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Sleepiness, social anxiety, and blood pressure in adolescents during the COVID-19 pandemic

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Abstract

Aim: The negative effects of the COVID-19 pandemic on a global scale and the resulting changes in daily life habits have significantly influenced the growth and development of adolescents. Adolescents have been deeply affected in physical, mental, and social aspects, both by COVID-19 itself and its psychological impact. This study aims to assess the sleepiness, social anxiety, and blood pressure status of adolescents during the COVID-19 pandemic.

Materials and Methods: A total of 412 adolescents in the 6th, 7th, and 8th grades participated in this descriptive cross-sectional study. Data was collected using a questionnaire consisting of socio-demographic characteristics and questions related to COVID-19, the Cleveland Adolescent Sleepiness Scale (CASS), and the Social Anxiety Scale for Adolescents (SAS-A). The students' blood pressure was measured in a classroom setting.

Results: It was determined that 23.1% of the adolescents participating in the study had experienced COVID-19, and 42.7% of them had family members who had also had COVID-19. It was found that adolescents who had not experienced COVID-19 reported higher levels of emotions such as fear, distress, and sadness ($p<0.05$). A positive correlation was identified between the sleepiness status of adolescents and their social anxiety ($r = 0.368$, $p = 0.000$). The systolic blood pressure of adolescents was found to be 7.3% high-normal and 9.7% high. Diastolic blood pressure was determined to be 3.6% high-normal and 1.7% high. A significant difference in diastolic blood pressure was identified between those who had experienced COVID-19 and those who had not ($p<0.05$).

Conclusion: According to the results of the study, it is observed that adolescents experience moderate levels of sleepiness and social anxiety. Hence, adolescents have been affected psychologically and physiologically during the COVID-19 pandemic. The short and long-term effects of the pandemic on adolescents should be monitored and supported.

Introduction

The COVID-19 pandemic has had a profound impact on the lives of children, adolescents, and students, affecting them in many ways, especially in terms of health, education, and socio-economic status. The sudden and long-lasting changes brought about by the pandemic have led to an increase in stress, anxiety, and depression levels among adolescents [1, 2]. Adolescents experience rapid physical, cognitive, and psychosocial growth and development, which influences how they feel, think, and interact with the world around them [3]. Transitioning to remote learning, social isolation, the fear of losing loved ones, and uncertainties about the future, all of which are part of the lifestyle changes brought about by the COVID-19 pandemic, have negatively impacted the emotional well-being of adolescents. Several related studies report that restrictions imposed during the pandemics lead to significant psychological consequences for individuals, especially on adolescents, such as stress, helplessness, anxiety, and depression [4, 5].

During the COVID-19 pandemic, one of the most important preventive measures has been the implementation of distance learning. The transition to remote learning, accompanied by the closure of schools, has led to changes in the nutrition, physical activity, and sleep habits of students. Social isolation and loneliness can increase the depression and anxiety of adolescents during their growth and development process [6, 7].

Sleep plays a crucial role in maintaining the health and well-being of adolescents. Sleep disorders can lead to day-

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time sleepiness in adolescents and negatively affect their learning abilities. Additionally, sleep disturbances can have a negative impact on healthy growth and development in adolescents. The COVID-19 pandemic can also influence the sleep behavior of young adults [8]. Factors such as increased stress levels in children and adolescents, social isolation, changes in family financial status, and uncertainties about the future can contribute to sleep disturbances [9, 10].

The COVID-19 pandemic has led to psychological effects in individuals, including symptoms of post-traumatic stress, fear of infection, anger, disappointment, and stigma. It has been determined that social anxiety has increased in the general population due to the pandemic, and women and individuals with low income are particularly vulnerable [4, 11]. Protective measures, the fear of loved ones contracting the infection, transmitting the infection to family members and friends, and uncertainties can heighten the anxiety of adolescents in the process of growth and development [12]. Studying the effects of the COVID-19 pandemic on adolescents, one of the most vulnerable groups in society, is crucial for the preservation of adolescent health.

