

The Children's Degree of Symptom Related to Post-Traumatic Stress Disorder During the COVID-19 Pandemic: A Study from Turkey

Çocukların COVID-19 Salgını Sırasında Travma Sonrası Stres Bozukluğuyla İlgili Belirti Derecesi: Türkiye'den Bir Araştırma

Fatma KURUDİREK^{1*}, Türkan KADİROĞLU², Esen YILDIRIM DEMİRDÖĞEN³,
Zülbıye DEMİR BARBAK⁴

¹ Ataturk University, Faculty of Nursing, Department of Child Health and Diseases, Erzurum, Turkey.

² Ataturk University, Faculty of Nursing, Department of Child Health and Diseases, Erzurum, Turkey.

³ Ataturk University, Faculty of Medicine, Department of Child and Adolescent Psychiatry, Erzurum,
Turkey.

⁴ Ataturk University, Faculty of Health Sciences, Erzurum, Turkey.

Abstract

This study aimed to determine the levels of post-traumatic stress and the influencing factors among children during the COVID-19 pandemic. Conducted as a descriptive and correlational research, it took place online between January and February 2021. The study population was selected from children aged 8-13. A sample of 854 children living in Turkey, who participated voluntarily with parental consent or by personal choice, was included. Data were collected using a "Personal Information Form" and the "Children's Post-Traumatic Stress Response Index." Analyses involved descriptive statistics, Independent Samples t-test, Mann Whitney U test, ANOVA, and Kruskal-Wallis H test. Results indicated that 59.0% of the children reported not being able to play enough during the pandemic, 45.0% spent their time reading and studying, and 81.7% stated that they played games. Additionally, 93.6% of the participants reported feeling unhappy about being separated from school and friends due to COVID-19. The mean score on the Post-Traumatic Stress Response Index was 35.26 ± 13.65 , with 24.6% of the children showing mild, 38.9% moderate, 30.4% severe, and 6.1% very severe stress symptoms ($p < 0.05$). These findings suggest that most children aged 8-13 experienced post-traumatic stress during the pandemic, underscoring the need for better nursing practices to address mental health.

Keywords: COVID-19, children, pandemic, post-traumatic stress, symptoms

Özet

Bu çalışma, COVID-19 pandemisi sürecinde çocuklarda travma sonrası stres düzeylerini ve etkileyen faktörleri belirlemek amacıyla yapılmıştır. Tanımlayıcı ve ilişkisel tipte olan bu araştırma, Ocak-Şubat 2021 tarihleri arasında çevrimiçi olarak gerçekleştirilmiştir. Araştırmanın evreni, 8-13 yaş gruplarından seçilmiştir. Türkiye'de yaşayan ve bu araştırmaya ebeveynlerinin rızası veya kişisel isteği ile gönüllü olarak katılan 8-13 yaş aralığındaki 854 çocuk örneklemini oluşturmuştur. Veriler "Kişisel Bilgi Formu" ve "Çocuk Travma Sonrası Stres Tepki Endeksi" kullanılarak toplanmıştır. Analizler, tanımlayıcı istatistikler, Bağımsız Örneklem t-testi, Mann Whitney U, ANOVA ve Kruskal-Wallis H testlerini içermektedir. Çocukların %59,0'ı pandemi döneminde yeterince oyun oynayamadıklarını, %45,0'ı zamanlarını okuyarak ve ders çalışarak geçirdiklerini, %81,7'si ise oyun oynadıklarını ifade etmiştir. Katılımcıların %93,6'sı COVID-19 nedeniyle okuldan ve arkadaşlarından ayrılmaktan mutsuz olduklarını belirtmiştir. Ortalama Travma Sonrası Stres Tepki Endeksi puanı $35,26 \pm 13,65$ olup, çocukların %24,6'sında hafif, %38,9'unda orta, %30,4'ünde şiddetli ve %6,1'inde çok şiddetli stres belirtileri gözlemlenmiştir ($p < 0,05$). Bu sonuçlar, 8-13 yaş arasındaki çocukların çoğunun pandemi travma sonrası stres yaşadığını ve hemşirelik uygulamalarının geliştirilmesi gerektiğini göstermektedir.

How to cite (Atıf için): Kurudirek, F., Kadiroğlu, T., Yıldırım Demirdoğan, E., & Demir Barbak, Z. (2025). The children's degree of symptom related to post-traumatic stress disorder during the COVID-19 pandemic: A study from Turkey. *Fenerbahce University Journal of Health Sciences*, 5(1), 80-95. DOI: 10.56061/fbujohs.1400070

Submission Date: 04.12.2023, Acceptance Date: 03.09.2024, Publication Date: 30.04.2025

1. Introduction

COVID-19 is an infectious disease firstly appeared in the Chinese city of Wuhan and caused pandemic all over the world. The most recent news displays a picture that COVID-19 globally affects many countries and spread at an enormous speed. On January 28, 2021, World Health Organization declared that 100.200.107 is the number of confirmed cases, and 2.158.761 people lost their lives due to COVID-19 (WHO, 2021). As the Republic of Turkey declared concerns in Turkey, the number of confirmed cases and mortalities, Ministry of Health respectively as 2.449.839, 25.476 (Bakanlığı, 2021). COVID-19 is a virus transmitted through exposure to droplets and close contacts, and when this disease is compared between adults and pediatric cases, it is much less in the second one (Posfay-Barbe et al., 2020). Concerning the COVID-19 weekly surveillance report (19-25 October 2020) prepared by the Republic of Turkey Ministry of Health, it was mentioned that 6.3% of all patients were children aged 15 or below, and the death count was 17 among these children due to COVID-19 (Bakanlığı, 2020). Among children, COVID-19 disease progress is seemed to be more moderate with a better prognosis, better healing rate, and generally with less pneumonia (Ding et al., 2020). Although manifestation in children seems to be better than in adults, precautions taken within the scope of COVID-19 challenges disproportionally and negatively impact children (Leeb et al., 2020). Assessment of existing literature showed that the COVID-19 pandemic caused various problems such as stress, anxiety, depression, temper, aprosexia, fear, sleeping disorder, and Post-traumatic Stress Disorder (PTSD) in children (Guessoum et al., 2020; Jiao et al., 2020; Marques de Miranda et al., 2020; Moore et al., 2020).

