Clinical and Experimental Health Sciences

Impact of the COVID-19 Pandemic on the Emotional State of School Children

Rukiye Çelik[1], Birgül Erdoğan[2], Gizem Çakır[1], Naime Altay[1], Ebru Kılıçarslan[1]

[1] Gazi University, Nursing Faculty, Nursing Department, Ankara, Türkiye.
[2] Kocaeli University, Health Sciences Faculty, Nursing Department, Kocaeli, Türkiye.

Correspondence Author: Rukiye Çelik
E-mail: rukiyecelik@gazi.edu.tr

Received: September 17, 2024 **Accepted:** January 30, 2025

ABSTRACT

Objective: This study was conducted to determine school children's (8–10 years of age) feelings during the COVID-19 pandemic.

Methods: This study was descriptive. The study was conducted online between March 1 and June 17, 2022, with 49 children and their parents living in Türkiye who met the inclusion criteria and agreed to participate.

Results: Our study found that the anxiety scores of children who were diagnosed themselves or had someone in their families diagnosed were higher than those who were not diagnosed. According to the drawing technique, the rate of insecurity and anger was higher in children with a family member diagnosed with COVID-19 compared to those without a diagnosis. According to the results of the correlation, statistically significant relationships were found between anxiety scores and shyness (p=.031), between impulsivity and insecurity (p=.000), between impulsivity and anger (p=.029), and between insecurity and anger (p=.029).

Conclusion: Nurses should be aware of the social and emotional impact of pandemics on children and be able to use the drawing method, a therapeutic communication technique, to determine children's perceptions of the pandemic process and how they are affected by it.

Keywords: Child, COVID-19, drawing, anxiety, nurse

1. INTRODUCTION

The COVID-19 pandemic emerged in December 2019 as a global health issue affecting the whole world (1). The pandemic can cause physical and psychological health problems and negative social and economic impacts (2,3). Measures such as hand hygiene, protective masks, and social isolation have been introduced to prevent the rapid spread of the virus and control the disease (4). Children are one of the groups most affected and vulnerable to the problems caused by the pandemic (5,6). Children may be susceptible to stressors due to their developmental characteristics. Children diagnosed with COVID-19 may experience various difficulties in treatment, care, and quarantine. All over the world, health systems have been established to assist children during epidemics and quarantine periods. Some of these are international organizations such as UNICEF and WHO, while others are national ministries, municipalities, universities, and associations (7, 8, 9).

Pandemics may disrupt children's social relationships, adversely affect their school life, result in significant changes in their daily lives, and lead them to experience emotions such as fear, anxiety, anger, insecurity, reduced attention span, loneliness, and distress (2, 4, 7, 10-13). One of the most common negative emotions experienced by children is anxiety. Several factors cause anxiety. These factors include physical, psychological, social, and emotional situations (14-17).

Children who experience intense social isolation, stress, fear, and anxiety during the pandemic may be negatively impacted developmentally in their current and future life stages (12, 18). Voltmer and Salisch, 2024 revealed in their study that the COVID-19 pandemic increased the future anxiety of primary school 3rd and 4th-grade students (19). Many national and international health authorities have stated that children experiencing the pandemic need support and assistance to identify their feelings, manage their current emotions, and look to the future with confidence (20, 21). Although the pandemic does not continue with as much impact as it did

https://doi.org/10.33808/clinexphealthsci.1542187

in the early days, the pandemic and related long-term effects are seen in school children. These effects can be found even 10–20 years after a disastrous event (22). The primary goals in alleviating the traumatic impact of the pandemic are to ensure that children regain their sense of trust, reduce the impact of the pandemic, prevent the adverse effects that may be caused by it, improve/enhance their level of functioning, and enable children to express themselves (11, 13). The role of the pediatric nurse as a researcher, caregiver, and educator in this process is crucial.

Children may not be able or willing to verbally express their feelings and thoughts about themselves, their family, and their social environment. Therapeutic communication techniques help children express their feelings and thoughts (23, 24). Drawing is one of the most effective techniques in this context. Drawing is a communication tool with a stronger and simpler expression than the words and expressions the child has learned (25, 26). Drawing allows children to reveal and express their inner world and how they perceive the external world, feelings, thoughts, fears, anxieties, violence, and frustrations (27). No study on the effect of the COVID-19 pandemic on the emotional state of school children has been reported in the literature. This study aimed to determine the emotions of school children (8–10 years of age) during COVID-19.

A comparison of children between the ages of 8 and 10 years who were either diagnosed themselves or had a family member diagnosed with COVID-19 and those who were not will be used to answer the following questions:

- Is there a difference between the two groups regarding the emotional indicators obtained from the Draw-a-Person test drawings?
- Is there a difference between them in terms of the mean scores on the Trait Anxiety Inventory for Children?

2. METHODS

This descriptive study was carried out on Turkish children between the ages of 8 and 10 years old after obtaining their parents' permission.