This study aims to assess the sleep patterns, social anxiety, and blood pressure status in adolescents during the COVID-19 pandemic.

Materials and Methods

This is a descriptive-cross-sectional study conducted with 6th, 7th, and 8th grade students in a middle school located in a province in the Black Sea Region of Türkiye. The study was conducted during the fall semester of the 2021-2022 academic year, when the COVID-19 pandemic closure period ended, and face-to-face education began, at a middle school located in the city center of Giresun. The study was implemented in a randomly selected school where a total of 535 students were enrolled in the aforementioned grades during the specified academic period. The goal was to reach all students, and 412 students were reached.

The research was conducted with the permission of the provincial directorate of national education, ethical committee approval, and the necessary permits. Ethical approval is obtained from the Ethics Committee of Artvin Çoruh University (with number E-18457941-050.99-41561). The Helsinki Declaration principles were adhered to in the research.

After obtaining institutional approval, data were collected from the students through face-to-face interviews, and blood pressure measurements were taken. The data collection tools included a socio-demographic characteristics form prepared by the researchers, the Cleveland Adolescent Sleepiness Scale (CASS), and the Social Anxiety Scale for Adolescents (SAS-A). The socio-demographic characteristics form consists of 14 questions, covering students' socio-demographic characteristics, feelings, thoughts, and behaviors related to COVID-19. CASS is a measurement tool used to determine the sleepiness status of adolescents aged 11-17. Developed by Spilsbury et al. in 2007 [13], the scale consists of 16 questions that measure daytime sleepiness in adolescents. 11 questions are positive, 5 questions are negative and are reverse-coded (items 2, 5, 7, 11, and 13). The scores obtained from the 5-point Likert scale range from 16 to 80 [13]. The scale consists of a total of 4 sub-dimensions. These sub-dimensions include sleepiness at school (items 1, 3, 6, 10, 15), sleeplessness at school (items 2, 5, 7, 11, 13), evening sleepiness (items 8, 12, 16), and sleepiness during transportation (items 4, 9, 14). In the original study, the scale's cutoff point for evaluating sleepiness was specified as 42, with an increase in score indicating an escalation in sleepiness [13]. The Turkish validity and reliability of the scale were conducted in 2020 by Çağlar and Kesgin [14]. In the validity and reliability study, the Cronbach's alpha coefficient of internal consistency for the scale was found to be 0.87 and the significance level was accepted as 0.05 [14].

SAS-A was developed in 1999 by La Greca [15] and was validated for Turkish in 2007 by Aydın and Tekinsav-Sütçü [16]. The 22-item scale has three sub-dimensions: fear of negative evaluation, general social avoidance-discomfort, and new situation avoidance-discomfort [16]. Four items (items 2, 7, 11, and 16) are not considered in scoring. Scores derived from the scale range from 18 to 90. In the reliability analysis of the scale, a Cronbach's alpha coefficient of internal consistency was found to be 0.88, and a significance level of 0.05 was accepted.

Blood pressure measurement was conducted following the principles outlined in the Turkish Ministry of Health, General Directorate of Public Health Hypertension Assessment Guidelines [17]. The necessary information regarding the research was provided to the school administration. The research was implemented in appropriate vacant class hours within the classroom setting. In the classroom setting, the blood pressure of students was measured and recorded by two nurses. For the measurement, an aneroid sphygmomanometer suitable for the adolescent age group was utilized. Adolescents, after resting for 5 minutes, were seated with their backs supported, feet flat on the ground, and their right arm supported at heart level during the measurement process [17].

The assessment for adolescents was conducted based on the European Pediatric Hypertension Guidelines [18]. According to these guidelines, in children aged 0-15 years old, the average systolic and diastolic blood pressure percentiles are categorized as follows concerning gender, age, and height: less than the 90th percentile is considered normal blood pressure, between the 90th and less than the 95th percentile is classified as high-normal blood pressure, and equal to or greater than the 95th percentile is regarded as childhood hypertension [18]. Adolescents' blood pressure was measured in the classroom setting, with the students sitting with their backs supported and their feet on the ground. The right arm was supported, and the measurement was taken at heart level.