PTSD is defined as a diagnosis including emotional, mental, behavioral, and social disorders caused by an event that reveals itself intensely, repeatedly, and deeply or it is a combination of disorders caused by being exposed or hearing somebody being exposed to one or more physical and psychologically traumatic events (Pynoos R et al., 1987). This diagnosis's basic clinical features are over-stimulation longing for more than one month, automatic symptoms related to the stressful event, get away from the event's reminder, and negative alterations in cognitive and emotional cases related to events and afterward. In some researches, people who experienced traumatic events were followed up by PTSD in substantial degrees (Forte et al., 2020; Geng et al., 2021; Küçükoğlu et al., 2015; Li et al., 2020; Liang et al., 2020). PTSD is a psychological disorder that can happen after traumatic experiences such as earthquakes (Dai et al., 2016), hurricanes, SARS, or COVID-19 (Mak et al., 2010; Martínez-González et al., 2020; Schwartz et al., 2019; Sun et al., 2021).

Variables such as biological factors, development period of trauma, and severity of the trauma, social context where people find themselves before and after trauma, and life experiences are compelling on people's level of encountering obtained from trauma. These variables have a critical role in deciding whether perceptions of people toward the event's value, controllability, and sudden progress will lead to a traumatic event. However, children are affected differently from traumatic events depending on age and development period; therefore, they respond differently.

There are some adverse effects of children's moving away from school and staying at home on mental and physical health. Possible long-lasting school closure, fear of infection and disease, restriction and boredom, inadequate information, distance to teacher and friends, no more personal space at home, and loss of money in families affect children and adults' mental health significantly (Carrion et al., 2023). Precautions during the COVID-19 pandemic has a crucial threatening position for children's mental health (Fegert JM et al., 2020). For this reason, this study aimed to determine the post-traumatic stress levels of children and factors associated with it.

2. Method

This research is both descriptive and correlational and was conducted online. The study involved children aged 8-13 living in Turkey. The sample consisted of 854 children within this age range, whose parents or themselves are members of social media platforms (Facebook, WhatsApp, Instagram, etc.) and who willingly participated in the research.

2.1. Purpose of the research

This study was conducted to determine post-traumatic stress levels in children and factors affecting them during the COVID-19 pandemic process.

2.2. Questions of research

- What is the degree of symptoms related to post-traumatic stress in children during COVID-19 pandemic in Turkey?
- Do demographic features of children affect their post-traumatic stress during COVID-19 pandemic in Turkey?
- What are the feelings and thoughts of children in Turkey regarding their post-traumatic stress during the COVID-19 pandemic?

2.3. Population and Sample of the Research

This research was both descriptive and correlational and conducted online. The study took place across various cities in Turkey between December 2020 and January 2021. The target population consisted of children aged 8-13 living in Turkey. No specific sample size calculation was performed; instead, the sample included 854 children within this age range. These children, or their parents, were members of social media platforms (such as Facebook, WhatsApp, Instagram, etc.) and voluntarily chose to participate in the research. In the literature review, the total sample size found using the G*POWER program was calculated as $n = 854$, with a 0.116 effect size, 95% power, and a 0.05 error margin, based

on the percentage measurement values for the methods to be studied. Power analysis showed that the data collected was sufficient. This research only included those who gave informed consent obtained from their parents and in 8-13 age groups plus literate.

2.4. Data Collection and Data Tools

2.4.1. Data Collection

Research data was collected after ethics approval had been taken from both the Committee and Republic of Turkey Ministry of Health Scientific Research Platform. The data was through the administration of online questionnaire filling considering the risk circumstances during the pandemic. The research was conducted among children aged 8-13, and either they or their parents were members of any social media platform. For this purpose, forms (Personal Information Form, CPTS-RI) that were prepared in Google Forms were distributed on online platforms such as Facebook, Whatsapp, Instagram, Telegram, and e-mails. In the introduction part of the form, the aim and content were given. After children read this section carefully and accept it, forms were filled in an open-access environment. With the help of decoding the questionnaire, repeated attempts to the research were restricted. Access to the data collection link was openly seen for 60 days between the research steps' dates. Then, access to the link was blocked. For each participant, filling up the data collection forms took 10-15 minutes.

2.4.2. Data Collection Tools

The research data was obtained by using "Personal Information Form" and "Child Post-traumatic Stress Reaction Index".

Personal Information Form: It is a research form conducted by researchers through literature investigation (Bonsaksen et al., 2021; Jiao et al., 2020), and it consists of 15 questions. These questions are prepared in order to assess the demographic characteristics belonging to a child (age, gender, parental education, parental job, income level, family type, residential address) and their feelings and thoughts toward COVID-19 and pandemic period (lack of access to play, fear of COVID-19 infection, fear of parents getting infected by COVID-19, both parent and child infection status, challenges with distance friendship and school).

Child Post-traumatic Stress Reaction Index: In 1987, Pynoos et al. (Pynoos R et al., 1987) designed this index for measuring the levels of PTSD. The reliability and validity assessment of the scale was administered by Erden et al. (1999) (Erden G et al., 1999). This scale was developed to evaluate PTSD symptoms and reactions which come up after being exposed to various traumatic events, and it was applied between the ages of 6 and 16. The scale includes 20 items with a rating scale type called 5-point likert scale. The rating scale has an assessment interval beginning from 0 and ends with 4. Out of 20 items, the score is established between 0 and 80, and a higher score displays higher PTSD levels. When the total score is between 0 and 11, it means doubtful; 12-24 a mild level; 25-39 a moderate level, 40-59 a severe level, and 60 and above indicates a very severe level of PTSD. In this recent study, Cronbach's alpha value was 0.75. On the other hand, the Cronbach's alpha value of the CPTS-RI was 0.84.

2.5. Ethical Aspect of Research

To conduct the research, approval was received from Ethics Committee (Number: B.30.2.ATA.0.01.00/19 date: 17.12.2020 decision no:10/35-) and the Republic of Turkey Ministry of Health Scientific Research Platform (date: 24.12.2020). The written text was presented to participants addressing that research purpose, content, and findings in the introduction part of data collection cannot be used anywhere else. "Voluntary Principle" and "Informed Consent" were set as conditions for the personal right privilege.