2.1. Sample and Population Selection

The study was conducted online with 49 children and their parents living in Türkiye who agreed to participate. Inclusion criteria for the study were that the child was between the ages of 8 and 10, the child or parent had an Android phone/tablet/PC and internet access, and the child and parent agreed to participate. Exclusion criteria were that the child had an illness that prevented communication, had a medical diagnosis of a mental disorder, and had experienced a significant life event other than the pandemic (e.g., moving to a new house in the past three months or divorce of parents) and any condition that prevented the child from drawing. Convenience sampling, one of the purposive sampling methods, was used to select the sample. The rationale for using this method was to reach participants who were accessible online due to the pandemic.

2.2. Data Collection Tools

The data was collected using the Descriptive Characteristics Form, State-Trait Anxiety Inventory for Children (STAI-CH), and Draw-a-Person test.

The Descriptive Characteristics Form consists of 14 closed-ended questions about the age, education, and employment status of the parents, the age and sex of the child, and the COVID-19 diagnosis status of the child and family members. According to the literature, this form was developed by the researchers (13, 28, 29).

The State-Trait Anxiety Inventory for Children (STAI-CH) instrument was developed by Spielberger (1973) for measuring state and trait anxiety in children between the ages of nine and 12 years. The inventory consists of two parts: the State Anxiety Inventory and the Trait Anxiety Inventory. Each inventory consists of 20 items, making 40 items in total. The Trait Anxiety Inventory is designed to determine how a child feels in general. The inventory uses a 3-point Likert-type scale, and items are scored using the following options: almost never = 1, sometimes = 2, and almost always = 3. The lowest score of 1 indicates the absence of the included emotions. The highest score obtained from each item is 3, which indicates that the presence of emotions is very high. The total score obtained from the Trait Anxiety Inventory varies between 20 and 60 (30).

The Draw-a-Person Test was developed by Koppitz (31). The test is used in the developmental assessment of drawings by children between the ages of 5 and 12 years, and it helps determine the presence of emotional indicators. Koppitz studied children's human figure drawings to assess the presence of emotional indicators. The 28 emotional indicator items included in the test have clinical validity, and they are grouped into the five following categories: impulsivity, insecurity/inadequacy, anxiety, shyness, and anger. Raters score each item as 'present' or 'absent' based on a child's drawing (31, 32).

2.3. Data Collection and Procedure

The research began after the necessary permissions were obtained from the Ethics Committee, along with written consent from the parents of the children and verbal consent from the children. The research was conducted between March 1 and June 17, 2022. Data collection forms were completed by the children and their parents using Google Forms. Parents who agreed to participate in the study were told they could help the children fill out the Descriptive Data Form and the State-Trait Anxiety Inventory for Children. After filling out the forms, children were asked to draw pictures for the Draw a Person test. Parents were asked to provide

A4 paper, eraser, pencil, and other necessary materials for the drawing test. It was emphasized that parents should not interfere with children's drawings, should not direct them, and that drawing should only be done by children. The child was asked to determine the pencil, colors, and figures that the child would use while drawing. Parents took photos of their children's drawings and sent them to the researchers online.

2.4. Ethical Considerations

The research was started after obtaining permission from the Ethics Committee of the Gazi University (E-77082166-604.01.02-279409), the parents' written consent, and the children's verbal consent. The parental consent form was created using Google Forms and sent to parents online. Children of parents who signed the informed consent form verbally agreed to participate in the study and whose forms were properly completed were included in the study. Their personal information will be kept confidential to protect the children's privacy.

2.5. Statistical Analysis

The study data was evaluated using the SPSS 22.0 (IBM Corp. in Armonk, New York, USA) packaged software, and the values were expressed as numbers and percentages. The Mann–Whitney U test was used to assess whether there was a difference between the anxiety states of children with and without a COVID-19 diagnosis. The children's drawings were scored according to Koppitz's scoring criteria, and the children's emotional indicators were determined. The consistency between two experts in the field of painting who evaluated the children's drawings was determined by the Kappa test, and a significant level of consistency (K=0.784, p=0.00) was found among the raters who analyzed the drawings. The chi-squared test was used for two variables to determine whether the relationship between the emotional indicators determined by the drawings of children with and without a COVID-19 diagnosis was significant. The correlation test was used to evaluate the relationship between the children's anxiety scores and the results of the drawing analysis.

3. RESULTS

The mean age of the children in our study was 8.47 ± 0.67 years, while the mean ages of parents were 36 ± 6.09 years for mothers and 40.85±5.37 years for fathers. Regarding educational status, 38.80% of the mothers were primary school graduates, while 30.60% were high school graduates; furthermore, 42.80% of the fathers were college or university graduates. The unemployment rate was 75.50% for mothers, whereas it was 85.70% for fathers. At least one family member had been diagnosed with COVID-19 for 59.20% of the children. The rate of children diagnosed with COVID-19 was 16.30% (Table 1).

