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Research paper

# What is the psychosocial effects of the COVID-19 on adolescents at a private high school in Istanbul?

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Abstract

Introduction: Many countries have closed schools in order to prevent the spread of COVID-19. As a result, adolescents have become socially isolated.

Aim: The aim of this cross-sectional study was to determine the psychosocial effects of the COVID-19 pandemic on students attending a private high school in Istanbul, Turkey.

Material and methods: Participants completed an online questionnaire including the COVID-19 phobia scale (C19P-S), trait anxiety inventory (TAI), and questions about their sociodemographic characteristics, COVID-19 prevention measures taken, and pandemic-related life changes. The minimum sample number was calculated as 199 students, and 92% ($n$ = 183) of this target was achieved.

Results and discussion: The most common changes in their lives during the pandemic were increased use of digital devices, feeling socially isolated, and lethargy and laziness due to staying at home for a prolonged period. Based on the group medians, 39 (21.3%) of all participants were found to have COVID-19 phobia, with phobia in the psychological, somatic, social, and economic domains in 74 (40.4%), 57 (31.1%), 66 (36.1%), and 47 (25.7%) of participants, respectively. Based on the median TAI score, 55 (30.1%) of the participants had anxiety.

Conclusions: Adolescents are a vulnerable group; to protect their mental health during the pandemic, risks must be reduced and preventive mental health interventions increased. Parents should provide guidance to adolescents in order to provide access to sources of accurate information, use the internet to support individual and social development, and create alternative ways for peer interaction to reduce isolation and loneliness.

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## 1. INTRODUCTION

In December 2019, an epidemic of unknown etiology appeared in the city of Wuhan in the Hubei province of China and quickly spread worldwide, being declared a public health emergency of international concern by the World Health Organization (WHO) on January 30, 2020. Soon after the start of the epidemic, the causative agent was identified as a novel coronavirus, initially named 2019-nCoV and later called severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), and the disease was named novel coronavirus 2019 (COVID-19). On March 11, 2020, the WHO recognized the disease as a pandemic.[1] Because the virus is transmitted by direct contact or via droplets produced by coughing or sneezing, millions of people around the world have been forced to stay home in order to limit the spread of the pandemic.[2,3]

As part of pandemic precautions in our country, in-person education was suspended on March 16, 2020, five days after the first COVID-19 case was reported, and education at all levels was conducted online. As of February 20, 2021, education remains online. The isolation of adolescents that started with extended school closures was further increased by a curfew for individuals under the age of 20, which was implemented on April 3, 2020 to reduce the rate of spread and help enforce social distancing. These restrictions caused adolescents to be removed from the peer interactions of school life and/or forcefully isolated from their normal social interactions. Moreover, they faced stressors such as fear of COVID-19, insufficient information, lack of face-to-face contact with friends and teachers, and lack of personal space and socialization in the home environment. The WHO defines health not only as the absence of disease and disability, but as a state of complete physical, mental, and social well-being. During the COVID-19 pandemic, it is inevitable that the mental health of adolescents will be affected by the extraordinary isolation they are experiencing.[4]

The rapid rise in the number of confirmed cases and affected countries caused many people to fear the possibility of infection. As the pandemic continues, it may lead to greater and more permanent psychosocial problems, especially among adolescents, who represent a vulnerable group.[4] Mental health is considered the most important requirement for good quality of life. Adolescents with good mental health carry their happiness and self-confidence into adulthood, thereby gaining resilience and coping abilities.[5] Mental disorders account for 16% of the global burden of illness and injury between the ages of 10 and 19 years. It is estimated that 10%–20% of children and adolescents worldwide suffer from mental health issues. Globally, depression is the fourth and anxiety is the ninth most common cause of illness and disability among adolescents aged 15 to 19 years.[6] For all of these reasons, it is necessary to investigate the psychosocial impact of the pandemic on adolescents. A literature search reveals that few studies have examined the psychosocial effects of the COVID-19 pandemic on adolescents.[7–10] Xie et al.[11] found that 19% of 2nd- to 6th-grade children had anxiety symptoms during the COVID-19 pandemic. In an another study, Zhou et al.[7] report that 37% of 12- to 18-year-olds showed anxiety.

