Original Article

Psychosocial and Behavioral Problems of Children with and without Chronic Diseases in the Covid-19 Pandemic

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Abstract

Background: The research was conducted to determine the psychosocial and behavioral problems of children aged 6-16 with or without chronic disease during the COVID-19 pandemic.

Methods: The study population consisted of children with and without chronic diseases and their parents. It was observed that the total score of the RPDSCL and the externalization, attention, and unclassified sub-scores, which evaluated the behavioral problems reported by parents, were higher in children with chronic disease.

Results: Parents reported that their children had problems such as aggressiveness, hypersensitivity, depression, hyperactivity, withdrawal, jealousy, autism, and sleep disorders during the COVID-19 pandemic. It was determined that 38.5% of the families received counseling, 23% sent their children to special education and the rest applied individual solutions to cope with behavioral problems seen in children.

Conclusion: The study shows that the COVID-19 pandemic causes behavioral problems in children. Pediatric nurses can help identify children with and without chronic diseases at significant risk of developing psychosocial problems in social isolation. It may also aim to engage proactively with this vulnerable population.

Keywords: children/adolescents, chronic disease, pediatric nursing, mental health, psychosocial/behavioral problems.

Introduction

It is estimated that the COVID-19 pandemic will be the biggest epidemic disease of 2019. It has caused and continues to cause a global trauma that affects the whole world. The uncertainty and unpredictability of this process have had many negative effects on everyone living in society (Yavas & Arga, 2020). Children are one of the most vulnerable groups in society and need the most support. The pandemic affects individuals of all ages in society, but since the incidence rate in children is low, the impact on children may be minimal. It has been observed that COVID-19 has a mild course in children compared to adults, but

a severe clinical picture called Pediatric Inflammatory Multisystem Syndrome (PIMS) can also develop, albeit rarely (Muhsinoglu, 2021). Children and adolescents constitute approximately 42 percent of the world's population. Among the most vulnerable groups within this rate are children and adolescents with chronic diseases (Fegert et al., 2020). It is reported that chronic disease rates are between 10-20% in childhood and 10% in severe. If children with mental, sensory and behavioral problems are added to this rate, the prevalence can increase up to 30-40% (Akkuş & Ayhan, 2018; Aral et al., 2020). In our country, the number of children who died from chronic diseases in 2019 was 6368 (TURKSTAT, 2020). As of 22 March 2020, the COVID-19 mortality rate is very low among babies ages 0-9 and 0.2% between 10-19 (Republic of Turkey Ministry of Health, 2021). Although children and adults have chronic diseases, it has been observed that their susceptibility to COVID-19 is similar. It is emphasized that there are delays in routine hospital controls in children with chronic diseases during the pandemic period (Coşkun et al., 2021) and COVID-19 increases the risk of death in children with chronic diseases such as degenerative renal failure, immunodeficiency, long-term lung diseases, cancer types, diabetes, and neurological disorders (Evliyaoglu, 2020). Since children have not completed their development and cannot meet many of their needs, they become more vulnerable to psychosocial problems (Caykus, 2020). It is stated that sensory and behavioral problems such as excessive attachment to the mother, loss of appetite, hypersensitivity, constant questions about the virus, disruption in the sleep cycle, nightmares and enuresis are observed in children, especially during the COVID-19 pandemic (Jiao et al., 2020). It is predicted that failure to recognize these problems may cause global psychosocial problems (Akoglu & Karaaslan, 2020). The child's chronic disease also contributes to the increase in psychosocial symptoms brought about by the pandemic and the emergence of mental disorders afterward (Pilan et al., 2021). In addition to their caregiving roles, pediatric nurses also protect against diseases and promote health (Cetinkaya et al., 2017). Therefore, although they have responsibilities related to the prevention, treatment and care of COVID-19 infection in children, they have very significant responsibilities for the protection and development of children's mental health (Pars, 2020). The pandemic has revealed the need to support children and parents living together in this process not only medically but also psychosocially (Engin et al., 2021). For this reason, this study aims to determine the psychosocial and behavioral problems of children struggling with chronic diseases during the pandemic process. It also aims to contribute to parents and health professionals working in this field.