Table 1. *Sociodemographic characteristics of the child and family*

Characteristics	M±SD	Min-Max
Child's age (years)	8.47±0.67	7-10
Mother's age	36±6.09	24-48
Father's age	40.85±5.37	28-54
	n	%
The educational level of the mother		
Primary School	19	38.80
High School	15	30.60
University	15	30.60
Educational level of father		
Primary School	14	28.60
High School	14	28.60
University	21	42.80
Employment status of the mother		
Employed	12	24.50
Unemployed	37	75.50
Employment status of the father		
Employed	42	85.70
Unemployed	7	14.30
COVID-19 Diagnosis Status in the Family		
Diagnosed	29	59.20
Not Diagnosed	20	40.80
The child's diagnosis of COVID-19 in the last six months		
Diagnosed	8	16.30
Not Diagnosed	41	83.70

The mean anxiety score of children with at least one family member diagnosed with COVID-19 was 34.20 ± 6.24. The mean anxiety score of children diagnosed with COVID-19 in the last six months was 36.40 ± 4.97. There was no significant relationship between the mean anxiety scores of children with family members who had been diagnosed with COVID-19 versus those without or those who had been diagnosed with COVID-19 versus those who had not. Children diagnosed with COVID-19 or who had a family member diagnosed with COVID-19 had higher anxiety scores than those who did not have a family member diagnosed with COVID-19. However, the difference was not statistically significant (Table 2).

Table 2. *The effect of the presence or absence of a COVID-19 diagnosis in the children themselves and in one of their family members on the anxiety score.*

Characteristics	M±SD	Min-Max	U	p	z
Children diagnosed with COVID-19	36.40±4.97	29-44	158.500	.364	-0.907
Children not diagnosed with COVID-19	34.79±6.96	23-50			
Family member diagnosed with COVID-19	34.20±6.24	23-47	240.000	.308	-1.019
Family member not diagnosed with COVID-19	36.45±7.01	26-50			
Total	35.12±6.59	23-50			

Indications of impulsivity and shyness were found in the drawings of 50% of the children diagnosed with COVID-19,

while indications of insecurity were found in 70% of the drawings by these children. In contrast, symptoms of impulsivity, insecurity, and shyness were observed in about half of the children whose family members were diagnosed with COVID-19. Anger, anxiety, shyness, insecurity, and impulsivity combined are moderately related to anxiety scores.

According to the correlation analysis results, there was a very weak positive correlation between the anxiety score and the anxiety state in the drawing analysis (r= 0.096). On the contrary, there was a very weak negative correlation between impulsivity (r= – 0.061), insecurity (r= – 0.173), and anger (r= – 0.068), as well as a weak negative relationship with shyness (r= – 0.274). There were statistically significant differences between anxiety and shyness (p=.031), impulsivity and insecurity (p=.000), impulsivity and anger (p=.029), and insecurity and anger (p=.029) (Table 3).

Table 3. *The relationship between children's anxiety score and picture analysis results (r)*

	Anxiety score	Impulsivity	Insecurity	Anxiety	Shyness	Anger
Anxiety score		-0.061	-0.173	0.096	-0.274	-0.068
Anxiety score	.	0.341	0.122	0.260	0.031	0.325
Impulsivity	0.341	.	0.000	0.425	0.071	0.029
Insecurity/ inadequacy	0.122	0.000	.	0.084	0.388	0.029
Anxiety	0.260	0.425	0.084	.	0.388	0.178
Shyness/ timidity	0.031	0.071	0.388	0.388	.	0.125
Anger/ aggressiveness	0.325	0.029	0.029	0.178	0.125	.

The multiple correlation coefficient is R=362.

Table 4. *The results of picture analysis of children's family members diagnosed with COVID-19 versus those who had not in*

		Diagnosed		Not diagnosed			
Emotional Indicators Categories		Count	Percent[a]	Count	Percent[b]	X^2	p
Impulsivity	Yes	11	40.74	8	40.00	0.003	.959
	No	16	59.26	12	60.00		
Insecurity/ inadequacy	Yes	12	44.44	7	35.00	0.426	.514
	No	15	55.56	13	65.00		
Anxiety	Yes	9	33.33	10	50.00	1.325	.250
	No	18	66.67	10	50.00		
Shyness/ timidity	Yes	13	48.14	13	65.00	1.320	.251
	No	14	51.86	7	35.00		
Anger/ aggressiveness	Yes	4	14.82	1	05.00	*	*
	No	23	85.18	19	95.00		

[a]*n=27*
[b]*n=20*
**Fisher Exact Sig. (2-tailed)=0.377*

The rates of mistrust and anger were higher in children whose family members were diagnosed with COVID-19 than in those who were not. Feelings of anxiety and shyness were higher in those whose family members had not been diagnosed with COVID-19. The feeling of impulsivity was similar in both groups. However, the difference in emotions between children with and without a family member diagnosed with COVID-19 was not statistically significant (Table 4). Feelings of insecurity and anger were significantly higher in children diagnosed with COVID-19 than they were in those without a diagnosis, but the result was not statistically significant (Table 5).