## 2. AIM

The fact that the pandemic is new and its psychosocial effects have not been sufficiently investigated in adolescents is the strength of this study, which aimed to determine the psychosocial effects of the COVID-19 pandemic on students attending a private high school in Istanbul in the 2020–2021 academic year.

## 3. MATERIAL AND METHODS

This cross-sectional study was conducted in a private high school between November 1, 2020 and February 1, 2021. Inclusion criteria for the study included being enrolled in the relevant high school for the 2020–2021 academic year and agreeing to participate in the study (both parent and student).

To calculate the sample, we requested the list of students attending the high school, organized by gender and grade. In a study conducted in China, Zhou et al. determined the prevalence of anxiety among Chinese students aged 12–18 years during the COVID-19 pandemic to be 37.4%.[7] Based on this study, we calculated the minimum number of students to be included in the study sample at a confidence level of 95% as 199. The total number of students attending the school was 440, and the number of students to enroll in the study was determined by stratification according to gender and grade. Table 1 shows the numbers of students in the population, sample, and who completed the questionnaires. Data were collected from 92% of the targeted sample.

**Table 1. Distribution of the study population and sample by grade and gender.**

| Grade | Population | | | Population | | | Population | | |
|---|---|---|---|---|---|---|---|---|---|
| | Male | Female | Total | Male | Female | Total | Male | Female | Total |
| Preparatory | 72 | 43 | 115 | 33 | 19 | 52 | 25 | 19 | 44 |
| 9 | 83 | 41 | 124 | 38 | 19 | 56 | 27 | 22 | 49 |
| 10 | 38 | 39 | 77 | 17 | 18 | 35 | 14 | 17 | 31 |
| 11 | 52 | 25 | 77 | 24 | 11 | 35 | 25 | 13 | 38 |
| 12 | 19 | 28 | 47 | 9 | 13 | 21 | 9 | 12 | 21 |
| **Total** | **264** | **176** | **440** | **119** | **80** | **199** | **100** | **83** | **183** |

A Google forms online survey was announced to the students over the email. Informed consent was obtained from both the students and their parents, after which they were asked to complete the questionnaire. The questionnaire was created by the researchers and consisted of 6 sections:

(1) Sociodemographic data.
Questions about the students' date of birth, gender, current grade, family structure, maternal and paternal education, and number of people in their household were asked.

(2) COVID-19-related information.
The students were asked to assess their level of knowledge on how to prevent the spread of COVID-19 and how to protect themselves, their probability of contracting COVID-19, and how susceptible/vulnerable they feel to COVID-19 infection, rated on a Likert-type scale of low, moderate, and high.

(3) COVID-19 precautions.
The students were asked to indicate which of the 25 recommended precautions they applied to protect against COVID-19.

(4) Impact of COVID-19 on life.
The students were asked to respond to 14 statements by selecting from the response options 'agree,' 'disagree,' and 'not sure.' There were also open-ended questions about time spent using digital devices (mobile phones, laptops, tablets) before and during the pandemic.

(5) COVID-19 phobia scale (C19P-S).
The C19P-S is a self-assessment scale to measure phobic reactions to the coronavirus. Items are rated on a 5-point Likert-type from 'strongly disagree' to 'strongly agree.' There are a total of 20 questions in 4 domains: psychological (6 questions), somatic (5 questions), social (5 questions), and economic (5 questions). The relevant item scores are summed to obtain subscale scores, which are then summed to yield a total C19P-S score ranging 20–100 points and higher scores indicate greater phobia. High domain and total scores reflect higher levels of specific and general coronaphobia. In the validity and reliability study of the C19P-S performed by Arpacı et al. in 2020, the Cronbach's α coefficient of the scale was found to be 0.925.[12] This indicates that the scale is adequately reliable.

