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Investigation of the Effects of Restrictions Applied on Children During COVID-19 Pandemic

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ABSTRACT

Purpose: The objective of this study was to determine the effects of restrictions that have been imposed during the COVID-19 pandemic, and contact with a COVID-19 positive individual on children and the practices adopted by parents to help their children cope with these effects.

Design and methods: The data for this descriptive study were collected through social media platforms. The study included 464 parents who have children between the ages of 3 and 18, use social media, and are willing to participate in the study. The Parent and Child Descriptive Characteristics Form, Assessment Form for Pandemic Effects, and Form of Parent's Practices for Children during the Pandemic were used to collect the study data.

Results: It was determined that the screen time of the children increased and their physical activity decreased during the restrictions. Following the restrictions imposed during the COVID-19 pandemic, the children's body weight increased by an average of 3.87 ± 2.28 kg, and according to parents, most of the children were more tense, stressed, and angrier. A statistically significant relationship was found between having had contact with an individual diagnosed with COVID-19 and compliance with regular, balanced nutrition and hygiene rules in children ($p < 0.05$), as well as between having been quarantined and compliance with hygiene rules in children ($p < 0.05$).

Practice implications: Despite the relatively low case and mortality rates in children, the COVID-19 pandemic has been a significant health problem for children. From the study, it was determined that the COVID-19 pandemic affects the physical and psychological health of children.

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Introduction

Defined as a highly contagious disease that passes from person to person through droplets produced from coughing or sneezing, the coronavirus disease 2019 (COVID-19) has spread rapidly in many other countries after starting as an epidemic in China. It has now affected the entire world and continues to significantly impact the lives of people across the globe (Huang et al., 2020; Jiang et al., 2020; Poon et al., 2020; Zhu et al., 2020).

The COVID-19 outbreak had a sudden and profound impact on communities all around the world. As cases of the new virus and deaths from it increased, protective measures, such as social distancing and closure of schools and workplaces, were imposed to reduce the rate of spread of the virus (Chakraborty & Maity, 2020; Johns Hopkins University, 2020). In Turkey, the COVID-19 pandemic led to the temporary closure of schools on March 12, 2020, and a curfew was imposed for

individuals under the age of 20 on April 4, 2020. Although eventually schools were reopened and curfews were relieved, as the number of cases and deaths began to increase, distance education was started again on November 16, 2020, and on November 21, the curfew prohibiting individuals under the age of 20 from going outside from the hours of 1:00 pm to 4:00 pm was reinstated (Ministry of Interior of the Republic of Turkey, 2020).

These restrictions have caused serious problems for not only adults but also for children. Due to the curfew and the closure of schools, children have been away from school and their friends, their lifestyles have changed, education has been interrupted, their physical activities have decreased, their nutritional status has changed and they have faced on-line harm (CDC, 2020).

The pandemic has had long- and short-term effects on children's social, emotional, and mental health. The sudden emergence of an unknown virus at the beginning of the pandemic, causing illness and death, caused children to experience fear, anxiety, and stress. In addition, the illness and death of relatives of children also increased their fear, anxiety, and stress levels (CDC, 2020; Hardward, 2020). Studies have shown that children and adolescents who experience traumatic events tend to suffer greater degrees of stress and trauma due to the

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lack of appropriate emotional reactions and coping techniques (Lazarus et al., 2003; Roussos et al., 2005). However, children are more affected by the pandemic because they have different cognitive, psychosocial, emotional, developmental levels, and developmental limitations than adults. In particular, children who have not yet gained the ability to think abstractly in terms of cognitive development may not understand the pandemic, its effects, and the protective measures that should be taken in this process. So, they may produce unrealistic thoughts that can increase their anxiety and fear. Children's developmental limitations affect their ability to cope with emotional trauma. (Ermiş & Bayraktar, 2021). Unfortunately, these traumatic events experienced during the developmental period may continue to affect children throughout their lives (CDC, 2020; Loomis, 2018).

With children being away from their school and their friends due to the closure of schools, they have less opportunity to receive the necessary social support to maintain and cultivate their mental well-being. Moreover, although children perceive social changes, young children especially can have difficulty in understanding these changes, and both young and older children may feel irritability and anger due to this situation. This, in turn, results in children claiming more attention from their parents as they spend more time at home, placing parents under extreme pressure (CDC, 2020; Hardward, 2020).