Design and Methods

Research Purpose and Design: The study was conducted as a quantitative comparative descriptive design to determine the psychosocial and behavioral problems of children aged 6-16 years with and without chronic diseases during the COVID-19 pandemic.

Date and Place of the Research: The research was conducted between January and December 2022 in health directorate hospitals in three centers. Ethics committee permission was obtained after institutional and scale permissions were obtained.

Research questions: Children with/without chronic disease in the COVID-19 pandemic;

1. Is he/she psychosocially affected?
2. Is he/she affecting behaviorally?
3. What are parents' coping methods for psychosocial and behavioral problems?

Sample: The study population consisted of children with and without chronic diseases and their parents. They were hospitalized in pediatric wards and applied to pediatric outpatient clinics in 3 different hospitals in Istanbul, Edirne and Van. The provinces selected for the study were determined according to the researchers' locations to avoid disruption in the data collection process. No regression analysis result was found in which the effect of independent variables on the level of

psychosocial and behavioral problems of children with chronic disease in the COVID-19 pandemic, which is accepted as the primary result of this study, and no result that can be used in sample calculation could be obtained. According to the results of multiple regression analysis, it was predicted that the effect of the independent variables of chronic disease, demographic characteristics of children and COVID-19 pandemic on children's psychosocial and behavioral problems score could be at the level of f2:.08 (small effect). It was planned to conduct the sampling with at least 267 people with a 5% alpha margin of error (two-way) and 90% power in the G*Power (3.1.9.2) programme. Considering that there may be losses during data collection, 330 people (with and without chronic disease) were included in the study with 20% more than the sample number found in the calculation. During the data collection of losses ensured that the number of people was close to each other to avoid any difference between the groups with/without chronic diseases.

Data collection: Data were collected through a form including sociodemographic information (age, gender, institution of employment, occupational group, educational level, etc.) and the Pictorial Pediatric Symptom Checklist (PPSC).

Information Form: It is a form consisting of 23 closed-ended questions (child's age, gender, height, weight, nutrition, chronic disease, covid anamnesis, educational status and occupation of parents, number of children in the family, health status of the family, etc.) prepared to record sociodemographic information and anthropometric measurements of children and their families and some data related to the disease.

Pictorial Pediatric Symptom Checklist: The scale, the Turkish validity and reliability of which was conducted by Ardıç, Ünsal, and Bayram (2020), is used for early diagnosis of psychosocial and behavioral problems in children by evaluating the behaviors of parents' children. The checklist was first used as a health screening tool by Leiner et al., (2007) (Leiner et al., 2010). The checklist consists of 35 questions on a likert scale. The statements and pictures on the scale are expected to be evaluated by the parent as "Not True/Never", "Sometimes or Somewhat True" and "Often True". The rated items are scored 0,1,2 respectively. The scale scores vary between 0-70. If the parents leave items 1 to 3 of the scale blank, the score is evaluated as 0. If more than four items are not answered, the scale is invalid. According to Leiner et al. (2010), the cut-off rate is 28 and above for children aged 6-16 years. Items 5.6.17 and 18 are cancelled for primary school children aged 4-5 years and the total score is calculated according to the remaining 31 items.

Application

- Before starting the study, ethics committee permission was obtained from Halic University Non-Interventional Clinical Research Ethics Committee and institutional permission was obtained from the hospitals where the data would be collected.
- Children with and without chronic diseases who were hospitalized in pediatric wards and admitted to pediatric outpatient clinics together with the health personnel of the clinic were included in the study by the non-probability sampling method until sufficient data were obtained.
- The time and place of data collection were determined by contacting clinic managers.
- Parents of the children included in the study were invited to the clinic.
- Parents were given the necessary information and a form including their consent and volunteering was filled.
- The information form and control list were filled in face-to-face.
- We answered mothers' questions regarding COVID-19, psychosocial and behavioral problems.