(6) Trait anxiety inventory (TAI).
Trait anxiety is defined as a tendency to perceive situations as threatening and respond with emotions such as stress and anxiety. The TAI is a 20-item scale that assesses how people have felt in the last 7 days. Respondents rate to what extent the feelings, thoughts, and behaviors described in the statements represent how they generally feel by selecting 'almost never,' 'sometimes,' often,' and 'almost always.' The scale includes direct and reverse worded statements. The TAI comprises half of the State-Trait Anxiety Inventory, which was developed by Spielberg et al. in 1964 to measure the trait and state anxiety levels of normal and abnormal individuals and was adapted to Turkish by Öner and Le Compte. Cronbach's α reliability coefficients for the scale obtained in studies of normal and patient samples were 0.83 and 0.87.[13]

The Kolmogorov–Smirnov test was used to test numerical data for normal distribution. Normally distributed data (age) were presented as mean and standard deviation, nonnormally data (number of people in their household, daily time spent using digital devices, C19P-S scores and TAI score) distributed data as median with minimum and maximum values, and categorical data as number and percentage. Wilcoxon signed-rank test was performed to compare time spent using digital devices before and during the pandemic. Spearman correlation analysis was performed between the duration of digital devices use and anxiety and coronaphobia.

Statistical significance was accepted at $P < 0.05$. The data were evaluated using SPSS v. 21 statistical package program (IBM Corp, Armonk, NY, USA).

### Limitations

This study has a limited area of influence due to the fact that it was a single-center, cross-sectional study. Furthermore, because the study was conducted in a private high school, the results only represent adolescents in a specific sociodemographic group.

## 4. RESULTS

The distribution of the 183 participants according to grade is presented in Table 1. The mean age was 15.7 ± 1.3 years and 83 (45.4%) were girls (Table 2). The students' households included of a median of 4 (range 2–6) people.

In the COVID-19-related information section of the questionnaire, the participants were asked to evaluate their level of knowledge about COVID-19 spread and protection and share their opinion about their chances of infection and

**Table 2. Sociodemographic characteristics of the participants ($n$ = 183).**

| Characteristics | *N* | % |
|---|---|---|
| Gender | | |
| Female | 83 | 45.4 |
| Male | 100 | 54.6 |
| Family structure | | |
| Nuclear | 170 | 92.9 |
| Extended | 4 | 2.2 |
| Fragmented | 9 | 4.9 |
| Maternal education | | |
| High school | 7 | 3.8 |
| Associate/vocational | 14 | 7.7 |
| Undergraduate | 95 | 51.9 |
| Postgraduate (master/doctorate) | 67 | 36.6 |
| Paternal education | | |
| High school | 5 | 2.7 |
| Associate/vocational | 14 | 7.7 |
| Undergraduate | 74 | 40.4 |
| Postgraduate (master/doctorate) | 90 | 49.2 |

**Table 3. Distribution of participants' self-assessed knowledge and opinions about COVID-19 ($n$ = 183), $n$(%).**

| Self-assessed knowledge | Low | Moderate | High |
|---|---|---|---|
| Level of knowledge on how to prevent the spread of COVID-19 | 4(2.2) | 35(19.1) | 144(78.7) |
| Likelihood of becoming ill due to coronavirus infection | 106(57.9) | 74(40.4) | 3 (1.6) |
| How suspectible/vulnerable to COVID-19 | 40(21.9) | 74(40.4) | 69(37.7) |
| Knowledge of how to protect self from COVID-19 | 0(0.0) | 19(10.4) | 164(89.6) |

their vulnerability to COVID-19. The distribution of their responses is shown in Table 3.

In the section evaluating measures taken by the participants to prevent the spread of COVID-19, they were asked which of the 14 recommendations they followed. The distribution of the measures they reported applying is presented in Table 4.

