures, such as school closures and lockdowns. Therefore, adolescents experienced long-term physical isolation, which kept them away from their peers, teachers, and other social networks. The more independent teenagers become, the less time they spend with their families and the more time they spend with their peer groups. Lockdown carried out during the COVID-19 pandemic prevented this tendency in adolescents. Social distancing rules and the closure of schools are possible reasons for the increased sense of loneliness in adolescents.

Loneliness is a painful emotional experience and one of the serious risk factors for depression. (Achterbergh et al., 2020). When the descriptive characteristics of the adolescents were compared with their depression total mean scores, it was determined that while there was a statistically significant difference between gender and depression total mean score ($p < 0.05$), there was no statistically significant difference between the other descriptive characteristics (income level, number of people they were living with, and age) and depression total mean score ($p > 0.05$). The depression total mean

score of female adolescents was significantly higher than those of males. In their study, Oosterhoff et al. (2020) and Zhou et al. (2020) investigated the relationship between gender and depressive symptoms in adolescents and found that depressive and anxiety symptoms were higher in female adolescents than in their male counterparts. In the study conducted in Jordan, Alazzam and Abuhammad reported that 30.7% of those identified as depressed were male and 50.7% were female (Alazzam & Abuhammad, 2021). In their study, Zhang et al. (2021) analyzed loneliness and depression in adolescents during the COVID-19 pandemic and reported that while 31.38% of men suffered from depression, 68.62% of women suffered from depression. Thus, the findings of similar studies in the literature are compatible with this finding of the present study.

When the descriptive characteristics of the adolescents and their loneliness total mean scores were compared, it was determined that while there was a statistically significant difference between gender, income level and age, and the loneliness total mean score ($p < 0.05$), there was no statistically significant difference between the number of people the participants lived with and the loneliness total mean scores ($p > 0.05$). The loneliness total mean score of female adolescents was significantly higher compared to males. There are a limited number of studies examining this correlation in the literature. But one study's findings are compatible with the present study; Cooper et al. (2021) reported that female adolescents felt more lonely than males during the pandemic, $r(867) = 0.19, p < 0.001$.

Adolescents with a low-income level had a significantly higher loneliness total mean score compared to adolescents with medium- and high-income levels. In the study conducted with university students during the pandemic period, Cooper et al. (2021) reported that the loneliness total mean score of young people with lower income levels was significantly higher, $r(867) = 0.13, p < 0.001$. In a study conducted with adolescents during the pandemic, Sarialioğlu

et al. (2021) reported that adolescents with a low family income had higher loneliness mean scores. Perhaps adolescents with high-income levels have the chance to be more active in different social environments, where during the pandemic appropriate social distancing rules were followed.

In the present study, the adolescents were aged between 13 and 18 years and their mean age was 15.53 ± 2.23 . It was determined that as the age of adolescents increased, the loneliness total mean score increased significantly. No study examining these two correlations has been encountered in the literature. One characteristic of this developmental period is that as adolescents get older, they grow more apart from their parents and share more with/become closer to their peers. With increasing age, the need for peers and other social environments increases during adolescence; however, the failure to meet these needs due to the pandemic may lead older adolescents to have higher loneliness mean scores.

It was determined that there was a statistically strong positive correlation between the depression total mean scores and the loneliness total mean scores of the adolescents ($p < 0.05$). Further, as the loneliness levels of adolescents increased their depression levels increased. There are serious associations between loneliness and mental health problems (J. Wang et al., 2017). The loneliness deficit hypothesis argues that individuals experiencing strong loneliness have problems with interpersonal interactions and have unsatisfied emotional needs, which, in turn, causes depression (Zhang et al., 2021). As stated, Zhang et al. (2021) study with university students during the pandemic period reported a positive correlation between depression and loneliness. Similarly, Cooper et al. (2021) reported that during the pandemic adolescents who reported high levels of loneliness had a higher level of mental problems compared to other adolescents. Loades et al. (2020) conducted a systematic review to investigate the effect of social isolation and loneliness on the mental health of children and adolescents during the COVID-19 pandemic. They reported that 63 studies, which included 51,576 participants, indicated that there is an obvious relationship between loneliness and mental health problems in children and adolescents.

5 | LIMITATIONS OF THIS STUDY

The results obtained from this study are limited to adolescents who received education in a single center for a certain period of time. In this study, social media was used to reach adolescents and thus a potential limitation of the study.

6 | CONCLUSION AND RECOMMENDATIONS

The COVID pandemic's social distancing and isolation measures have caused adolescents to experience an increase in mental health issues. One of the possible reasons underlying this increase is thought to be loneliness. Governments should rapidly work on this issue to plan and

allocate resources for the purpose of protecting and improving the mental health of adolescents.

Quality social networks should be created that for adolescents that while maintaining physical distance, reduce the feeling of strain caused by physical isolation. Giving adolescents a sense of being a part of society should be a priority. Parents should be provided training about the risks and benefits of social media and how much screen time should be permitted. This will help adolescents use social media beneficially, interact with their friends through social media, and reduce the feeling of loneliness.

7 | IMPLICATIONS FOR NURSING PRACTICE

Adolescents will experience mental health issues, such as loneliness and depression during and after the pandemic. The findings of this study showed that there was an increase in the level of depression and loneliness in adolescents during the COVID-19 pandemic period and that there was a significant relationship between depression and loneliness in adolescents. The protection, development, and treatment of adolescents' mental health is the responsibility of psychiatric nurses. During the pandemic period, psychiatric nurses should evaluate adolescents in terms of depression and loneliness, provide training on how to deal with these problems, make psychosocial interventions, and plan and implement initiatives to ensure their adaptation to society.

AUTHOR CONTRIBUTIONS

Study conception and design: Kübra Kayaoğlu. *Data collection and analysis:* Kübra Kayaoğlu. *Drafting of manuscript:* Kübra Kayaoğlu and Mehmet Başçillar. *Critical revisions for important intellectual content and supervision:* Kübra Kayaoğlu. *Statistical expertise:* Kübra Kayaoğlu and Mehmet Başçillar. *Administrative, technical, and material support:* Kübra Kayaoğlu and Mehmet Başçillar.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

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

ETHICS STATEMENT

The study was approved by the Firat University Non-Interventional Studies Ethics Committee. Written approval was obtained from the Firat University Non-Invasive/Noninvasive Research Ethics Committee (Decision No: 30932) before the study. After the participants were informed about voluntarily giving answers in the study, the purpose of the study, and how the results of the study would be used, their consent (informed consent principle) was obtained verbally and in writing. The adolescents were informed that information about them would not be used for another purpose,

and the "principle of confidentiality" was met. The study was conducted in accordance with the principles of the Declaration of Helsinki.

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