Data Analysis: The data were assessed for normal distribution using skewness and kurtosis. Since the data did not follow a normal distribution, descriptive statistics were provided in the form of numbers and percentages for categorical data. For numerical data, the median and

interquartile range (25th-75th percentile) were presented. To compare two-group variables, the Mann-Whitney U test was utilized for independent groups. The Pearson chi-square test was employed for comparing distributions, and the Spearman correlation coefficient was calculated to determine the relationships between the data. In this context, a correlation coefficient of ≤0.30 was considered a weak correlation, 0.31 to 0.59 was deemed a moderate correlation, and ≥0.60 indicated a high correlation, as defined by Akoğlu in 2018. The significance level for all analyses was set at $p < 0.05$.

Ethics Statement: Permission was received from the Scientific Research Platform of the Ministry of Health of the Republic of Turkey for studies within the scope of COVID-19. This was required for the implementation of the research. Institutional permissions were obtained from the hospitals located in Istanbul, Edirne and Van provinces. The ethics committee permission required for the study implementation was received from Haliç University's Non-Interventional Clinical Research Ethics Committee (26.01.2022/23). Before starting the study, the purpose of the study was explained to the individuals who volunteered to participate in the study. Their written and verbal consent was obtained and they were asked to fill in the data collection forms individually.

Results

A total of 330 children aged between 6-16 years, 83 with chronic disease and 247 without chronic disease, were included in the study. When children with and without long-term diseases were compared demographically, no statistical difference was found between the groups in any parameter except height ($p>0.05$). However, it was found that the mean height of children without chronic disease was greater than that of children with chronic disease ($p<0.05$). In addition, it was found that children with chronic disease had more behavioral problems reported by the families ($p<0.05$). When the employment status of the others was compared, it was found that The mothers of children with chronic diseases had a higher employment rate ($p<0.05$). Demographic and clinical characteristics of the participants are shown in Table 1. Covid-19 family history was questioned and its distribution is shown in Figure 1. Accordingly, the most common pattern was that the whole family was positive, followed by only the mother and mother+father.

When clinical data were examined, it was observed that the total score of the PPSC, in which the behavioral problem reported by the parents was evaluated, and the externalization, attention and unclassified sub-scores were higher in children with chronic disease ($p<0.005$). Participants were divided into two groups according to Covid history in the family. When the effects of chronic disease on PPSC in children with a Covid family history were examined, a significant difference was discovered between the total score, attention and externalization sub-scores. These scores were higher in the group with chronic disease than the group without chronic disease ($p<0.05$). In children without a family history of Covid, the PPSC total score, externalization problem and unclassified sub-scores were statistically significantly higher in the group with chronic disease ($p<0.05$). Table 3 shows detailed information.

According to the distribution of chronic diseases, the 3 most common chronic diseases were diabetes (n=26), asthma (n=23) and heart disease (n=5), respectively. Thalassaemia, psoriasis, ulcerative colitis, drug allergy, and inguinal hernia were the least common diseases seen in only one person.

When the problems seen by parents in their children were examined, 14 parents reported behavioral problems. Figure 2 shows the parents' problems Of these 14 children, 8 were male (57.1%) and 6 were female (42.9%) and the mean age was 9.71±3.41 years. PPSC questionnaire score results were as follows: total score 66.29±10.84, attention score 21.65±4.78, externalizing problem score 16.29±4.43, internalizing problem score 12.57±1.55,

unclassified score 14.21±3.24. Similarly, when the families were asked how they coped with these problems, 38.5% indicated that they received counseling, 23% reported that they sent them to special education and the rest indicated that they applied individual solutions. The coping methods of the families are shown in Table 4.

Table 1 Comparison of Demographic and Clinical Data of Children (N=330)