In the study conducted by Lesser and Nienhuis (2020), it was reported that 40.5% of individuals changed their physical activity habits during the COVID-19 pandemic. In another study conducted by Moore et al. (2020), it was found that during the pandemic, although the sleep habits of Canadian children were not negatively impacted, their physical activity levels were not at the desired level and they engaged in excessive screen time. In children, decreased physical activity and increased screen time have been shown to be directly associated with increased body weight, poorer social and motor development, and loss of cardiorespiratory fitness (Carson et al., 2017; Mostafavi et al., 2013; Tarp et al., 2018).

Basic strategies that can be implemented to solve these problems include showing children the love and attention they need, being honest with children, and explaining to them what is happening in a way that the child can understand. In addition, parents need to manage their own stress to be a model for their children. Lastly, helping children find ways to express themselves through creative activities and establishing routines with them would be beneficial for securing their well-being during the pandemic (WHO, 2020).

Examination of the related literature on this subject revealed that there are only a limited number of studies on the effect of the pandemic in Turkey, and that of these studies, the effects of the pandemic on children were evaluated from only a few aspects. There were no studies found that specifically examined the effects of the efforts made by parents to manage their children during the pandemic. This gap in the relevant literature points to the need for research that evaluates the effect of the pandemic on children from a wide perspective and the initiatives taken by parents to manage these effects. This study was carried out to determine the effects of restrictions that have been imposed during the COVID-19 pandemic, and contact with a COVID-19 positive individual on children and the practices adopted by parents to help their children cope with these effects.

Methods

Study design, setting and participants

This study was designed as a cross-sectional descriptive study. The study data were collected on social media platforms (Facebook, Instagram, blogs and forums) between July 2020 and November 2020. Since the population was unknown, the sample size of the study was calculated using the formula $n = p \cdot q \cdot t^2 / d^2$ ($t = 1.96$, $p = 0.5$, $q = 0.5$, $d = 0.05$), which indicated that the minimum sample size should be 384 participants. The study was carried out with a sample group of

465 people. The inclusion criteria applied for participation in the study were as follows: the children must be between the ages of 3 and 18, be able to read and write in Turkish, use social media tools, and voluntarily agree to participate in the study.

Data collection instruments

The Parent and Child Descriptive Characteristics Form, the Pandemic Effects Assessment Form, and the Form of Parent's Practices for Children during the Pandemic were used to collect the data for the study.

The data collection forms were created by the researchers after conducting a literature review (Moore et al., 2020; Lesser & Nienhuis, 2020; WHO, 2020; Silva et al., 2020). To confirm the validity of the questionnaire forms, the content validity and face validity of the forms were examined. Seven pediatric nurses were consulted as experts in carrying out the content validity of the questionnaire forms. These expert opinions were evaluated using the Davis method, the results of which indicated that the CVI values of the items varied between 0.85 and 1.00, proving that the content validity was acceptable. For face validity, a pilot study was conducted before collecting the data to test the comprehensibility of the questionnaire forms. Twenty parents were included in the pilot study, and it took approximately 5 to 10 min for the parents to answer all the survey questions. After the pilot study, the parents did not make any suggestions, and no revisions were made to the survey questions. The parents who were included in the pilot study were excluded from the main study.

The Parent and Child Descriptive Characteristics Form included questions about the demographic characteristics of the parents (age, gender, education level, income level, etc.) and the age, gender and pandemic-related experiences of their children.

The Pandemic Effects Assessment Form included a numeric rating scale, which was an 11-pointed horizontal scale anchored at 0 and 10 with 0 representing "unfavorable" and 10 represented "favorable", to evaluate the physical and psychological characteristics of the children during the pandemic. Parents were asked to rate the condition of their children by selecting the number that describes his/her level during restrictions (Grove et al., 2013).

The Form of Parent's Practices for Children during the Pandemic included questions on the practices adopted by parents to help children cope with the negative effects of the pandemic. It was used a categorical judgment, either yes or no response, for each question on the form (Streiner et al., 2015).