2.6. Limitations of the Research

There are some limitations to this study. First of all, data was collected in an online environment, and this might have left children who do not have computer skills to access the questionnaire out of scope. Secondly, research was based on the expressions of children. In this case, some children express themselves correctly in order not to feel labeled.

2.7. Analysis and Evaluation of Data

The collected data were analyzed using Statistical Package for the Social Sciences for Windows 20.0, and through that, number, percentage, average, independent samples t-test, Mann-Whitney U, ANOVA, and Kruskal-Wallis H test were applied.

3. Results

Table 1 presents the relationship between demographic characteristics and the mean Child Post-traumatic Stress Reaction Index (CPTS-RI) scores among the 854 child participants. The mean age of the children was 9.80 years (± 1.80). Regarding gender differences, the mean CPTS-RI score for females was 35.01 (± 13.21), while for males, it was 35.55 (± 14.15). This slight difference was not statistically significant ($p=0.564$), suggesting that gender did not play a significant role in influencing post-traumatic stress levels in this sample. When comparing the educational levels of children, those in secondary education had a higher mean CPTS-RI score (36.24 ± 14.53) than those in primary education (34.63 ± 13.03), though this difference approached significance ($p=0.091$), indicating a potential trend where older children may experience slightly higher stress levels.

Parental education levels showed varied associations with CPTS-RI scores. Mother's education did not significantly affect the children's CPTS-RI scores ($p=0.795$), with similar mean scores across primary, secondary, high school, and university education levels. However, father's education level showed a significant relationship with CPTS-RI scores ($p=0.000$). Children whose fathers had secondary education reported the highest mean scores (38.87 ± 14.52), indicating greater post-traumatic stress, compared to those whose fathers had a high school (33.49 ± 12.83) or university education (34.61 ± 13.21). This finding suggests that lower paternal education may be linked to increased stress levels in children. Other factors such as mother's occupation, father's occupation, income level, family type, and residential address did not show statistically significant differences in CPTS-RI scores. However, it is notable that children living in villages had the lowest mean CPTS-RI scores (31.89 ± 15.13),

although the difference across residential areas was not significant ($p=0.096$). These findings collectively suggest that specific demographic factors, particularly paternal education, might influence the levels of post-traumatic stress symptoms experienced by children during the COVID-19 pandemic, warranting further investigation into socio-economic and educational interventions for families.

Table 1. Comparison of Demographic Characteristics and CPTS-RI Mean Scores (N=854)

Age (Mean±SD)	9.80±1.80				
	n	%	Mean±SD	Test	p
Gender					
Female	453	53.0	35.01±13.21	t=-0.576	0.564
Male	401	47.0	35.55±14.15		
Children's education					
Primary	519	60.8	34.63±13.03	t=-1.692	0.091
Secondary	335	39.2	36.24±14.53		
Mother's education					
Primary	252	29.5	35.53±13.69	F=0.342	0.795
Secondary	193	22.6	35.83±14.56		
High School	228	26.7	34.57±12.50		
University	181	21.2	35.14±14.06		
Mother's job					
Housewife	679	79.5	35.07±13.82	F=0.315	0.730
Government Employee	77	9.0	36.05±14.51		
Health Employee	98	11.5	35.94±11.76		
Father's education					
Primary	112	13.1	36.41±14.64	F=6.082	0.000
Secondary	163	19.1	38.87±14.52		
High School	303	35.5	33.49±12.83		
University	276	32.3	34.61±13.21		
Father's education					
Government Employee	389	45.6	34.81±14.24	F=1.646	0.193
Freelancer	265	31.0	36.51±13.09		
Health Employee	200	23.4	34.48±13.16		
Income level					
Income<Outcome	253	29.6	35.30±14.47	F=0.685	0.504
Income=Outcome	477	55.9	34.91±13.21		
Income>Outcome	124	14.5	36.52±13.65		

Table 1. Comparison of Demographic Characteristics and CPTS-RI Mean Scores (N=854) (**Continue**)

Family type					
Nucleus	682	79.9	35.07±13.30	t=-0.821	0.412
Extended Family	172	20.1	36.02±14.99		
Residential Address					
Village	46	5.4	31.89±15.13	KW=4.69 0	0.096
District	128	15.0	36.65±12.98		
Province	680	79.6	35.23±13.65		

CPTS-RI= Child Post-traumatic Stress Reaction Index, F=ANOVA, KW=Kruskal-Wallis, t=Independent Samples t- Test.

Table 2 examines the relationship between children's feelings and thoughts during the COVID-19 pandemic and their mean scores on the Child Post-traumatic Stress Reaction Index (CPTS-RI). The data indicate significant differences in CPTS-RI scores based on various emotional and psychological factors experienced by the children. Children who felt they did not play enough during the pandemic had significantly higher mean CPTS-RI scores (36.44±13.51) compared to those who felt they played enough (33.56±13.70), with a p-value of 0.002. This suggests that limited playtime might be associated with increased post-traumatic stress symptoms. Additionally, children who expressed a fear of getting infected by COVID-19 showed significantly higher mean CPTS-RI scores (36.49±13.49) than those who did not express this fear (29.78±13.05), with a highly significant p-value of 0.000. Similarly, children who feared their parents becoming infected reported higher stress levels (35.90±13.53) compared to those who did not have this fear (27.06±12.61), also with a significant p-value of 0.000.

The table also highlights that children who were themselves infected with COVID-19 had higher mean CPTS-RI scores (39.20±13.18) compared to those who were not infected (34.97±13.65), with a p-value of 0.023, indicating a significant impact of personal infection on post-traumatic stress. Parental infection status was also a significant factor; children whose parents had been infected exhibited higher mean CPTS-RI scores (37.49±14.06) than those whose parents had not been infected (34.44±13.42), with a p-value of 0.004. Finally, feelings of unhappiness due to the lack of in-person interactions with friends and the absence from school significantly impacted stress levels. Children who reported feeling unhappy about these distance relationships and school closures had higher mean CPTS-RI scores (35.52±13.63) compared to those who did not express such feelings (31.50±13.62), with a p-value of 0.030. These findings collectively suggest that both the emotional experiences and the direct impacts of the pandemic—such as personal or parental infection—play a critical role in influencing children's post-traumatic stress levels, highlighting the importance of addressing these psychological and emotional aspects in any interventions aimed at mitigating the adverse effects of the pandemic on children's mental health.