	Children with chronic illness (n=83)	Children without chronic disease (n=247)	p
Age (years), Median	10 (8-14)	10 (8-14)	0.953
Height (cm), Median	140 (125-152)	148 (130- 60)	0.023
Weight (kg), Median	35 (25-49)	40 (28-53)	0.205
BMI (kg/m²), Median	18.96 (16-21.48)	18.9 (16.43-21)	0.825
Maternal age (years), Median	36 (31-42)	38 (33–43)	0.110
Paternal age (years), Median	40 (35–45)	42 (36–45)	0.551
Number of people in the household (n), Median	5 (4–6)	4 (4–5)	0.065
Gender, n (%)			
Female	44 (%53)	113 (%54.3)	0.252
Male	39 (%47)	134 (%45.7)	
Presence of Covid in family, n			
There is	45 (%54.2)	105 (%42.5)	0.064
None	38 (%45.8)	142 (%57.5)	
Family Death Due to Covid, n (%)			
There is	3 (%3.6)	6 (%2.4)	0.566
None	80 (%96.4)	241 (%97.6)	
Mother's Educational Status, n (%)			
Cannot read and write	16 (%19.3)	39 (%15.8)	0.066
Primary school	18 (%21.7)	63 (%25.5)	
Middle school	17 (%20.5)	22 (%8.9)	
High school	18 (%21.7)	63 (%25.5)	
University	14 (%16.9)	57 (%23.1)	
Master's and other	0 (%0)	3 (%1.2)	
Mother's Employment Status, n(%)			
Working	17 (%20.5)	87 (%35.2)	0.012
Not Working	66 (%79.5)	160 (%64.8)	

Father's Educational Status, n (%)			
Cannot read and write	7 (%8.4)	17 (%7)	0.434
Primary school	18 (%21.7)	50 (%20.5)	
Middle school	15 (%18.1)	33 (%13.5)	
High school	25 (%30.1)	83 (%34)	
University	17 (%20.5)	61 (%25)	
Master's and other	1 (%1.2)	0 (%0)	
Father's Employment Status, n(%)			
Working	73 (%88)	220 (%90.2)	0.568
Not Working	10 (%12)	24 (%9.8)	
Child Behavior Problem, n (%)			
There is	9 (%10.8)	5 (%2)	0.001
None	74 (%89.2)	242 (%98)	

Median: Results are presented as median (range of quarters). **BMI:** Body Mass Index.

Table 2 Comparison of Children's Pictorial Pediatric Symptom Checklist Scores (N=330)

Number of children (n), Median	Children with chronic illness (n=83)	Children without chronic disease (n=247)	p
PPSC-total score, Median	57 (53 – 65)	54 (48 – 60)	**<0.001**
PPSC- Attention subscale, Median	18 (16 – 21)	16 (14 – 21)	**0.003**
PPSC- Externalization problem subscale, Median	14 (13 – 17)	12 (11 – 15)	**<0.001**
PPSC- Internalization problem subscale, Median	11 (10 – 12)	11 (10 – 13)	0.410
PPSC- Unclassified, Median	12 (11 – 14)	11 (10 – 13)	**0.002**

Median: Results are presented as median (range of quarters). **PPSC**: Pictorial Pediatric Symptom Checklist.

Table 3 Comparison of Behavioral Problem Scores of Children with and Without a Family History of Covid

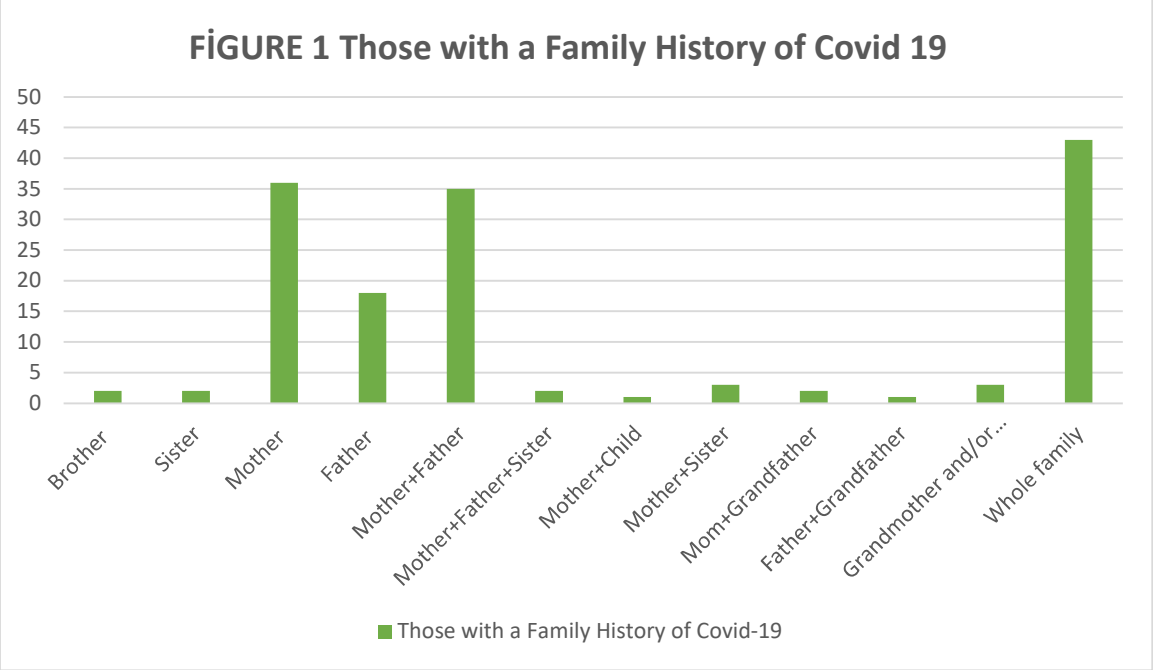
	Children with a family history of Covid (n=150)		**p**	**Children without a family history of Covid (n=180)**		**p**
	Children with chronic illness (n=45)	Children without chronic disease (n=105)		Children with chronic illness (n=38)	Children without chronic disease (n=142)	