Tablo 5. *The results of picture analysis of children diagnosed with COVID-19 versus those who had not.*

		Diagnosed		Not diagnosed		
Emotional Indicators Categories		Count	Percent[a]	Count	Percent[b]	p*
Impulsivity	Yes	5	50.00	14	37.83	.496
	No	5	50.00	23	62.17	
Insecurity/ inadequacy	Yes	7	70.00	12	32.43	.066
	No	3	30.00	25	67.57	
Anxiety	Yes	3	30.00	16	43.24	.718
	No	7	70.00	21	56.76	
Shyness, timidity	Yes	5	50.00	21	56.76	.734
	No	5	50.00	16	43.24	
Anger/ aggressiveness	Yes	2	20.00	3	08.11	.285
	No	8	80.00	34	91.89	

[a]*n=10*
[b]*n=37*
** Fisher Exact Sig*

4. DISCUSSION

The COVID-19 pandemic has been a time of many negative experiences, both physical and mental. Children were especially away from their families, school, activities, and friends due to the quarantine process. Investigating the psychological effects of this will be useful in terms of taking the necessary precautions in similar situations in the future. In our study, we aimed to evaluate the anxiety of children during the COVID-19 pandemic using both quantitative method and drawing methods. Drawing is one of several therapeutic techniques that can help children express themselves, and it is a highly effective tool for communicating with children, especially in situations where communication is interrupted and insufficient, such as during a pandemic (33, 34). There are many studies in the literature to evaluate childhood anxiety during the COVID-19 pandemic (35-37). In the literature review, no study was found in which the quantitative and drawing methods were used together in children during the Covid 19 pandemic.

In our study, children diagnosed with COVID-19 and those not diagnosed with COVID-19 had similar anxiety scores. A study by Zhang et al. (38) found that similar to our study, the anxiety scores of children during the COVID-19 pandemic were not high. Studies in the literature at the beginning of the quarantine period (especially the first six weeks) reported that anxiety symptoms were higher in children (39-41). Still, studies conducted after this first period indicated that children's anxiety symptoms were at normal levels (13,

38, 42, 43). A systematic review and meta-analysis conducted by Miao et al. determined that the anxiety level, which was high in the early days of quarantine, increased again towards the second quarantine (44). The fact that the children in our study, whether diagnosed with COVID-19 or not, had similar levels of anxiety might be due to the study data being collected after the first six months of the pandemic. This can be explained by the fact that children's knowledge of and experience with quarantine and isolation measures, mask use, and social distancing measures increased over time. In addition, some studies have reported that academic success, academic process anxiety, and social isolation, which have been essential sources of anxiety during the pandemic, are experienced more by adolescents than by children (36, 45). Adolescents have higher anxiety scores than children, and children experience less anxiety because they are less affected by difficulties during these periods (46, 47, 48). It is thought that the children 8 and 10 in our study did not have high anxiety scores because they were at the beginning of their academic lives.

In our study, the anxiety levels of children whose family members were diagnosed with COVID-19 were very close to those of children who were diagnosed themselves. This shows that children are affected by their parents' anxiety (e.g., job loss, loss of loved ones, and deterioration of financial and psychological conditions) (14, 33). It has been observed that children who have lost a family member due to COVID-19 experience anger and express this loss in their drawings (Figure 1). The analysis of the children's drawings shows that children who were not themselves diagnosed and whose family members were not diagnosed with COVID-19 expressed more anxiety in their drawings (Figure 2). This result led us to believe that previously undiagnosed children and their families were worried about being diagnosed with COVID-19 and infecting their families with the disease. Our results are similar to those observed in the literature (11, 33, 38, 49-53).

Figure 1. *Boy, 8 years, His grandfather died due to covid-19. He drew a heart between his grandfather's house and his grave. He drew the coronavirus next to his grandfather's grave.*

Figure 2. *Girl, 8 years, She draws dark clouds and rain. Signs of intense anxiety appear.*

There was a positive relationship between anxiety and anxiety scores reflected in the children's drawings. In particular, anger and insecurity were seen more often in the drawings of children who had been diagnosed with COVID-19 or who had a family member diagnosed with COVID-19 (Figure 3). At the same time, anxiety was more common in children who had not been diagnosed (Figure 4). It has been interpreted that the reason for the high level of anxiety in undiagnosed children is that they have a fear of the unknown and that those who have been diagnosed may have less anxiety because they have been through the process. Studies in the literature show that knowledge about the pandemic and the disease reduces anxiety (54, 55). Our study supports these results.