SPSS 24.0 software was used for data analysis. The Kolmogorov-Smirnov test was utilized to assess the normal distribution adequacy of the data. Descriptive statistics, including mean, standard deviation, frequency, number, percentage, minimum value, and maximum value were used. Additionally, chi-square test, independent samples t-test, and Pearson correlation analysis were used to determine the relationship and strength between variables. The

significance level was chosen as 0.05, with $p<0.05$ considered statistically significant.

Results

A total of 412 students participated in the research (Table 1). Among the students, 33% were in the 6th grade, and 35.7% were in the 7th grade. The average age of the students was 12.20±0.94. Of the students who took part in the research, 51.9% were female. Regarding the parents' education, 48.8% of the mothers had completed middle school or lower, while 41.3% of the fathers had completed middle school or lower. When it came to academic performance, 77.9% of the students reported it as good, while 2.9% considered it as poor. 12.4% of the students evaluated their health as poor.

During the pandemic, 23.1% of the students had contracted COVID-19, and 42.7% of their family members living together had also experienced the virus. In terms of the pandemic's impact, 27.7% of adolescents reported experiencing fear, while 26.9% mentioned feeling stressed. Among the respondents, 52.2% said they had felt unwell during the pandemic, and 11.2% indicated that they had become bored with staying at home. To protect themselves from COVID-19, 65.3% of the students reported using masks, and 53.6% stated that they adhered to social distancing rules.

During the COVID-19 pandemic, it has been determined that adolescents who did not contract COVID-19 experience emotions such as fear, distress, and sadness at a higher rate ($p<0.05$). In our study, it was determined that 7.3% of adolescents have normal to high systolic blood pressure, and 9.7% have high systolic blood pressure. Regarding diastolic blood pressure, 3.6% of adolescents have high-normal levels, and 1.7% have high levels. There was no significant difference found in the systolic blood pressure between adolescents who had or had not experienced COVID-19 ($p>0.05$). However, a significant difference was identified in the diastolic blood pressure between adolescents who had and had not experienced COVID-19 ($p<0.05$). No significant difference was observed between the blood pressure of adolescents and their CASS scale scores ($p>0.05$). Additionally, no significant difference was found between the blood pressure of adolescents and their SAS-A scores ($p>0.05$).

The mean score on the CASS for adolescents was found to be 31.17±8.8 (Table 2). There was no significant difference in sleepiness scores between female and male students ($p>0.05$).

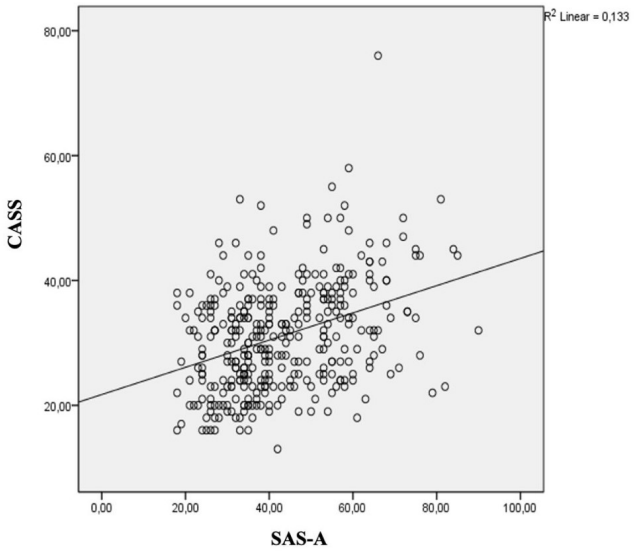
Students whose fathers had completed middle school or lower education had significantly higher sleepiness scores compared to students whose fathers had completed high school or higher education ($p<0.01$).