Table 2. Comparison of children's feelings and thoughts during COVID-19 pandemic and CPTS-RI Mean Scores (N=854)

	n	%	Mean±SD	Test	p
Playing enough					
Yes	350	41.0	33.56±13.70	t=-3.044	0.002
No	504	59.0	36.44±13.51		
Time management					
Studying and reading	384	45.0	34.95±14.27	F=1.735	0.158
Watching TV and surfing on the net	255	29.9	36.28±13.84		
At-home activities	114	13.3	36.14±12.83		
Constant sleeping	101	11.8	32.87±11.33		
Fear for getting infected by COVID-19					
Yes	698	81.7	36.49±13.49	t=5.645	0.000
No	156	18.3	29.78±13.05		
Fear for parents getting infected by COVID-19					
Yes	792	92.7	35.90±13.53	t=4.977	0.000
No	62	7.3	27.06±12.61		
Infection status of children					
Yes	58	6.8	39.20±13.18	t=2.282	0.023
No	796	93.2	34.97±13.65		
Infection status of parents					
Yes	229	26.8	37.49±14.06	t=2.899	0.004
No	625	73.2	34.44±13.42		
Feeling unhappy about distance friendship and school					
Yes	799	93.6	35.52±13.63	U=18334.5	0.030
No	55	6.4	31.50±13.62		

CPTS-RI=Child Post-traumatic Stress Reaction Index, F=ANOVA, U=Mann-Whitney U, t=Independent Samples t-Test.

The results presented in Table 3 provide a detailed overview of the Child Post-traumatic Stress Reaction Index (CPTS-RI) scores among the sample of 854 children aged 8-13 years. The overall mean CPTS-RI score was 35.26 with a standard deviation of 13.65, indicating a moderate level of post-traumatic

stress symptoms in the study population. The distribution of CPTS-RI levels highlights that a significant portion of the children experienced varying degrees of post-traumatic stress. Specifically, 24.6% of the participants reported mild symptoms, while 38.9% experienced moderate levels of post-traumatic stress, making it the most prevalent category. Furthermore, 30.4% of the children exhibited severe symptoms, and a concerning 6.1% demonstrated very severe levels of post-traumatic stress. These findings suggest that a considerable number of children in the study experienced moderate to severe post-traumatic stress symptoms, emphasizing the need for targeted mental health interventions and support strategies to address the psychological impacts of traumatic experiences in this age group. The relatively high prevalence of severe and very severe cases underscores the importance of early identification and intervention to mitigate long-term mental health consequences.

Table 3. CPTS-RI Mean Score and CPTS-RI Levels (N=854)

	Mean±SD	
CPTS-RI	35.26±13.65	
CPTS-RI Levels	n	%
Mild	210	24.6
Moderate	332	38.9
Severe	260	30.4
Very severe	52	6.1

CPTS-RI= Child Post-traumatic Stress Reaction Index.

4. Discussion

This research was conducted related to post-traumatic stress symptoms of children living in Turkey during the COVID-19 pandemic. In that sense, research results were valuable from the aspect of PTSD symptoms in Turkey during the outbreak. These results were discussed relating to the literature.

Total PTS scores were found to be moderate level in this study. It was detected that 38.9% indicate a moderate, 30.4% a severe level, 24.6% a mild level, and 6.1% a very severe level. Stressful events such as natural disasters and human-made traumas can have a mental health effect, and it can cause PTSD and depression as well (Plexousakis et al., 2019; Schwartz et al., 2019). Several studies are revealing the PTSD symptoms among children and teenagers who witnessed natural disasters (Geng et al., 2021; Marthoenis et al., 2019). After Aceh earthquake (Marthoenis et al., 2019) (58.3%) and Wenchuan earthquake (Geng et al., 2021), PTSD symptoms were seen in teenagers who witnessed these natural disasters. After the Marmara earthquake (Sabuncuoğlu et al., 2003), 42% of people who witnessed the earthquake faced a moderate level; in the Van earthquake (Küçükoğlu S et al., 2015), 47.7% faced a severe level, and 24.0% faced a very severe level of symptoms.

The observed levels of post-traumatic stress symptoms in this study highlight the significant psychological impact of the COVID-19 pandemic on children in Turkey. With 38.9% of the children

exhibiting moderate PTS symptoms, 30.4% showing severe symptoms, and 6.1% displaying very severe symptoms, these findings indicate that a substantial proportion of the child population experienced high levels of stress and trauma during the pandemic. The presence of severe and very severe PTS symptoms in over one-third of the participants is particularly concerning; as it suggests that these children may face enduring psychological challenges if appropriate interventions are not implemented. These results align with previous studies indicating that exposure to stressful events, such as pandemics and natural disasters, can significantly increase the risk of PTSD among children (Cao et al., 2022; Suresh et al., 2022). Therefore, it is crucial to address these psychological symptoms early, by providing targeted mental health support and interventions to mitigate the long-term effects on children's mental health and well-being. Interventions should focus on reducing anxiety, improving coping mechanisms, and providing a supportive environment where children can express their fears and emotions freely.

As it happens during a natural disaster, PTSD risks also increase during a pandemic disaster. (Guessoum et al., 2020). In research administered on American families who were exposed to H1N1 and SARS-CoV (Severe Acute Respiratory Syndrome Coronavirus), 30% of children were declared to have PTSD since they were restricted by pandemic precautions (Dutheil et al., 2021). People exposed to SARS and MERS were seen to have diseases such as depression, anxiety, fatigue, and PTSD months even years later (Rogers et al., 2020). Li et al. reported that PTSD exists among children and teenagers who are sensitive to COVID-19 (Li Y et al., 2020). In the study conducted by Forte et al. (2020), it was found that approximately 29.5% of the Italian population exhibited high rates of post-traumatic stress disorder (PTSD) symptoms during the COVID-19 pandemic (Forte et al., 2020).