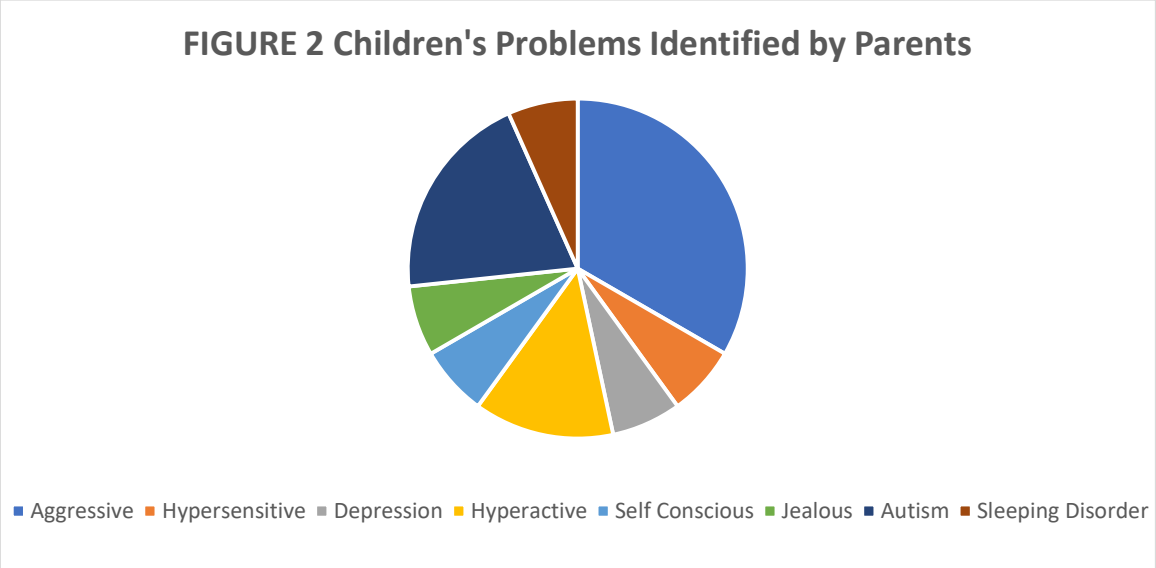
PPSC- total score, Median	57 (54–65)	54 (49–61)	**0.013**	57.5 (50–64.25)	53.5 (48–59)	**0.005**
PPSC- Attention subscale, Median	19 (16.5–21.5)	17 (14–21)	**0.026**	17.5 (15.75–20.5)	16 (14- 20.25)	0.076
PPSC- Externalization problem subscale, Median	14 (12.5–16.0)	13 (11–15.5)	**0.024**	15 (12.75–17)	12 (10.75–14)	**<0.001**
PPSC- Internalization problem subscale, Median	11 (10.5–12)	12 (10–13)	0.445	11 (9–12)	11 (9.75–13)	0.437
PPSC- Unclassified, Median	12 (10.5–14)	11 (10–13)	0.099	13 (11–16)	11 (10–13)	**0.005**

Median: Results are presented as median (range of quarters). **PPSC:** Pictorial Pediatric Symptom Checklist.