The average sleepiness scale score was significantly higher for students who rated their academic performance as poor ($p<0.01$) and for students who rated their health as poor ($p<0.01$).

There was no significant difference in sleepiness scale scores between students who had contracted COVID-19 and those who had not ($p>0.05$). Additionally, there was no significant difference in sleepiness scale scores among adolescents living with family members who had contracted COVID ($p>0.05$).

The average score on the social anxiety scale for adolescents was determined to be 42.6±14.5 (Table 3). There was no significant difference in terms of the average social anxiety scores between adolescents who had and had not experienced COVID-19 ($p>0.05$). Similarly, there was no significant difference in the average social anxiety scores between adolescents with family members who had experienced COVID-19 and those without such family members ($p>0.05$). When comparing social anxiety scale scores by gender, it was observed that female students had significantly higher total scale scores ($p<0.01$). Among the subscales of social anxiety, the fear of negative evaluation was significantly higher in female students ($p<0.01$). In general situations, the sub-scale score for social avoidance and distress was significantly higher in female students ($p<0.01$). In new situations, the sub-scale score for social avoidance and distress was also significantly higher in female students ($p<0.01$). Students whose mothers had completed middle school or lower education had significantly higher scores in the sub-scale of social avoidance and distress in new situations ($p<0.05$).

The study found a significant difference between sleepiness status and social anxiety in the participating adolescents ($r=0.364$; $p=0.000$) Figure 1.



**Pearson Correlation, p<0.01*

Figure 1. Correlation between Sleepiness Status and Social Anxiety in Adolescents.

Discussion

The extraordinary conditions experienced worldwide during the COVID-19 pandemic have had various psychosocial effects, especially on children and adolescents. Adolescents, who are in a critical phase of growth and development, are vulnerable to distress and trauma. With the pandemic, schools have closed in many countries, social isolation has been imposed, restrictions on staying at

Table 1. Socio-Demographic Characteristics of Adolescents and Their Opinions on COVID-19.

Variables		N*	%*
Grade	6th grade	136	33.0
	7th grade	147	35.7
	8th grade	105	25.5
Gender	Female	214	51.9
	Male	194	47.1
Education level of mother	Middle school or lower	201	48.8
	High school or higher	169	41.0
Education level of father	Middle school or lower	170	41.3
	High school or higher	190	46.1
How do you evaluate your academic performance?	Good	321	77.9
	Average	74	18.0
	Poor	12	2.9
How do you evaluate your health?	Good	347	84.2
	Poor	57	12.4
Have you had COVID-19?	Yes	95	23.1
	No	313	76.0
Have your family members had COVID-19?	Yes	176	42.7
	No	225	54.6
What emotion did you mostly feel during the COVID-19 pandemic?	Fear	114	27.7
	Anxiety, stress	111	26.9
	Did not feel anything	68	16.5
	Sadness	55	13.3
How did the COVID-19 pandemic affect you?	I felt bad	215	52.2
	It did not affect me	65	15.8
	I got bored staying at home	46	11.2
What preventive measures did you take to protect yourself from COVID-19?	Mask	269	65.3
	Social distancing	221	53.6
	Hand sanitizer	66	16.0
	Hygiene	153	37.1
Systolic blood pressure	Normal	342	83.0
	High-normal blood pressure	30	7.3
	Hypertension	40	9.7
Diastolic blood pressure	Normal	390	94.7
	High-normal blood pressure	15	3.6
	Hypertension	7	1.7

*Students did not respond to some of the questions.

home, daily routine limitations, and the fear of illness have affected adolescents. In a study conducted with middle school and high school students in China, it was found that one-fifth of the students had their mental health affected during the COVID-19 pandemic [19].