Figure 3. *Girl, 8 years. The absence of hands indicates insecurity, asymmetry of arms and legs indicates impulsivity, exaggerated teeth indicate anger, and legs together indicate anxiety.*

Figure 4. *Gril, 8 years. The absence of feet is a sign of insecurity, the absence of a nose is a sign of shyness. In addition, the child is seen to have a sad facial expression.*

Our study has shown that it is easier for children to express the psychological distress and emotions caused by the pandemic when they transfer their pandemic experiences to paper through drawing. This technique is helpful in communicating with children and enabling them to express themselves. Idoiaga et al. (56) used the drawing in their study to examine how children aged 6-12 years understand the COVID-19 pandemic in their daily thoughts. The drawings evaluated in the study were examined under four themes. These were related to pandemic symbols (32.34%), emotions (30.55%), actions taken (27.18%), and socialization (9.90%). In our study, children also drew symbols, emotions, and events related to the pandemic (56). Also, in two studies conducted during the COVID-19 pandemic, children were asked to express their pandemic experiences through drawings. These studies found that the drawing reducing effectively facilitated the expression of children's experiences and reduced emotional distress (33, 51). Drawing can be an effective method for expressing and regulating emotions. Drawing is an effective and reliable tool to help children cope with a crisis, increase emotional expression and awareness, and express themselves (57). The use of drawings and visual models can assist in understanding and communicating appropriately with children who may not be able to fully express their emotions verbally, especially in situations where the disease process is severe, clinical symptoms are prolonged, and deaths occur, such as in pandemics.

4.1. Strength and Limitations

The strongest aspect of our study is its originality due to the absence of a similar study on this topic in the literature. Our results allow us to better understand the emotional states of children and the role of families in this process, with its content and the parameters it measures. In addition, it will be a guide for programs to be developed in this sense.

Although our study was conducted with children from many geographical regions, due to the pandemic's constraints, observing the children during their drawing activities or talking to them about their emphases and explanations was impossible. In addition, the study cannot be generalized to any region or area because the children reached in our study cannot represent any universe. One limitation of this study was that the researchers stayed away from the children and parents during the drawings.

5. CONCLUSION

Our findings showed that symptoms of impulsivity and shyness were determined in the drawings of half of the children diagnosed with COVID-19. Symptoms of impulsivity, insecurity, and shyness were observed in half of the children whose parents were diagnosed with COVID-19. The relationship between the draw-a-man test scores and the children's anxiety scale scores was analyzed insecurity analyzed, and according to this, anger, fear, shyness, insecurity analyzed, and according to this, anger, fear, shyness, insecurity, and impulsivity together are moderately related to the anxiety score. There were statistically significant differences between "anxiety and shyness", "impulsivity and insecurity", "impulsivity and anger", and "insecurity and anger". Nurses should be aware of the social and emotional impact of pandemics on children and be able to use drawing, a therapeutic communication technique, to determine children's perceptions of the pandemic process and how they are affected by it.

Acknowledgements: *We would like to thank the children and their parents who participated in the study. Also the authors would like to thank Gazi University Academic Writing Application and Research Center for proofreading the article*
Funding: *The authors received no financial support for the research.*
Conflicts of interest: *The authors declare that they have no conflict of interest.*
Ethics Committee Approval: *This study was approved by Ethics Committee of Gazi University,*
Noninvasive Clinic Ethics Committee (Approval date: January 25, 2022; Number: E-77082166-604.01.02-279409)
Peer-review: *Externally peer-reviewed.*
Author Contributions:
Research idea: RC, BE, GC, NA, EK
Design of the study: RC, BE, GC, NA, EK
Acquisition of data for the study: RC, BE, GC
Analysis of data for the study: RC, BE, GC
Interpretation of data for the study: RC, BE, GC, NA, EK
Drafting the manuscript: RC
Revising it critically for important intellectual content: NA, EK
Final approval of the version to be published: RC, BE, GC, NA, EK

REFERENCES

[1] Umakanthan S, Chauhan A, Gupta, MM, Sahu PK, Bukelo MM, Chattu VK. COVID-19 pandemic containment in the Caribbean Region: A review of case-management and public health strategies. AIMS Public Health. 2021;8(4):665. https://doi.org/10.3934/publichealth.2021053

[2] Kaur R, Boobna T, Kallingal P Effect of Covid-19 lock down on indian children with autism. Research in Developmental Disabilities. 2022;125:104230.
https://doi.org/10.1016/j.ridd.2022.104230

[3] Serlachius A, Badawy SM, Thabrew H. Psychosocial challenges and opportunities for youth with chronic health conditions during the COVID-19 pandemic. JMIR Pediatrics and Parenting. 2020;3(2):e23057.
https://doi.org/10.2196/23057

[4] Richter SA, Ferraz-Rodrigues C, Schilling LB, Camargo NF, Nunes ML. Effects of the COVID-19 pandemic on sleep quality in children and adolescents: A systematic review and meta-analysis. Journal of sleep research. 2023;32(1):e13720. https://doi.org/10.1111/jsr.13720