Data collection

Google Forms were used as the survey tools in the study because they are free and the most common and easy to use tools. The data collection forms were transferred to Google Forms and a link was provided to share the surveys. The survey link created to collect the study data was shared on various social media platforms (Facebook, Instagram, blogs, and forums) for the purpose of inviting qualifying participants to take part in the study.

Ethical considerations

Ethical committee approval to conduct the study was obtained from the Pamukkale University, Faculty of Medicine, Non-Interventional Medical Ethics Committee. The first part of the questionnaire form included information about the aim of the study and a directive on the required questionnaire response time as part of informed consent procedures. Informed consent was received online from all study participants. When the participants clicked on the link given to answer the questionnaire, they read the section containing the purpose of the research and their consent to participate before seeing the questions in the data collection forms. Participants, who approved their consent to participate in the study, completed the questionnaires.

Analysis

The data were analyzed using the SPSS program, version 21 (IBM Corp, 2012 Armonk, NY). The numerical variables in the study were expressed as mean, standard deviation, and minimum and maximum, while categorical and nominal variables were expressed as frequencies and percentages. The fitness of the data to normal distribution was assessed using the Shapiro–Wilk Test to determine the required analysis test. To identify the group responsible for creating the difference in significant relationships, the independent samples *t*-test was applied in cases where the parametric test assumptions were met, while the Mann–Whitney *U* test was used in cases where the parametric test assumptions were not met. The statistical significance level in all analyses was accepted as 5%. The results were analyzed based on a 95% confidence interval and a $p < 0.05$ significance level.

Results

The descriptive characteristics of the parents included in the study are given in Table 1 and the features of their children in Table 2.

The effects of COVID-19 on children are shown in Table 3. During the restrictions, the NRS score averages of the children are as follows; hygiene practices level was 8.73 ± 1.49 , screen time was 7.89 ± 2.27 , the psychological condition was 6.36 ± 2.37 and physical activity level was 5.27 ± 2.65 . It was found that 42.7% of the children were more nervous and stressed, and 32.8% were angrier during the pandemic. Furthermore, 42.6% of the children had weight gain during the restrictions and the average gain weight of the children was 3.87 ± 2.28 kg.

During the restrictions, 73.7% of the children's activities at home were watching television, 69.2% were surfing the internet, 65.3% were studying, 58.6% were playing games with parents/siblings, and 53.4% were playing computer games. It was determined that 46.2% of the parents conducted daily time planning for their children. (Table 4).

Table 5 shows that the practices adopted by the parents to help their children cope with the restrictions. Most frequently used practices were providing information about transmission and ways of protection for

Table 1
Distribution of the participating parents' sociodemographic characteristics.

Sociodemographic characteristics	Mean	SD
Age	38.4	8.14
Number of children	2.01	0.84
	Number	Percentage
Gender		
Female	347	74.8
Male	117	25.2
Mothers' education level		
Illiterate	18	3.8
Primary school graduate	84	17.8
Secondary school graduate	23	4.9
High school graduate	66	14.0
University graduate	273	57.8
Fathers' educational level		
Illiterate	18	3.8
Primary school graduate	71	15.0
Secondary school graduate	38	8.1
High school graduate	94	19.9
University graduate	243	51.5
Income Level	55	11.9
Income less than expenses		
Income equal to expenses	261	56.4
Income higher than expenses	148	31.7
Family Type		
Nuclear	367	79.3
Extended	72	15.6
Fragmented	25	5.2
TOTAL	464	100.0

Table 2
Distribution of findings regarding characteristics of the children.

Descriptive Characteristics	Mean	SD
Age (years)	9.84	8.14
	Number	Percentage
Age		
3–6	122	26.3
7–12	205	44.2
13–18	137	29.5
Gender		
Female	200	43.2
Male	264	56.8
Child has come into contact with an individual who tested positive for COVID-19		
Yes	80	17.3
No	384	82.7
Child has been quarantined		
Yes	74	16.0
No	389	84.0
COVID-19 related matters that the child was most curious about^a		
Disease	256	55.2
Quarantine	121	26.1
Reason for not attending school	181	39.0
Reason for not being able to go out	180	38.8

^a More than one answer was given.