Of the adolescents participating in the study, 23.1% stated that they had contracted COVID-19. According to data from 2019, Wu et al. conducted a study in China, indicating that 1% of adolescents aged 11-19 had contracted COVID-19 [20]. In the United States, as of April 2, 2020, the frequency of COVID-19 in children under the age of 18 in all known age groups was determined to be 1.7%, with 60% of this occurring in adolescents aged 10-17 [21]. COVID-19 rapidly spread worldwide since its inception. In 2022, when the study was conducted, almost 1.5 years had passed since the beginning of the COVID-19 pandemic, and an increase in the frequency of infection had been observed in all age groups. Among the adolescents who participated in our study, the rate of family members who had contracted COVID-19 was 42.7%. Many studies have reported that the majority of pediatric patients infected with SARS-CoV-2 had positive contact within their households [22, 23]. The high prevalence of COVID-19 among adolescents in our study can be explained by the high prevalence of COVID-19 in their families and household transmission.

During the pandemic, it was determined that the most common emotion experienced by adolescents was fear (27.7%). Following fear, stress was reported as the second most common emotion (26.9%). Studies have shown that restrictions during outbreaks and pandemics can lead

Table 2. Comparison of Cleveland Adolescent Sleepiness Scale (CASS) Total Scores and Subscale Scores with Socio-Demographic Characteristics and Health Status Variables.

Scale	Gender			
	Female	Male	t*	p
CASS	31.60±9.2	30.55 ±8.3	1.205	.229
School sleepiness	6.37±2.4	6.62±2.6	-.984	.326
School sleeplessness	13.02±4.8	12.82±5.5	.376	.707
Evening sleepiness	6.64±2.9	6.15±2.6	1.768	.078
Sleep during transportation	5.55±2.9	4.93±2.3	2.363	**.019**
	Education Level of Mother			
	Middle school or lower	High school or higher	t*	p
CASS	31.91±8.7	30.19±8.6	1.886	.060
School sleepiness	6.69±2.7	6.17±2.2	2.000	**.046**
School sleeplessness	13.33±5.1	12.37±5.0	1.796	.073
Evening sleepiness	6.47±2.9	6.47±2.6	-.002	.998
Sleep during transportation	5.40±2.8	5.17±2.5	.838	.403
	Education Level of Father			
	Middle school or lower	High school or higher	t*	p
CASS	32.42±8.8	29.88±8.6	2.752	**.006**
School sleepiness	6.87±2.7	6.07±2.2	2.971	**.003**
School sleeplessness	13.41±5.2	12.39±5.0	1.880	.061
Evening sleepiness	6.69±2.8	6.28±2.7	1.377	.169
Sleep during transportation	5.44±2.7	5.12±2.6	1.108	.269
	Perception of Health Status			
	Good	Poor	t*	p
CASS	28.74±8.4	31.32±8.3	-2.578	**.010**
School sleepiness	6.25±2.3	6.30±2.2	-.185	.853
School sleeplessness	12.00±5.6	13.15±5.0	-1.848	.066
Evening sleepiness	5.70±2.7	6.6±2.6	-2.870	**.004**
Sleep during transportation	4.78±2.3	5.24±2.4	-1.576	.116
	COVID-19 Infection Status			
	Yes	No	t*	p
CASS	30.47±9.2	31.30±8.7	-.802	.423
School sleepiness	6.17±2.5	6.58±2.5	-1.350	.178
School sleeplessness	12.70±4.9	12.99±5.2	-.472	.637
Evening sleepiness	6.50±2.8	6.42±2.7	.254	.800
Sleep during transportation	5.08±2.7	5.30±2.6	-.721	.472

*The independent samples t-test, p<0.05.

to increased stress, depression, anxiety, emotional exhaustion, and fear [4, 5]. The perceived severity of COVID-19 and being in the presence of individuals diagnosed with coronavirus have been associated with increased stress, anxiety, and depression in adults [4]. In a study conducted by İnci et al. with adolescents in Denizli, it was found that they experienced moderate levels of fear during the COVID-19 pandemic [24]. It was also found that the fear experienced by adolescents affected their adolescent health-promoting behaviors [24]. Nearly one-third of the adolescents in our study reported experiencing pandemic-related fear and stress. Approaches should be implemented to help adolescents cope with fear and stress and promote their mental well-being. A study by Wright et al. found that promoting physical activity can be beneficial in supporting adolescents' mental health and well-being [25].