When the effect of COVID-19 on PTSD was investigated through literature, it was detected that 906 (7.4%) participants had PTSD in India (Chew NWS et al., 2020) and 3480 (15.8%) participants had PTSD in Spain (González-Sanguino C et al., 2020). In research administered in China related to the effect of COVID-19 on PTSD, PTSD was seen with a possible range (2.7%-31.6%) (Hao et al., 2020; Huang et al., 2020; Liang et al., 2020; Tan et al., 2020; Tang et al., 2020). In another research conducted in Norway, it was found that PTSD was seen common during the early stages of the COVID-19 pandemic (Bonsaksen et al., 2021). Research findings show parallelism with literature.

A substantial difference was detected between fathers' education and PTSD ($p < 0.05$). Information showing relationship between fathers' education and PTSD during the COVID-19 pandemic has not yet to be detailed in the literature. Thus this research can be an example in the sort of ways to enlighten this topic. In research where anxiety, depression, and PTSD of children and parents were evaluated, it was stated that having high education level reflects a positive effect among parents in terms of depression and PTSD. If we get back to the issue at hand in this study, results were interpreted as higher education levels show more expansive information fields and a better understanding of pandemic. In this way, education can be a protective factor for depression and PTSD (Yue J et al., 2020). Fathers with high education status can support their children in different ways. They can invite their children to talk about COVID-19, listen to them and remove misunderstandings. This type of parents can share more information with their children about the prevention of virus infection. To reduce children's anxiety levels, fathers can create suitable environments where their children can express themselves freely and

spend time together in an enjoyable way. For this reason, the higher education level shows better-dealing methods with the adverse effects of the pandemic. As a result, children might be less affected by COVID-19.

Removing or restricting the need for a play of children can cause unhealthy development (Yogman et al., 2018). In this study, 59.0% and 93.6%, respectively, could not play enough and were unhappy about leaving their school and friends. A meaningful difference was observed between children's play perceptions, distance school, and friends and CPTS-RI ($p < 0.05$). Play is not only a tool for preparing children for the outside world but also an essential element for their psychological, physical, and social development. Moore et al., reported that children and adults were inactive, effortless, sleepy, and more involved in screen-based activities during the pandemic, and these created a bad influence on the play behaviors of children (Moore et al., 2020). Long-term closure of school and activity centers can cause loneliness, anxiety, and uncertainty among children and adults, resulting in a weakening effect on their psychological, physical and social development implications. Moving towards the charm of computer and console games and using social media mandatorily put children at high risk in terms of development (Singh et al., 2020). Many of the children play at home and become dissociated. Since their interactions are keys for their development, teenagers can be sorry, especially for being away from the social stimulus (Orben et al., 2020). Some children expressed a low level of emotionality on the occasion of not being able to meet with friends and attend school activities (Azpiazu Izaguirre et al., 2021). Eventually, movement restriction applied on children can cause negative effects on their general psychological health (J., 2020).

A substantial difference was detected between the following variables: fear of Covid-19 infection, fear of parents getting infected, infection status, and PTSD ($p < 0.05$). In the whole world, isolation and social distance strategies were prepared for getting protection against infection risk. From the beginning of January 2020, several countries started to establish regional and national isolation precautions and apply quarantines. In this context, one of the most basic precautions during lockdown is the closure of schools, educational institutions, and facilities. These conditions, which are beyond usual experiences, can cause stress, anxiety, and desperation in children. The size and quality of the COVID-19 effect is dependent on several factors such as children's development age, current education status, special needs, previous mental health, economic privilege, fear of infection, and quarantine (Singh S et al., 2020). Pandemic and home quarantine have larger emotional and social effects on children and teenagers compared to adults. A pre-research conducted during the on-going pandemic showed that children aged (3-6) indicated more needy behaviors than children aged (6-18) and they were afraid of parents or family members getting infected (Viner RM et al., 2020). Children tend to worry about family matters and future of the family (Tang et al., 2020). Research in China relates the lockdown of children and uncertainty in the restrictions for their physical and social tendencies with anxiety. Again in the same research, it was discussed that children were worried about feeling unsafe, loneliness, sleeping disorders, nightmares, anorexia, agitation, careless behaviors, and separations during the pandemic, and eventually, they were afraid of COVID-19 disease (Jiao et al., 2020).

Despite the low COVID-19 infection rate seen among small children and teenagers, the stress they face makes the situation hard to handle and make them vulnerable. COVID-19 can build harmful barriers to children's psychological development such as sadness, anxiety, fear of both parents and their death, fear of loneliness in the hospital. Children can turn feelings into fear inside and straight behaviors outside, which can be the consequences of repressed emotions. Since they have limited information and maturity level, they feel separated and lonely in their limited world in order to understand the consequences of the pandemic (Liu JJ et al., 2020).

In researches (Cao et al., 2020; Sun et al., 2021; Wang et al., 2021), It was suggested that extreme precautions for an unknown and uncertain infection fear related to COVID-19 affected people's life style and highly created psychological dilemma, anxiety, and mental changes. Therefore, the most significant effect on PTSD and depression after the COVID-19 pandemic was the feeling of being frightened (Tang et al., 2020). Both infection fear and precautions for spreading of virus can be apprehended as traumatic facts. Consequently, they can represent risk factors for many mental diseases and constitutes potential PTSD symptoms (Brooks et al., 2020).

5. Conclusion

This study found that a significant number of children aged 8-13 living in Turkey experienced post-traumatic stress symptoms during the COVID-19 pandemic. The results revealed that many children were unable to play sufficiently, had fears about themselves or their parents contracting the virus, and felt anxious about being away from school and friends. These factors were significantly associated with higher levels of PTSD symptoms among the children. Additionally, the study highlighted that fathers' education levels were related to the children's PTSD levels, suggesting that parental education might play a role in how children cope with traumatic events.

These findings emphasize the need for targeted mental health interventions to support children during crises like pandemics. Schools and healthcare providers should prioritize implementing mental health programs that focus on reducing anxiety, providing coping strategies, and creating safe environments where children can express their feelings and fears. Parents, particularly fathers, should be educated about the importance of their role in supporting their children's emotional well-being. Parenting programs that promote open communication and provide tools for discussing health concerns and emotional issues with children can help mitigate the impact of such stressful situations.