[5] Buheji M, Hassani A, Ebrahim A, da Costa Cunha K, Jahrami H, Baloshi M, Hubail S. Children and coping during COVID-19: A scoping review of bio-psycho-social factors. International Journal of Applied Psychology. 2020;10(1):8-15.
https://doi.org/10.5923/j.ijap.20201001.02

[6] Christakis DA School reopening—the pandemic issue that is not getting its due. JAMA pediatrics. 2020;174(10):928-928. DOI:10.1001/jamapediatrics.2020.2068

[7] Anand P, Patil RS, Puri P, Patil S. The psychosocial effects of lockdown due to the COVID-19 Pandemic on children in 2021. Cureus, 2024;16(2): e53614.
https://doi.org/10.7759/cureus.53614

[8] UNICEF. Psychosocial Support for Children during COVID-19. A Manual for Parents and Caregivers. 2024. https://www.unicef.org/india/media/3401/file/PSS-COVID19-Manual-ChildLine.pdf

[9] TC Sağlık Bakanlığı. Covid Bilgilendirme Platformu. 2024. https://covid19.saglik.gov.tr/TR-66158/81-il-psikososyal-destek-hat-bilgileri.html

[10] Becker SP, Gregory AM. Editorial Perspective: Perils and promise for child and adolescent sleep and associated psychopathology during the COVID-19 pandemic. Journal of Child Psychology and Psychiatry. 2020;61(7):757-759.
https://doi.org/10.1111/jcpp.13278

[11] Jefsen OH, Rohde C, Nørremark B, Østergaard SD. Editorial Perspective: COVID-19 pandemic-related psychopathology in children and adolescents with mental illness. Journal of Child Psychology and Psychiatry. 2020;62:798–800.
https://doi.org/10.1111/jcpp.13292

[12] Phelps C, Sperry LL. Children and the COVID-19 pandemic. Psychological Trauma: Theory, Research, Practice, and Policy. 2020. https://doi.org/10.1037/tra0000861

[13] Ravens-Sieberer U, Kaman A, Erhart M, Devine J, Schlack R, Otto C. Impact of the COVID-19 pandemic on quality of life and mental health in children and adolescents in Germany. Eur Child Adolesc Psychiatry. 2021;31(6):879-889.
https://doi.org/10.1007/s00787-021-01726-5

[14] Courtney D, Watson P, Battaglia M, Mulsant BH, Szatmari P. COVID-19 impacts on child and youth anxiety and depression: challenges and opportunities. The Canadian Journal of Psychiatry. 2020;65(10):688-691.
https://doi.org/10.1177/0706743720935646

[15] Liu JJ, Bao Y, Huang X, Shi J, Lu L Mental health considerations for children quarantined because of COVID-19. The Lancet Child & Adolescent Health. 2020;4(5):347-349.
https://doi.org/10.1016/S2352-4642(20)30096-1

[16] Racine N, McArthur BA, Cooke JE, Eirich R, Zhu J, Madigan S. Global prevalence of depressive and anxiety symptoms in children and adolescents during COVID-19: a meta-analysis. JAMA Pediatrics. 2021;175(11):1142-1150.
https://doi.org/10.1001/jamapediatrics.2021.2482

[17] Şahbudak B, Emiroğlu Nİ. COVID-19 pandemic and mood disorders in children and adolescents. Turk J Child Adolesc Ment Health. 2020;27(2):59-63. *(Turkish)*

[18] Wang G, Zhang Y, Zhao J, Zhang J, Jiang F. Mitigate the effects of home confinement on children during the COVID-19 outbreak. The Lancet. 2020;395(10228):945-947.
https://doi.org/10.1016/S0140-6736(20)30547-X

[19] Voltmer K, von Salisch M. Longitudinal prediction of primary school children's COVID-related future anxiety in the second year of the pandemic in Germany. Plos one. 2024;19(5):e0302065.
https://doi.org/10.1371/journal.pone.0302065

[20] The American Academy of Pediatrics COVID-19 guidance for safe schools and promotion of ın-person learning. The American Academy of Pediatrics. 2023. https://www.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/clinical-guidance/covid-19-planning-considerations-return-to-in-person-education-in-schools

[21] World Health Organization. Considering the impact of COVID-19 on children. World Health Organization. 2023. https://www.who.int/europe/activities/considering-the-impact-of-covid-19-on-children

[22] Wolf K, Schmitz J. Scoping review: longitudinal effects of the COVID-19 pandemic on child and adolescent mental health. Eur Child Adolesc Psychiatry. 2023;33(5):1257–1312.
https://doi.org/10.1007/s00787-023-02206-8

[23] Lyon P. Using drawing in visual research: materializing the invisible. In The SAGE Handbook of Visual Research Methods (Second ed., pp. 297-308). SAGE Publications, Inc., 2020. https://doi.org/10.4135/9781526417015

[24] Volans A, Brown E. Children expressing themselves. Oxford Textbook of Palliative Care for Children, 2021;95.