In our study, 65.3% of the participating adolescents stated that they wore masks to protect themselves from COVID-19, and 53.6% mentioned following social distancing rules. It was found that approximately one-third of the students did not use masks, and about half did not pay attention to social distancing. In a study conducted by Ayran et al. with adolescents in Erzincan, it was reported that 80.1% of students used disposable masks, and the use of masks was influenced by gender and the mother's profession [26]. In our study, the percentage of mask users is relatively low compared to this study. Oosterhoff et al. found in their study that adolescents who maintained social dis-

Table 3. Comparison of Social Anxiety Scale for Adolescents (SAS-A) Scores and Subscale Scores with Socio-Demographic Characteristics and Health Status Variables in Adolescents.

Scale	Gender			
	Female	Male	t*	p
SAS-A	46.33±15.1	39.59±13.3	4.359	**.000**
Fear of negative evaluation	17.34±7.4	14.68±6.6	3.794	**.000**
Social avoidance and distress in general situations	10.95±4.7	9.77±4.17	2.647	**.008**
Social avoidance and distress in new situations	16.94±5.36	15.41±5.1	2.947	**.003**
	Education Level of Mother			
	Middle school or lower	High school or higher	t*	p
SAS-A	45.24±15.2	41.81±14.4	2.027	**.043**
Fear of negative evaluation	16.93±7.1	15.54±7.3	1.838	.067
Social avoidance and distress in general situations	10.93±4.5	10.18±4.6	1.548	.123
Social avoidance and distress in new situations	16.88±5.3	15.37±5.2	2.720	**.007**
	Education Level of Father			
	Middle school or lower	High school or higher	t*	p
SAS-A	45.70±15.2	41.11±14.2	2.708	**.007**
Fear of negative evaluation	17.08±7.4	15.31±6.8	2.350	**.019**
Social avoidance and distress in general situations	11.12±4.7	9.8±4.2	2.673	**.008**
Social avoidance and distress in new situations	16.88±5.2	15.4±5.3	2.494	**.013**
	Perception of Health Status			
	Good	Poor	t*	p
SAS-A	38.16±13.0	42.91±14.2	-2.635	**.009**
Fear of negative evaluation	13.86±5.9	15.97±6.9	-2.642	.009
Social avoidance and distress in general situations	8.71±3.7	10.42±4.3	-3.406	.001
Social avoidance and distress in new situations	15.17±4.9	16.00±5.2	-1.357	.176
	COVID-19 Infection Status			
	Yes	No	t*	p
SAS-A	42.70±14.7	43.15±14.6	-.243	.808
Fear of negative evaluation	14.96±6.9	16.32±7.1	-1.634	.103
Social avoidance and distress in general situations	10.60±4.5	10.35±4.4	.464	.643
Social avoidance and distress in new situations	16.57±5.6	16.07±5.1	.822	.411

*The independent samples t-test, p<0.05.

tance experienced less anxiety during the COVID-19 pandemic [27].

During the COVID-19 pandemic, it was determined that adolescents who did not contract COVID-19 experienced emotions such as fear, anxiety, and sadness to a greater extent, and the difference between them was statistically significant ($p<0.05$). The fear of COVID-19 and social isolation have negative psychological effects on children and adolescents. Improving sleep habits, regulating physical exercise, and internet usage can contribute to psychological well-being [28].