Table 3
Effects of the COVID-19 pandemic on children.

Features	Mean	SD
NRS Score^a		
Psychological condition	6.36	2.37
Sleep level	7.25	2.37
Nutritional level	7.69	2.22
Academic achievement	6.55	2.38
Screen time	7.89	2.27
Physical activity	5.27	2.65
Hygiene practices	8.73	1.49
Communication	6.12	2.39
Family-child interaction	7.89	2.08
Weight (kg) gained during restrictions imposed during the pandemic	3.87	2.28
	Number	Percentage
Child gained weight during restrictions		
Yes	198	42.6
No	266	57.4
Changes in child's mental state^b		
More stressed	198	42.7
More nervous	198	42.7
More tired	72	15.5
Angrier	152	32.8
More peaceful	37	8
More positive	35	7.5
Not affected	113	24.4

^a NRS: Numeric rating scale score.

^b More than one answer was given.

Table 4
Home activities of children during the COVID-19 pandemic ($n = 464$).

Activities	Yes		No	
	n	%	n	%
Make a daily time planning	214	46.2	250	53.8
Studying	303	65.3	161	34.7
Reading	237	51.1	227	48.9
Playing games with parents/siblings	272	58.6	192	41.4
Watching television	342	73.7	122	26.3
Playing computer games	248	53.4	216	46.6
Surfing on the internet	321	69.2	143	30.8

Table 5

Practices adopted by parents to help children cope with the restrictions imposed during the COVID-19 pandemic (n = 464).

Practices	Yes		No	
	n	%	n	%
Finding out what the child knows about COVID-19	404	87.10	60	12.90
Defining what COVID-19 is	417	89.90	47	10.10
Providing information about transmission and ways of protection for COVID-19	435	97.50	29	6.25
Explaining what has been done about COVID-19	413	89.10	51	10.90
Observing the child's reactions and changes	437	94.20	27	5.80
Making the child feel safe	450	97.00	14	3.00
Being honest	447	96.40	17	3.60
Speaking calmly and reassuringly	450	97.00	14	3.00
Letting the child share his/her fears and worries	443	94.50	21	4.50
Providing information appropriate to the child's age, referring the child to sources where he/she can obtain information appropriate for his/her age.	433	93.40	31	6.60
Helping the child to properly understand the news	443	94.50	21	4.50
Talking to the child about current information frequently	349	75.30	115	24.70
Receiving professional support	23	4.90	441	95.10
Conducting daily time planning	214	46.20	250	53.80

COVID-19 (97.5%), making the child feel safe and speaking calmly and reassuringly (97.0%) and being honest (96.4%).

A statistically significant relationship was found between contact with an individual diagnosed with COVID-19 and compliance with regular, balanced nutrition and hygiene rules in the children ($t = 2.214$, $p = 0.027$; $t = 2.202$, $p = 0.028$). The children, who had come into contact with an individual diagnosed with COVID-19, had paid more attention to their nutrition and hygiene than that of the other children. There was a statistically significant relationship between having been quarantined and complying with hygiene rules in the children ($t = 2.053$, $p = 0.041$), with children who had been quarantine had a higher level of compliance with hygiene rules.

Discussion

In this study, which was conducted to determine the effects of restrictions imposed on children due to the COVID-19 pandemic and the practices applied by parents to cope with these effects, it was found that the children were more nervous and stressed, nearly half of them had gained weight, and screen use had increased during the time of the pandemic. In addition, it was determined that the children who had encountered an individual diagnosed with COVID-19 had a more regular, balanced diet and were more likely to follow hygiene rules than those who had not encountered an individual diagnosed with the virus, and that children who had been in quarantine followed the hygiene rules more than that of the other children.

Like all countries around the world, Turkey has been affected negatively by the unanticipated COVID-19 pandemic, which has had the same degree of impact on adults and children alike, especially in the spring and summer months, when children are most active but had to stay at home constantly as a result of the measures taken to prevent the spread of COVID-19. This situation had many negative effects on children's emotional, behavioral, physical, and mental health. These negative effects include decreased physical activity, increased screen time, less outside playing, greater tension, more stress, and decreased social interaction (Moore et al., 2020; Patrick et al., 2020).