[25] Brechet C, D'Audigier L, Audras-Torrent L. The use of drawing as an emotion regulation technique with children. Psychology of Aesthetics, Creativity, and the Arts. 2022;16(2):221–232. https://doi.org/10.1037/aca0000314

[26] Mondragon IN, Munitis EA, Sancho BN, Etxebarria ON. Drawing the COVID-19 pandemic: how do children incorporate the health crisis and its consequences into their everyday thinking? Psychology & Health. 2022.
https://doi.org/10.1080/08870446.2022.2066103

[27] Farley L, Mishra Tarc A. Drawing trauma: The therapeutic potential of witnessing the child's visual testimony of war. Journal of the American Psychoanalytic Association. 2014;62(5):835-854. https://doi.org/10.1177/0003065114554419

[28] Schmidt SJ, Barblan LP, Lory I, Landolt MA. Age-related effects of the COVID-19 pandemic on mental health of children and adolescents. Eur J Psychotraumatol. 2021;12(1):1901407. https://doi.org/10.1080/20008198.2021.1901407

[29] Zengin M, Yayan EH, Vicnelioğlu E. The effects of the COVID-19 pandemic on children's lifestyles and anxiety levels. Journal of Child and Adolescent Psychiatric Nursing. 2021;34(3):236-242. https://doi.org/10.1111/jcap.12316

[30] Ozusta HS. Çocuklar için durumluk-sürekli kaygı envanteri uyarlama, geçerlik ve güvenirlik çalışması [Adaptation, validity and reliability study of state-trait anxiety inventory for

children]. Turkish Journal of Psychology. 1995;10(34):32-44. *(Turkish)*

[31] Koppitz EM. Psychological evaluation of children's human figure drawings. NewYork: Grune&Stratton. 1968.

[32] Koppitz, EM. Psychological evaluation of human figure drawings by middle school pupils. London: Grune&Stratton. 1984.

[33] Abdulah DM, Abdulla BMO, Liamputtong P. Psychological response of children to home confinement during COVID-19: A qualitative arts-based research. International Journal of Social Psychiatry. 2021;67(6):761-769.
https://doi.org/10.1177/0020764020972439

[34] Moitra M, Rahman M, Collins PY et al. Mental health consequences for healthcare workers during the COVID-19 pandemic: A scoping review to draw lessons for LMICs. Frontiers in psychiatry. 2021;12:602-614.
https://doi.org/10.3389/fpsyt.2021.602614

[35] Cornaggia A, Bianco F, Gilli G, Marchetti A, Massaro D, Castelli I. Children's representations of the COVID-19 lockdown and pandemic through drawings. Frontiers in Psychology. 2022;13:960893.
https://doi.org/10.3389/fpsyg.2022.960893

[36] Idoiaga Mondragon N, Eiguren Munitis A, Berasategi Sancho N, Ozamiz Etxebarria N. Drawing the COVID19 pandemic: how do children incorporate the health crisis and its consequences into their everyday thinking? Psychology & Health. 2022a;19:1-20. https://doi.org/10.1080/08870446.2022.2066103

[37] Le Vu MN, Do AL, Boyer L, et al. A review of the effectiveness, feasibility, and acceptability of art therapy for children and adolescents during the COVID-19 pandemic. International Journal of Environmental Research And Public Health. 2022;19(18):11612.
https://doi.org/10.3390/ijerph191811612

[38] Zhang L, Zhang D, Fang J, Wan Y, Tao F, Sun Y. Assessment of mental health of Chinese primary school students before and after school closing and opening during the COVID-19 pandemic. JAMA Network Open 3. 2020:e2021482.
https://doi.org/10.1001/jamanetworkopen.2020.21482

[39] Qi M, Zhou SJ, Guo, ZC, Zhang LG, Min HJ, Li XM, Chen JX. The effect of social support on mental health in chinese adolescents during the outbreak of COVID-19. The Journal of Adolescent Health. 2020a;67:514–518.
https://doi.org/10.1016/j.jadohealth.2020.07.001

[40] Yeasmin S, Banik R, Hossain S, Hossain MN, Mahumud R, Salma N, Hossain MM. Impact of COVID-19 pandemic on the mental health of children in Bangladesh: A cross-sectional study. Children and Youth Services Review. 2020;117:105277. https://doi.org/10.1016/j.childyouth.2020.105277

[41] Zhou SJ, Wang LL, Yang R, Yang XJ, Zhang LG, Guo ZC, et al. Sleep problems among Chinese adolescents and young adults during the coronavirus-2019 pandemic. Sleep Medicine. 2020a;74:39–47. https://doi.org/10.1016/j.sleep.2020.06.001