This study contributes to the existing literature by highlighting the specific emotional and psychological impacts of the COVID-19 pandemic on children in Turkey and underlining the importance of family dynamics, particularly the educational background of fathers, in children's mental health outcomes. By providing insights into the factors associated with increased PTSD symptoms, this research offers valuable guidance for future studies and interventions aimed at improving children's resilience and psychological health during public health emergencies.

Authors Contributions

Topic selection: FK, TK, ZDB; Design: FK, TK; Planning: FK, TK; Analysis: FK; Data collection: ZDB ; Writing of the article: FK; Critical review: FK, TK, EYD.

Conflict of Interest

The author declares no potential conflicts of interest concerning the research, authorship, and/or publication of this article.

References

- Azpiazu Izaguirre, L., Fernández, A. R., & Palacios, E. G. (2021). Adolescent Life Satisfaction Explained by Social Support, Emotion Regulation, and Resilience. *Front Psychol*, 12, 694183. <https://doi.org/10.3389/fpsyg.2021.694183>
- Bakanlıđı, T. C. S. (2020). COVID-19 Haftalık Durum Raporu. https://covid19.saglik.gov.tr/Eklenti/39229/0/covid-19-haftalik-durum-raporu---43pdf.pdf?_tag1=70F7CD89B8F7191D8FAD3ACF29EF550190C31B61
- Bakanlıđı, T. C. S. (2021). <https://covid19.saglik.gov.tr/TR-66935/genel-koronavirus-tablosu.html#>
- Bonsaksen, T., Ruffolo, M., Leung, J., Price, D., Thygesen, H., Schoultz, M., & Østertun Geirdal, A. (2021). Loneliness and Its Association With Social Media Use During the COVID-19 Outbreak. *Social Media + Society*, 7, 1-10. <https://doi.org/10.1177/20563051211033821>
- Brooks, S. K., Webster, R. K., Smith, L. E., Woodland, L., Wessely, S., Greenberg, N., & Rubin, G. J. (2020). The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *Lancet*, 395(10227), 912-920. [https://doi.org/10.1016/s0140-6736\(20\)30460-8](https://doi.org/10.1016/s0140-6736(20)30460-8)
- Cao, C., Wang, L., Fang, R., Liu, P., Bi, Y., Luo, S., Grace, E., & Olf, M. (2022). Anxiety, depression, and PTSD symptoms among high school students in china in response to the COVID-19 pandemic and lockdown. *J Affect Disord*, 296, 126-129. <https://doi.org/10.1016/j.jad.2021.09.052>
- Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong, J., & Zheng, J. (2020). The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Res*, 287, 112934. <https://doi.org/10.1016/j.psychres.2020.112934>
- Carrion, A. J., Ridley, A., Rasaki, A. A., Journee, B., & McCants, T. A. (2023). Impact of COVID-19 on the academic performance and mental health of HBCU pharmacy students. *Curr Pharm Teach Learn*, 15(2), 123-129. <https://doi.org/10.1016/j.cptl.2023.02.017>
- Chew NWS, Lee GKH, Tan BYQ, Jing M, Goh Y, & Ngiam NJH. (2020). A multinational, multicentre study on the psychological outcomes and associated physical symptoms amongst healthcare workers during COVID-19 outbreak. *Brain Behav Immun*, 88, 559-565.
- Dai, W., Chen, L., Lai, Z., Li, Y., Wang, J., & Liu, A. (2016). The incidence of post-traumatic stress disorder among survivors after earthquakes: a systematic review and meta-analysis. *BMC Psychiatry*, 16, 188. <https://doi.org/10.1186/s12888-016-0891-9>
- Ding, Y., Yan, H., & Guo, W. (2020). Clinical Characteristics of Children With COVID-19: A Meta-Analysis. *Front Pediatr*, 8, 431. <https://doi.org/10.3389/fped.2020.00431>
- Dutheil, F., Mondillon, L., & Navel, V. (2021). PTSD as the second tsunami of the SARS-Cov-2 pandemic. *Psychol Med*, 51(10), 1773-1774. <https://doi.org/10.1017/s0033291720001336>
- Erden G, Kılıç EZ, Uslu RI, & Kerimođlu E. (1999). The validity and reliability study of Turkish version of Child Posttraumatic Stress Reaction Index. *Journal of Child and Youth Health*, 6, 143-149.
- Fegert JM, Vitiello B, Plener PL, & Clemens V. (2020). Challenges and burden of the Coronavirus 2019 (COVID-19) pandemic for child and adolescent mental health: a narrative review to highlight clinical and research needs in the acute phase and the long return to normality. *Child and adolescent psychiatry and mental health*, 14, 1-11.