In the section assessing life changes due to COVID-19, the participants were asked to respond to 25 statements with 'agree,' 'disagree,' or 'not sure.' The most common changes in the participants' lives were increased use of digital devices, feeling socially isolated, and lethargy and laziness due to staying at home for a prolonged period. The distribution of the responses is presented in Table 5. The participants' median daily time spent using digital devices was 3.5 h (range 1.0–13.0 h) before and 11.0 h (range 2.0–20.0 h) during the pandemic ($P < 0.001$). No relationship was found between the duration of digital devices use and C19P-S scores before the pandemic. A correlation was found between the duration of digital devices use and psychological ($r = 0.225$; $P = 0.002$), somatic ($r = 0.217$; $P = 0.003$), economic ($r = 0.146$; $P = 0.049$) and total ($r = 0.195$; $P = 0.008$) scores during the pandemic. There was no correlation between TAI before and during the pandemic and digital devices use ($P = 0.053$).

**Table 4. Measures taken by participants to prevent the spread of COVID-19 ($n$ = 183), $n$(%).**

| Measures taken | Yes | No | Not sure |
|---|---|---|---|
| Wearing a face mask | 181(98.9) | 1(0.5) | 1(0.5) |
| Covering mouth and nose when coughing and sneezing | 177(96.7) | 2(1.1) | 4(2.2) |
| Using disinfectant to clean hands when there is no soap and water for handwashing | 168(91.8) | 11(6.0) | 4(2.2) |
| Staying at home when sick or feeling unwell | 166(90.7) | 12(6.6) | 5(2.7) |
| Washing hands for at least 20 s | 159(86.9) | 10(5.5) | 14(7.7) |
| Avoiding touching the eyes, nose, and mouth before washing hands | 156(85.2) | 18(9.8) | 9(4.9) |
| Being careful when opening deliveries | 144(78.7) | 29(15.8) | 10(5.5) |
| Maintaining physical distance (staying at least 2 m away from persons not in the same household) | 140(76.5) | 17(9.3) | 26(14.2) |
| Self-isolation | 127(69.4) | 42(23.0) | 14(7.7) |
| Disinfecting surfaces | 121(66.1) | 51(27.9) | 11(6.0) |
| Use of herbal supplements | 85(46.4) | 82(44.8) | 16(8.7) |
| Disinfecting your mobile phone | 80(43.7) | 87(47.5) | 16(8.7) |
| Getting influenza vaccination | 39(21.3) | 122(66.7) | 22(12.0) |
| Using antibiotics | 14(7.7) | 154(84.2) | 15(8.2) |

**Table 5. Changes in the participants' lives due to COVID-19 ($n$ = 183), $n$(%).**

| Changes in the lives | Agree | Not sure | Disagree |
|---|---|---|---|
| I spend more time using digital devices (mobile phone, laptop, ipad). | 168(91.8) | 4(2.2) | 11(6.0) |
| I feel socially isolated. | 123(67.2) | 18(9.8) | 42(23.0) |
| Staying at home for a long time has led to lethargy and laziness. | 120(65.6) | 27(14.8) | 36(19.7) |
| I have a harder time concentrating on classes at home. | 116(63.4) | 22(12.0) | 45(24.6) |
| My sleep schedule was disrupted during the pandemic. | 104(56.8) | 8(4.4) | 71(38.8) |
| A hybrid education system (combined remote and in-person) would be better than the remote education system. | 96(52.5) | 47(25.7) | 40(21.9) |
| The remote education system imposed by the pandemic has adversely affected my quality of learning. | 85(46.4) | 35(19.1) | 63(34.4) |
| It would be better if exams were held in person. | 73(39.9) | 73(39.9) | 37(20.2) |
| I think I am not able to express myself sufficiently in classes held remotely. | 60(32.8) | 47(25.7) | 76(41.5) |
| I am more nervous and angrier than usual. | 57(31.1) | 40(21.9) | 86(47.0) |
| I feel alone/helpless. | 52(28.4) | 30(16.4) | 101(55.2) |
| I've lost interest in things I've always enjoyed. | 49(26.8) | 30(16.4) | 104(56.8) |
| Thinking about the COVID-19 pandemic makes it hard for me to focus on classes. | 30(16.4) | 30(16.4) | 123(67.2) |