As far as it is known, the findings obtained from this study are the first to be derived from a multi-dimensional examination of the effects of restrictions imposed on children during the COVID-19 pandemic and from determination of the practices adopted by parents to help their children cope with these effects. Furthermore, this study is the first study in Turkey to provide such comprehensive data about the negative effects of the COVID-19 pandemic on children.

The findings obtained from this study revealed that an average of 17 out of every hundred children had come into contact with an individual who had tested positive for COVID-19, and that an average of 16 out of every hundred children had been quarantined. This study further found that the children who had come into contact with an individual diagnosed with COVID-19 paid more attention to their nutrition and hygiene, and that the children who had been quarantined paid more attention to hygiene practices than that of other children. These findings can be attributed to the normal reaction of showing greater adherence to protective measures preventing transmission by those who have had direct experience with COVID-19. The most important preventive measure to stop the spread of COVID-19 is good hygiene. Maintaining good wash and waste management practices prevent the transmission of COVID-19 from person-to-person (Australian Government, Department of Health, 2020; World bank, 2020). All the brochures, banners, billboards, radio spots, and videos that have been prepared to inform the public about how best to protect against the COVID-19 pandemic in Turkey highlight the importance of hygiene (Ministry of Health, 2020). It is believed that children who have had any experience with COVID-19 pay more attention to hygiene practices as a preventive measure. In addition, the fact that the guidelines that have been published to highlight the importance of nutrition in the fight against the COVID-19 pandemic include dietary recommendations may have contributed to these children paying more attention to their nutrition (Turkish Dietetic Association, 2020; Yeditepe University, 2020).

In the evaluations made by the mothers about how their children have been affected by the COVID-19 pandemic, the highest mean scores were in the areas of hygiene practices, screen time and family-child interaction. It is encouraging that the highest mean scores were in the area of hygiene practices, as all authorities emphasize that hygiene is one of the most effective methods of protection from COVID-19. This finding served as the chief indicator that children pay attention to the protective measures against COVID-19. Screen time had the second highest average score, which indicates that children have largely spent their time in front of screens during the enforced stay at home periods that have been mandated by the government. The recommendations issued by the American Academy of Pediatrics to families regarding children's screen time include limiting screen time to less than an hour or at most, two hours per day. Other recommendations issued by the American Academy of Pediatrics for families include limiting screen time for children aged 2 to 5 to high-quality programs for an hour a day, creating an active parenting model by making a family plan for all media/screen time, and implementing a "use ban" during mealtimes and before bedtime for media/screen devices, including mobile phones (Brown, 2011; Council on Communications and Media, 2013). However, with the closure of schools during the COVID-19 pandemic, the use of screens in maintaining and supporting education has made these recommendations challenging to implement. Indeed, children's screen-time rate has increased during the COVID-19 pandemic, despite being discouraged. In the present study, the findings revealed that the children's activities involved high rates of watching television, playing computer games, and using the internet. In order to prevent this, it is extremely important to make a daily plan for children, as recommended by the American Academy of Pediatrics. Yet, more than half of the parents in this study reported that they did not make any plans for their children. Similarly, other studies conducted during the COVID-19 pandemic have also reported an increase in screen time in children (Dunton et al., 2020; Moore et al., 2020; Xiang et al., 2020). In one study, it was found that there was a weekly increase of 30 h in total screen time (Xiang et al., 2020). These findings are consistent with the findings of the present study. The other issue with the highest mean score in this study was family-child interaction. With the closure of schools and workplaces during the COVID-19 pandemic, children spent prolonged amounts of time with their parents and siblings, which allows for an increase in family interaction and communication.

This study found that physical activity had the lowest mean score in the evaluations made by the mothers regarding the effects that the restrictions imposed during the COVID-19 pandemic have had on their children. While it is quite clear that this is due to the closure of schools and curfews, increased screen time is also a factor. Findings from other studies confirm the data obtained from this study (Bates et al., 2020; Lesser & Nienhuis, 2020; Moore et al., 2020). Almost half of the children had gained an average of 4 kg during the restrictions imposed. This is thought to be due to increased screen time, decreased physical activity, closure of schools, and curfews.