- Forte, G., Favieri, F., Tambelli, R., & Casagrande, M. (2020). COVID-19 Pandemic in the Italian Population: Validation of a Post-Traumatic Stress Disorder Questionnaire and Prevalence of PTSD Symptomatology. *Int J Environ Res Public Health*, 17(11). <https://doi.org/10.3390/ijerph17114151>
- Geng, F., Li, S., Yang, Y., Zou, J., Tu, L., & Wang, J. (2021). Trauma exposure and posttraumatic stress disorder in a large community sample of Chinese adults. *Journal of Affective Disorders*, 291, 368-374. <https://doi.org/https://doi.org/10.1016/j.jad.2021.05.050>
- González-Sanguino C, Ausín B, Castellanos MÁ, Saiz J, López-Gómez A, & C., U. (2020). Mental health consequences during the initial stage of the 2020 Coronavirus pandemic (COVID-19) in Spain. *Brain Behav Immun*, 87, 172-176
- Guessoum, S. B., Lachal, J., Radjack, R., Carretier, E., Minassian, S., Benoit, L., & Moro, M. R. (2020). Adolescent psychiatric disorders during the COVID-19 pandemic and lockdown. *Psychiatry Research*, 291, 113264. <https://doi.org/https://doi.org/10.1016/j.psychres.2020.113264>
- Hao, F., Tan, W., Jiang, L., Zhang, L., Zhao, X., Zou, Y., Hu, Y., Luo, X., Jiang, X., McIntyre, R. S., Tran, B., Sun, J., Zhang, Z., Ho, R., Ho, C., & Tam, W. (2020). Do psychiatric patients experience more psychiatric symptoms during COVID-19 pandemic and lockdown? A case-control study with service and research implications for immunopsychiatry. *Brain, Behavior, and Immunity*, 87, 100-106. <https://doi.org/https://doi.org/10.1016/j.bbi.2020.04.069>
- Huang, C., Wang, Y., Li, X., Ren, L., Zhao, J., Hu, Y., Zhang, L., Fan, G., Xu, J., Gu, X., Cheng, Z., Yu, T., Xia, J., Wei, Y., Wu, W., Xie, X., Yin, W., Li, H., Liu, M., . . . Cao, B. (2020). Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet*, 395(10223), 497-506. [https://doi.org/10.1016/s0140-6736\(20\)30183-5](https://doi.org/10.1016/s0140-6736(20)30183-5)
- J., L. (2020). Mental health effects of school closures during COVID-19. *The Lancet Child & Adolescent Health*, 4(6), 421. [https://doi.org/10.1016/S2352-4642\(20\)30109-7](https://doi.org/10.1016/S2352-4642(20)30109-7)
- Jiao, W. Y., Wang, L. N., Liu, J., Fang, S. F., Jiao, F. Y., Pettoello-Mantovani, M., & Somekh, E. (2020). Behavioral and Emotional Disorders in Children during the COVID-19 Epidemic. *J Pediatr*, 221, 264-266.e261. <https://doi.org/10.1016/j.jpeds.2020.03.013>
- Küçükoğlu S, Yıldırım N, & Dursun OB. (2015). Posttraumatic stress symptoms seen in children within the 3-month period after the Van earthquake in Turkey. *International Journal of Nursing Practice* 21(5), 542–549. <https://doi.org/https://doi.org/10.1111/ijn.12305>
- Küçükoğlu, S., Yıldırım, N., & Dursun, O. B. (2015). Posttraumatic stress symptoms seen in children within the 3-month period after the Van earthquake in Turkey. *Int J Nurs Pract*, 21(5), 542-549. <https://doi.org/10.1111/ijn.12305>
- Leeb, R., Bitsko, R., Radhakrishnan, L., Martínez, P., Njai, R., & Holland, K. (2020). Mental Health–Related Emergency Department Visits Among Children Aged. *MMWR. Morbidity and Mortality Weekly Report*, 69, 1675-1680. <https://doi.org/10.15585/mmwr.mm6945a3>
- Li, X., Li, S., Xiang, M., Fang, Y., Qian, K., Xu, J., Li, J., Zhang, Z., & Wang, B. (2020). The prevalence and risk factors of PTSD symptoms among medical assistance workers during the COVID-19 pandemic. *J Psychosom Res*, 139, 110270. <https://doi.org/10.1016/j.jpsychores.2020.110270>
- Li Y, Duan W, & Z., C. (2020). Latent profiles of the comorbidity of the symptoms for posttraumatic stress disorder and generalized anxiety disorder among children and adolescents who are susceptible to COVID-19. *Child Youth Serv Rev.*, 116, 105235. <https://doi.org/10.1016/j.childyouth.2020.105235>
- Liang, L., Ren, H., Cao, R., Hu, Y., Qin, Z., Li, C., & Mei, S. (2020). The Effect of COVID-19 on Youth Mental Health. *Psychiatr Q*, 91(3), 841-852. <https://doi.org/10.1007/s11126-020-09744-3>
- Liu JJ, Bao Y, Huang X, Shi J, & L., L. (2020). Mental health considerations for children quarantined because of COVID-19. *Lancet. Child Adolesc. Health*, 4(5), 347–349. [https://doi.org/10.1016/S2352-4642\(20\)30096-1](https://doi.org/10.1016/S2352-4642(20)30096-1)
- Mak, I. W., Chu, C. M., Pan, P. C., Yiu, M. G., Ho, S. C., & Chan, V. L. (2010). Risk factors for chronic post-traumatic stress disorder (PTSD) in SARS survivors. *Gen Hosp Psychiatry*, 32(6), 590-598. <https://doi.org/10.1016/j.genhosppsych.2010.07.007>
- Marques de Miranda, D., da Silva Athanasio, B., Sena Oliveira, A. C., & Simoes, E. S. A. C. (2020).

How is COVID-19 pandemic impacting mental health of children and adolescents? *Int J Disaster Risk Reduct*, 51, 101845. <https://doi.org/10.1016/j.ijdrr.2020.101845>

Marthoenis, M., Ilyas, A., Sofyan, H., & Schouler-Ocak, M. (2019). Prevalence, comorbidity and predictors of post-traumatic stress disorder, depression, and anxiety in adolescents following an earthquake. *Asian J Psychiatr*, 43, 154-159. <https://doi.org/10.1016/j.ajp.2019.05.030>

Martínez-González, N., Atienza, F. L., Tomás, I., Duda, J. L., & Balaguer, I. (2020). The Impact of Coronavirus Disease 2019 Lockdown on Athletes' Subjective Vitality: The Protective Role of Resilience and Autonomous Goal Motives. *Front Psychol*, 11, 612825. <https://doi.org/10.3389/fpsyg.2020.612825>

Moore, S. A., Faulkner, G., Rhodes, R. E., Brussoni, M., Chulak-Bozzer, T., Ferguson, L. J., Mitra, R., O'Reilly, N., Spence, J. C., Vanderloo, L. M., & Tremblay, M. S. (2020). Impact of the COVID-19 virus outbreak on movement and play behaviours of Canadian children and youth: a national survey. *International Journal of Behavioral Nutrition and Physical Activity*, 17(1), 85. <https://doi.org/10.1186/s12966-020-00987-8>

Orben, A., Tomova, L., & Blakemore, S. J. (2020). The effects of social deprivation on adolescent development and mental health. *Lancet Child Adolesc Health*, 4(8), 634-640. [https://doi.org/10.1016/s2352-4642\(20\)30186-3](https://doi.org/10.1016/s2352-4642(20)30186-3)

Plexousakis, S. S., Kourkoutas, E., Giovazolias, T., Chatira, K., & Nikolopoulos, D. (2019). School Bullying and Post-traumatic Stress Disorder Symptoms: The Role of Parental Bonding. *Front Public Health*, 7, 75. <https://doi.org/10.3389/fpubh.2019.00075>