**Table 6. Frequency of overall and domain-specific COVID-19 phobia and anxiety among the participants ($n$ = 183)**

| Low | *N* | % |
|---|---|---|
| Psychological | 74 | 40.4 |
| Social | 66 | 36.1 |
| Psychosomatic | 57 | 31.1 |
| Economic | 47 | 25.7 |
| Total score | 39 | 21.3 |
| TAI | 55 | 30.1 |

The participants' median total C19P-S score was 49.0 (41.0–56.0) and their psychological, somatic, social, and economic subscale scores were 15.0 (6.0–28.0), 7.0 (5.0–17.0), 12.0 (5.0–24.0), and 6.0 (4.0–16.0), respectively. Their median TAI score was 49.0 (41.0–56.0). Based on the group medians, 39 (21.3%) of all participants were found to have coronaphobia, with phobia in the psychological, somatic, social, and economic domains in 74 (40.4%), 57 (31.1%), 66 (36.1%), and 47 (25.7%) of participants, respectively. Based on the median TAI score, 55 (30.1%) of the participants had anxiety. Table 6 shows the frequency of coronaphobia and anxiety.

## 5. DISCUSSION

It is difficult to estimate the true impact of COVID-19 on adolescents' mental health, as only a year has passed since the start of the pandemic. More comprehensive and long-term studies on this topic are needed. However, findings from small studies such as ours reveal the urgent need for preventive mental health services to adolescents during and after the pandemic.

As in all pandemics, the uncertainty, loss of freedom, and isolation experienced globally in all age groups has had an impact on public mental health during the COVID-19 pandemic.[8] Although COVID-19 is less likely to cause severe illness in young people compared to other age groups, many affected countries have implemented school closures to prevent social spread. In-person education has been suspended in our country for over a year. In addition, in April 2020, in a decision unique to our country, all individuals under the age of 20 were initially allowed in shopping centers, cinemas, theaters, sports centers, restaurants, and cafes between specific (restricted) hours and were later completely prohibited, which greatly reduced their opportunities for socialization.[9] Socialization is a process by which individuals conform to and internalize the norms, values, traditions, and behaviors of the society they live in.[14] Although adolescents' having to live in prolonged isolation from their peers, teachers, relatives, sometimes their parents for occupational reasons, and other social settings during the pandemic is seen as a normal part of disease control measures, it nevertheless has a deleterious effect on their physical and mental health.[9,14] This is supported by our findings that 67.2% of the participants reported being socially isolated, 31.1% were more nervous and angry than usual, 28.4% said they felt alone/helpless, and 26.8% reported having lost interest in things they used to enjoy. Considering the natural development of adolescents, disruption of the socialization process during the pandemic is unavoidable.

Failure to recognize the acute psychosocial needs of adolescents has the potential to lead to certain psychosocial problems in the long term. The uncertainties of quarantine or isolation periods generally manifest with negative emotions such as anxiety, boredom, fear, anger, and frustration. Intolerance of uncertainty is also one of the components of generalized anxiety disorder.[8] Results from some experimental studies conducted during quarantine periods have shown that adolescents exhibit increased symptoms and behaviors such as avoidance, anxiety, or impulsive decision-making during pandemics.[8] In the present study, anxiety score was found to be high in nearly a third (30.1%) of adolescents. In a study conducted among adolescents in China, it was found that a quarter of them experienced at least mild anxiety during the COVID-19 pandemic.[15] A systematic review of 63 studies evaluating the effects of social isolation and loneliness on adolescents' mental health in previous epidemics demonstrated that social isolation and loneliness increased the risk of depression and anxiety in adolescents, who were found to be 5 times more likely to require mental health services. The duration of loneliness has been interpreted as a predictor of future mental health problems.[9] It is an important problem that consequences of untreated anxiety in adolescents can carry into adulthood.