It was found in this study that almost all the parents implemented the strategies recommended by the World Health Organization and the Psychiatric Association of Turkey (PAT) to help their children cope with the effects of COVID-19 (PAT, 2020; WHO, 2020). However, nearly one out of every four mothers did not talk to their children about current information on COVID-19, an oversight that could cause children to receive misinformation from different sources and as a result, to have negative thoughts. For this reason, it is extremely important that children are frequently informed about the latest developments related to the COVID-19 disease.

The data obtained from this study showed that one in every two children wondered what the COVID-19 disease was. This points to the importance of families being able to explain the disease in a way that is appropriate to the age of their child. The findings from this study further indicated that almost all the mothers tried to provide information appropriate to the age of their child and referred them to sources where they could obtain information appropriate to their age. Considering that children's understanding of the COVID-19 disease will facilitate their compliance with preventive measures, it is extremely important to pay the utmost attention to providing children with information. About four out of ten of the children in this study wondered why they could not go to school or go out. When providing information about the disease, children would feel a sense of relief if these specific matters were explained to them.

According to the evaluations made by the parents in this study, the rate of those who felt that their children had become more tense, stressed and angrier during this process was found to be greater than that of those who believed their children have not been affected. The guideline issued by the Psychiatric Association of Turkey states that professional support may be required for children in cases where such symptoms last longer than two weeks, although this period varies depending on the age group (PAT, 2020). Although almost half of the children were more tense and more stressed, the percentage of those who received support was only 5%. It is extremely important for parents to be aware of this situation and to monitor their children and take them to a professional if symptoms last for more than two weeks.

Practice implications

Despite the relatively low case and mortality rates in children, the COVID-19 pandemic has been a significant health problem for children. In the study, although parents stated that they supported their children during the pandemic process, the findings has shown that the COVID-19 pandemic affects children's physical and psychological health. Also, few parents have received professional support to help their children cope with the pandemic.

In order to protect children from the negative effects of the Covid 19 pandemic, it is recommended that they be appropriately supported by healthcare professionals, their families and educators. However, in the study, it was found that the children were negatively affected despite the support given by the parents. For this reason, it is important for parents to be educated about how they can support their children and where they can get professional support. Considering the long-term effects of the pandemic on children, the findings of the study reveal the necessity of strategies and programs developed for these effects.

Limitations

As a result of the COVID-19 restrictions, it was not possible to physically meet with parents and administer face-to-face surveys, so data were collected via the internet and based on parents' self-reports. The findings obtained from the data collected according to the statements of the parents can only be generalized to the population of the study.

Conclusion

In this study, parents reported that to help children cope with the restrictions imposed by the pandemic, they informed their children about COVID-19, let them express their feelings and thoughts, and made them feel safe. The study findings also show; however, that the restrictions imposed due to the COVID-19 pandemic negatively affect children physically and psychologically. Hence, in addition to the restrictions aimed at slowing the spread of the virus, it is recommended to develop strategies and approaches covering different age groups to help cope with the problems, caused by these restrictions, such as stress, anxiety, inactivity, sleep disorders, and internet addiction. It is thought that comprehensive and maintainable intervention-based studies focused on the special needs of families will play an important role in the permanence of the results obtained.

Author Agreement Statement

We undersigned declare that this manuscript is original, has not been published before and is not currently being considered for publication elsewhere.

We confirm that the manuscript has been read and approved by all named authors and that there are no other persons who satisfied the criteria for authorship but are not listed, we further confirm that the order of authors listed in the manuscript has been approved by all of us,

We understand that the corresponding Author is the sole contact for the Editorial process, she is responsible for communicating with the other authors about progress, submissions of revisions and final approval of proofs.

This study was presented as oral presentation at the Healthy Growing Child Congress (online congress), December 18-20, 2020 in Turkey.

Authorship statement

SSC, ÇE and TT designed the study. SSC, ÇE and TT were responsible for data management and data analysis. All authors drafted and revised the manuscript.

Source of founding statement

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Declaration of Competing Interest

No conflict of interest has been declared by the authors.

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