[42] Cao Y, Huang L, Si T, Wang NQ, Qu M, Zhang XY. The role of only-child status in the psychological impact of COVID-19 on mental health of Chinese adolescents. Journal of Affective Disorders. 2021;282:316–321.
https://doi.org/10.1016/j.jad.2020.12.113

[43] Tang S, Xiang M, Cheung T, Xiang YT. Mental health and its correlates among children and adolescents during COVID-19 school closure: The importance of parentchild discussion. Journal of Affective Disorders. 2021;279:353–360.
https://doi.org/10.1016/j.jad.2020.10.016

[44] Miao, R., Liu, C., Zhang, J., & Jin, H. Impact of the COVID-19 pandemic on the mental health of children and adolescents: a systematic review and meta-analysis of longitudinal studies. Journal of Affective Disorders. 2023;340:914-922.
https://doi.org/10.1016/j.jad.2023.08.070

[45] Carter C, Barley R, Omar A. 'I wish that COVID would disappear, and we'd all be together': Maintaining Children's friendships during the Covid-19 pandemic. Children & Society. 2023. https://doi.org/10.1111/chso.12693

[46] Idoiaga Mondragon N, Eiguren Munitis A, Berasategi Sancho N, Picaza Gorrotxategi M, Dosil Santamaria M. How are children coping with COVID-19 health crisis? Analysing their representations of lockdown through drawings. Childhood. 2022b;29(4):545-560.
https://doi.org/10.1177/09075682221101199

[47] Ellis WE, Dumas TM, Forbes LM. Physically isolated but socially connected: Psychological adjustment and stress among adolescents during the initial COVID-19 crisis. Canadian Journal of Behavioural Science/Revue Canadienne Des Sciences Du Comportement. 2020;52:177–187.
https://doi.org/10.1037/cbs0000215

[48] O'Sullivan K, Clark S, McGrane A et al. A qualitative study of child and adolescent mental health during the COVID-19 pandemic in Ireland. International Journal of Environmental Research and Public Health. 2021;18(3):1062.
https://doi.org/10.3390/ijerph18031062

[49] Abawi O, Welling MS, van den Eynde E et al. COVID-19 related anxiety in children and adolescents with severe obesity: A mixed-methods study. Clinical Obesity. 2020;10:e12412. https://doi.org/10.1111/cob.12412

[50] Evans S, Mikocka-Walus A, Klas A, Olive L, Sciberras E, Karantzas G, Westrupp EM. From "It has stopped our lives" to "spending more time together has strengthened bonds": The varied experiences of Australian families during COVID-19. Frontiers in Psychology. 2020;11:588-667.
https://doi.org/10.3389/fpsyg.2020.588667

[51] Jones K, Hughes B. Children's Experiences of Death Anxiety and Responses to the Covid-19 Pandemic. Illness, Crisis & Loss. 2022;31(3):1-18.
https://doi.org/10.1177/10541373221100899

[52] Jiao WY, Wang LN, Liu J, Fang SF, Jiao FY, Pettoello-Mantovani M, Somekh E. Behavioral and emotional disorders in children during the COVID-19 epidemic. The Journal of Pediatrics. 2020;221:264–266.e1.
https://doi.org/10.1016/j.jpeds.2020.03.013

[53] Xue Q, Xie X, Liu Q et al. Knowledge, attitudes, and practices towards COVID- 19 among primary school students in Hubei Province, China. Children and Youth Services Review. 2021;120:105735.
https://doi.org/10.1016/j.childyouth.2020.105735

[54] Qi H, Liu R, Chen X, Yuan XF, Li YQ, Huang HH, et al. Prevalence of anxiety and associated factors for Chinese adolescents during the COVID-19 outbreak. Psychiatry and Clinical Neurosciences. 2020b;74:555–557.
https://doi.org/10.1111/pcn.13102

[55] Zhou SJ, Zhang LG, Wang LL, Guo ZC, Wang JQ, Chen JC, et al. Prevalence and sociodemographic correlates of psychological

health problems in Chinese adolescents during the outbreak of COVID-19. European Child and Adolescent Psychiatry. 2020b;29:749–758.
https://doi.org/10.1007/s00787-020-01541-4

[56] Idoiaga MN, Eiguren MA, Berasategi SN, Ozamiz EN. Drawing the COVID-19 pandemic: How do children incorporate the health crisis and its consequences into their everyday thinking?. Psychology & Health. 2024;39(3):379-398.
https://doi.org/10.1080/08870446.2022.2066103

[57] Drake JE. How children can use drawing to regulate their emotions. Theory Into Practice. 2023;62(2):181-192.
https://doi.org/10.1080/00405841.2023.2202132

How to cite this article: Çelik R, Erdoğan B, Çakır G, Altay N, Kılıçarslan E. Impact of the COVID-19 Pandemic on the Emotional State of School Children. Clin Exp Health Sci 2025; 15: 182-190. DOI: 10.33808/clinexphealthsci.1542187