Anxiety is a highly prevalent mental disorder in adolescent population. It can sometimes lead to severe physical and mental impairment and disability. Biological, developmental, psychological, and social/environmental factors can cause anxiety. In these factors, environmental factors can play a role in the development of anxiety. Such as loneliness and isolations, are a significant risk factor for some mental disorders, particularly anxiety. It was also reported that periods of isolation, which involve factors such as loss of freedom, uncertainty, and loss of tolerance for uncertainty, can play a role in magnifying the possible effects of existing stressors, and that the presence of these stressors can also trigger other negative emotions that can occur during isolation, such as anxiety and fear.[10] Reduced peer interaction and social support, increased loneliness, pandemic-induced uncertainty and anxiety, fear of infection and illness, heightened attention to dangerous situations, and being more influenced by misinformation result in increased anxiety and fear in adolescents during this period.[16] In the present study, the prevalence of coronaphobia was 21.3%. When the subdimensions of coronaphobia were examined, the adolescents in our study mostly experienced phobia in the psychological and social domains, with less concern related to the somatic and economic domains. Phobia adversely affects a person's daily life and requires professional treatment.[16]

Although adolescents have the cognitive maturity to recognize cause and effect relationships, they cannot yet adequately judge risk, tending to perceive situations as much more or less risky than they actually are, and can act impulsively.[16] When asked how much they knew about COVID-19, three-quarters of the participants stated that they

were very knowledgeable about how to prevent the spread of COVID-19 and nearly all of them considered themselves very knowledgeable about how to protect themselves from COVID-19. Despite constant reminders from the Ministry of Health that masks, distance, and hygiene are the most effective protection against COVID-19 in all public spaces, only 86.9% of the participants said they wash their hands for at least 20 s, and 76.5% said they maintain physical distance when outside the home. Although the rate was very low, 1.1% also said that they did not wear a mask. These data show that a considerable proportion of adolescents are not fully aware of protecting themselves from COVID-19 and cannot fully perceive risky situations.

The risk of transmission from a person with COVID-19 infection varies depending on the nature and duration of exposure, preventive measures taken, and possibly individual factors. However, SARS-CoV-2 is generally not very stable outside the body. Its stability varies depending on factors such as environmental humidity and temperature, the quantity of expelled organic matter, and the texture of the contaminated surface.[17] Despite all of these unknowns, the rapid acceleration from local outbreak to pandemic, and the relatively low compliance with even the most basic preventive measures, half of the participants believed they were unlikely to contract COVID-19 and one-fifth believed they had low vulnerability to COVID-19 infection. This shows that adolescents have low levels of perceived risk related to COVID-19. In a study on the health literacy of adolescents in Iran; Health literacy has been shown to be important in maintaining health.[18] After making this discovery, the student newspaper of the school planned to publish an article to raise awareness among the study body by researchers. The school guidance counselors' office will also send informative e-mails to bring students' attention to this issue.

According to UNESCO data, as of December 14, 2020, schools were fully open in 106 countries, partially open in 43 countries, on semester break in 34 countries, and closed in 27 countries.[19] Ours is among the 27 countries whose schools remain closed. Therefore, it is understandable that two-thirds of the participants in our study expressed feeling socially isolated. A third of participants stated that the social isolation and fear caused by the COVID-19 pandemic made it hard to focus on their classes, about half preferred a hybrid education system (combined remote and in-person learning) over exclusively remote education, and two-thirds stated that they had more difficulty concentrating on classes at home. These data complement the findings that 21.3% of participants had coronaphobia and 30.1% had anxiety. The disappearance of adolescents' school day routines and time spent with peers during the pandemic leads to an increase in free time at home, disrupted sleep schedule, increased screen time and intensive internet use, poorer eating habits, reduced physical activity, increased attention and concentration problems, and decreases in motivation and academic success.[16]