Posfay-Barbe, K. M., Wagner, N., Gauthey, M., Moussaoui, D., Loevy, N., Diana, A., & L'Huillier, A. G. (2020). COVID-19 in Children and the Dynamics of Infection in Families. *Pediatrics*, 146(2). <https://doi.org/10.1542/peds.2020-1576>

Pynoos R, Frederidk C, & Nader K. (1987). Life threat and post-traumatic stress in school- age children. *Archives of general psychiatry*, 44, 1057-1063. <https://doi.org/10.1001/archpsyc.1987.01800240031005>

Rogers, J. P., Chesney, E., Oliver, D., Pollak, T. A., McGuire, P., Fusar-Poli, P., Zandi, M. S., Lewis, G., & David, A. S. (2020). Psychiatric and neuropsychiatric presentations associated with severe coronavirus infections: a systematic review and meta-analysis with comparison to the COVID-19 pandemic. *The Lancet Psychiatry*, 7(7), 611-627. [https://doi.org/10.1016/S2215-0366\(20\)30203-0](https://doi.org/10.1016/S2215-0366(20)30203-0)

Sabuncuoğlu O, Ebrinç S, & M., Ç. (2003). Depression, anxiety and behavior among adolescents in two affected areas after the Marmara Earthquake. *Clinic Psychiatry*, 6, 189– 197.

Schwartz, R. M., Rasul, R., Gargano, L. M., Lieberman-Cribbin, W., Brackbill, R. M., & Taioli, E. (2019). Examining Associations Between Hurricane Sandy Exposure and Posttraumatic Stress Disorder by Community of Residence. *J Trauma Stress*, 32(5), 677-687. <https://doi.org/10.1002/jts.22445>

Singh S, Roy D, Sinha K, Parveen S, Sharma G, & G., J. (2020). Impact of COVID-19 and lockdown on mental health of children and adolescents: A narrative review with recommendations. *Psychiatry Res*, 293, 113429. <https://doi.org/10.1016/j.psychres.2020.113429>.

Singh, S., Murad, M. H., Fumery, M., Dulai, P. S., & Sandborn, W. J. (2020). First- and Second-Line Pharmacotherapies for Patients With Moderate to Severely Active Ulcerative Colitis: An Updated Network Meta-Analysis. *Clin Gastroenterol Hepatol*, 18(10), 2179-2191.e2176. <https://doi.org/10.1016/j.cgh.2020.01.008>

Sun, L., Sun, Z., Wu, L., Zhu, Z., Zhang, F., Shang, Z., Jia, Y., Gu, J., Zhou, Y., Wang, Y., Liu, N., & Liu, W. (2021). Prevalence and risk factors for acute posttraumatic stress disorder during the COVID-19 outbreak. *J Affect Disord*, 283, 123-129. <https://doi.org/10.1016/j.jad.2021.01.050>

Suresh, A., Shivanna, S. S., & Satyanarayana, P. T. (2022). Posttraumatic Stress Disorder Among Adolescent Girls Infected with COVID-19: A Cross-Sectional Study. *Journal of Indian Association for Child and Adolescent Mental Health*, 18(1), 82-91. <https://doi.org/10.1177/09731342221096491>

Tan, B. Y. Q., Chew, N. W. S., Lee, G. K. H., Jing, M., Goh, Y., Yeo, L. L. L., Zhang, K., Chin, H. K., Ahmad, A., Khan, F. A., Shanmugam, G. N., Chan, B. P. L., Sunny, S., Chandra, B., Ong, J. J. Y., Paliwal, P. R., Wong, L. Y. H., Sagayanathan, R., Chen, J. T., . . . Sharma, V. K. (2020). Psychological Impact of the COVID-19 Pandemic on Health Care Workers in Singapore. *Ann Intern Med*, 173(4), 317-320. <https://doi.org/10.7326/m20-1083>

- Tang, Y. W., Schmitz, J. E., Persing, D. H., & Stratton, C. W. (2020). Laboratory Diagnosis of COVID-19: Current Issues and Challenges. *J Clin Microbiol*, 58(6). <https://doi.org/10.1128/jcm.00512-20>
- Viner RM, Russell SJ, Croker H, Packer J, Ward J, Stansfield C, Mytton O, Bonell C, & Booy R. (2020). School closure and management practices during coronavirus outbreaks including COVID-19: A rapid systematic review. *Lancet Child Adolescent Health*, 4(5), 397–404. [https://doi.org/10.1016/S2352-4642\(20\)30095-X](https://doi.org/10.1016/S2352-4642(20)30095-X)
- Wang, M., Zhao, Q., Hu, C., Wang, Y., Cao, J., Huang, S., Li, J., Huang, Y., Liang, Q., Guo, Z., Wang, L., Ma, L., Zhang, S., Wang, H., Zhu, C., Luo, W., Guo, C., Chen, C., Chen, Y., . . . Yang, Y. (2021). Prevalence of psychological disorders in the COVID-19 epidemic in China: A real world cross-sectional study. *J Affect Disord*, 281, 312-320. <https://doi.org/10.1016/j.jad.2020.11.118>
- WHO. (2021). *Coronavirus disease (COVID-19)*. <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub/q-a-detail/coronavirus-disease-covid-19>
- Yogman, M., Garner, A., Hutchinson, J., Hirsh-Pasek, K., & Golinkoff, R. M. (2018). The Power of Play: A Pediatric Role in Enhancing Development in Young Children. *Pediatrics*, 142(3). <https://doi.org/10.1542/peds.2018-2058>
- Yue J, Zang X, Le Y, & An Y. (2020). Anxiety, depression and PTSD among children and their parent during 2019 novel coronavirus disease (COVID-19) outbreak in China. *Current Psychology*, 1-8. <https://doi.org/10.1007/s12144-020-01191-4>
- Republic of Turkey, Ministry of Health. (2021). *COVID-19 weekly status report - 43*. https://covid19.saglik.gov.tr/Eklenti/39229/0/covid-19-haftalik-durum-raporu---43pdf.pdf?_tag1=70F7CD89B8F7191D8FAD3ACF29EF550190C31B61
- Republic of Turkey, Ministry of Health. (2021). *General coronavirus table*. <https://covid19.saglik.gov.tr/TR-66935/genel-koronavirus-tablosu.html#>