In our study, the average score on the CASS for adolescents was 31.1±8.8. No difference was found based on gender. However, adolescents whose fathers had education levels of middle school or lower, those with a negative perception of their health, and those who assessed their school performance as poor had significantly higher daytime sleepiness scores. There was no significant difference in sleepiness scores between students who had or had not contracted COVID-19. Significant changes in sleep habits among adolescents were observed during the pandemic. According to a study by Becker et al., student parents reported that adolescents' sleep-related problems increased during the COVID-19 pandemic compared to the pre-pandemic period. It was determined that sadness, loneliness, anxiety, fear, and social isolation were associated with delayed sleep/wake behavior related to COVID-19. The study also suggests that the pandemic may have positive and negative effects on teenagers' sleep [29]. In our study, adolescents' daytime sleepiness levels were moderate in this regard. According to a study by Gruber et al., the closure of schools during the pandemic led to changes in adolescents' sleep duration, longer hours of sleep, improved sleep quality, and decreased daytime sleepiness [30].

The social anxiety score of the adolescents who participated in the study was determined as 42.6±14.5. Social interaction is an important developmental process for adolescents. Social anxiety disorder is a common anxiety dis-

order characterized by constant fear of negative evaluation or potential scrutiny in social situations [31]. Studies suggest that social anxiety, whether present before the pandemic or as a result of the pandemic, contributes to an increase in social anxiety [32]. A study by Ranta et al. in Finland showed that the prevalence of high social anxiety increased significantly, especially among girls, from 2013 to 2021. According to the study results, adolescents experiencing social anxiety during the COVID-19 pandemic had fear of infection and educational needs [33]. Similarly, in our study, female students had significantly higher social anxiety scores and subscale scores compared to male students. In our study, a significant difference was found in daytime sleepiness in adolescents with social anxiety. Families, schools, and communities should create support and educational programs to help adolescents cope with the challenges they face during the pandemic. In a study conducted in Egypt in 2020, two months after the closure of schools, research was carried out on the sleep quality and anxiety symptoms among children and adolescents. It was found that 65.6% of the participants exhibited symptoms indicative of sleep disorders. In the same study, a positive and significant correlation was observed between sleep disturbances and anxiety symptoms [34].

In our study, during the pandemic period, adolescents exhibited moderate levels of sleepiness and social anxiety scores. Similar to this study, a positively significant correlation was found between sleepiness and social anxiety.

In the study conducted by Yurteri et al., it was determined that the COVID-19 pandemic could impact children's sleep habits and quality of life. In the same study, it was found that both children and adolescents showed a significant increase in daytime sleepiness scores [35]. Considering our research, the systolic blood pressure of adolescents was determined to be 7.3% high-normal and 9.7% high. Diastolic blood pressure was 3.6% high-normal and 1.7% high. Adolescents who had experienced COVID-19 showed significantly higher diastolic blood pressure compared to those who had not.

In our study, the prevalence of hypertension among adolescents was higher compared to these studies. In recent years, studies have shown an increasing prevalence of hypertension in children and adolescents. Among the contributing factors to this increase are obesity, chronic diseases, obstructive sleep apnea syndrome, stress, and anxiety experienced by adolescents [35].

There are limited number of studies conducted on the blood pressure of adolescents during the COVID-19 period. A study by Song et al. involving Korean children and adolescents found an increase in the prevalence of hypertension during the COVID-19 pandemic [36]. They recommended close monitoring of hypertension among young individuals during this period. The prevalence of hypertension increased from 7.1% to 12.5% among all participants [36]. The results of our study are similar to results of this study by Song et al.

Conclusion

According to the results of the study, the majority of adolescents have experienced feelings such as fear, stress, and anxiety during this period. Adolescents experience moderate levels of sleepiness and social anxiety. The condition of experiencing sleepiness and social anxiety has been found to be positively correlated. Social anxiety is significantly higher among female students compared to male students. In future studies, an evaluation of COVID-19-related factors concerning sleepiness, social anxiety, and blood pressure in adolescents can be presented.

Ethical approval

Ethical approval is obtained from the Ethics Committee of Artvin Çoruh University (with number E-18457941-050.99-41561).

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