When participants in this study were asked to evaluate changes in their lives brought about by COVID-19, the most commonly reported change was increased use of digital devices (91.8%). The median daily time spent using digital devices was 3.5 h before the pandemic and increased significantly to 11.0 h at the time of the study. This usage includes online classes, peer-to-peer online gaming, and time spent on social media. Regardless of the reason, however, adolescents started to spend more time on digital devices during the pandemic. While involuntary social isolation and moving the school environment online during the COVID-19 pandemic can be characterized as a negative situation, it may be used to foster practical and psychological strategies for the promotion of adolescent mental health. According to the report published by the American Academy of Pediatrics, social media can indirectly improve mental health by enabling adolescents to strengthen bonds with existing friends and establish new friendships online, thereby reducing social isolation and loneliness.[20] However, finding ways to give adolescents a sense of belonging and help them feel like part of a wider community should be prioritized. From this point of view, we believe that the school where this study was conducted handled the pandemic relatively well. Despite more than a year of online classes and all the negatives, more than half of the adolescents stated that the remote education system imposed due to the pandemic had not impaired their quality of learning. In addition, in the challenging circumstances of the remote education system, 41.5% of the students stated that they were able to express themselves sufficiently in their online classes. Although these rates are not high enough, it is a positive sign that teachers' providing opportunities for students to actively participate in online classes gives adolescents a chance to socialize and share.

The use of digital devices has increased with high rate during the COVID-19 pandemic among adolescence. The high usage of these digital devices may lead to mental disorder, such as a phobia.[21,22] In this study, while there was no relationship between digital devices use and C19P-S scores before the pandemic, a positive correlation was found between psychological, somatic, economic and total scores during the pandemic period. This result supports that the increase in the use of digital devices during the pandemic period increases the psychological, somatic, economic and total phobia in adolescence.

In a study conducted in Portugal with adolescents and young adults aged 16 to 24, it was reported that somatic complaints increased, physical activity decreased, concentration was more difficult, screen time increased, and loneliness, anxiety, and substance use increased during the pandemic.[23] In the present study, 65.6% of the participants stated that staying at home for an extended time caused lethargy and laziness and 56.8% reported disruption of their sleep patterns during the pandemic, indicating that psychological support should be provided to students in difficult times like these. As a vulnerable group, attention should also be paid to changes in adolescents' symptoms of coronaphobia and anxiety during and after the pandemic.

## 7. CONCLUSIONS

According to this study, the following results were reached in adolescents:

(1) Adolescence had affected by the COVID-19 pandemic.
(2) A quarter do not know how to prevent the spread of COVID-19.
(3) Despite all warnings and notifications, it is not fully comply with the 'mask-distance-hygiene' rules.
(4) This period has increased technology addiction compared to the pre-pandemic period.
(5) According to the results of the CP19-S scale, a substantial proportion of adolescents have psychological, social, psychosomatic and economic phobia.
(6) According to TAI, one-third has anxiety.

Considering the prevalence of mental health issues in adolescence, it is important to determine adolescence's mental health during this pandemic to find potential protective measures. The impact of the COVID-19 pandemic on adolescent is only slowly starting to become noticeable. And there has been a few research examining the psychological impact of the COVID-19 pandemic among adolescents. Work documenting the psychosocial changes that occur as a result of the isolation of adolescent is a valuable source of knowledge for the future. This can be an important element that will allow the physicians to prepare in the future to reduce the effects of isolation.

Adolescents may be more affected by social isolation than other age groups because their cognitive maturation is incomplete, and peer interactions are important for identity development, socialization, and support. The pandemic also brings opportunities for adolescents to strengthen weakened family and social ties, to establish deeper and meaningful relationships, and to improve their ability to adapt to new situations and possibilities such as online learning. From this perspective, the strength to withstand adversity, overcome obstacles, and cope with problems should be turned into an opportunity to foster self-efficacy. Parents should guide adolescents to ensure access to sources of accurate information, have an open and transparent information exchange, reestablish routines for activities such as sleep and homework, use the internet to support their individual and social development, and create alternative ways for peer interaction to reducing isolation and loneliness. Additionally, sufficient measures should be taken by the relevant institutions to enable their return to the school environment as soon as possible.

### Conflict of interest

There is no conflict of interest, and that all authors have read and approved of the manuscript.

### Funding

There is no funding.

### Ethics

After obtaining permission from the high school to conduct the study, approval was obtained from the Ministry of Health and the Istanbul Faculty of Medicine Clinical Research Ethics Committee (dated 23/11/2020, No 202159). The students and their parents provided informed consent before participating in the study.

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