Table 4 Families' Ways of Coping with Problems (n=13)

	n (%)
I try to talk, to calm down, to be understanding	3 (%23.1)
Receiving psychological counseling	5 (%38.5)
I accept your requests	1 (%7.7)
I do not do anything	1 (%7.7)
I'm sending you to special education	3 (%23)





Discussion

The Covid-19 pandemic has affected the whole world and caused significant changes, especially in children's lives. Children with and without chronic diseases face psychosocial and behavioral problems as well as the difficulty of fighting the disease during the pandemic. In this study, we aimed to evaluate the psychosocial and behavioral problems of children with and without chronic diseases during the COVID-19 pandemic.

In the study, no statistical difference was found between the groups in terms of demographic characteristics except height measurements ($p>0.05$) (Table 1). This is of importance in terms of showing that the groups are homogeneous. However, it was determined that the mean height of children without chronic disease was longer than children with chronic disease. Studies have indicated that children with chronic diseases may be adversely affected by the disease (Cakir and Altay, 2021; Trivic and Hojsak, 2019).

Studies show that the covid pandemic causes children's behavioral problems. In the study conducted by Xie et al., (2020) with students in the city of Wuhan, it was concluded that children showed more depressive symptoms compared to other regions, and it was stated that this may be due to the social isolation experienced during the COVID-19 process (Xie et al., 2020). Ademhan Tural et al., (2020) found that when the average anxiety symptom scores were compared in all age groups in their study, the mean scores of the group with chronic disease were higher. In many studies, children and adolescents with chronic diseases are more vulnerable to behavioral and mental health problems (Campos et al., 2023; Zuccolo et al., 2022; Tso et al., 2020). In this study, similar to the literature, children with chronic illnesses were found to have more behavioral problems reported by families (Table 1). Disease anxiety is an existing condition in children with chronic diseases. However, increased frequency of talking about Coronavirus at home, more protection pressure due to the virus, and parents behaving differently from normal times may increase behavioral problems in children. When the data of this study are examined, it is seen that the total score of the PPSC, in which the behavioral problem reported by the parents is evaluated, and the externalization, attention and unclassified sub-scores are higher in children with chronic disease (Table 2). In their study, Campos et al., (2023) found that the presence of chronic illness did not lead to adverse emotional or behavioral outcomes unlike the present study. On the other hand, in another study evaluating

5795 children and adolescents in Brazil, they concluded that having a chronic disease condition increased emotional and behavioral symptoms (Zuccolo et al., 2022). Ghosh et al., (2020) thought that lack of outdoor activity and abnormal sleep habits may change neuropsychiatric symptoms. In studies evaluating the psychiatric effects of COVID-19 on children with chronic diseases, it was found that children with chronic diseases were more affected compared to healthy children (Campos et al. 2023; Ademhan Tural et al., 2020).

Parents have a crucial role in improving psychosocial behaviors in children. In their study, Eroglu and Yaksi (2021) found depressive behaviors in 24% of children who were away from their mothers, 6.7% of children who were away from their fathers, and 25% of children who were away from both parents due to covid infection. In another study, it was concluded that having chronic lung disease in children, parents being infected with COVID-19 virus and talking a lot about the pandemic in the family increased the anxiety scores of the child (Ademhan Tural et al., 2020). In this study, similar to the above studies, when the effects of chronic disease on RPDSCL in children with a family history of COVID-19 were examined, the scores of the group with chronic disease were found to be higher than the group without chronic disease (Table 3).

Bilir and Sop (2021) reported in their study that the behavioral problems seen by parents in their children were excessive mobility, aggressiveness, increased destructive behaviors and lack of rules. In a preliminary study conducted in Shaanxi Province during the Covid-19 pandemic, it was reported that the most common psychological and behavioral problems among 320 children and young people aged 3-18 years were stickiness, distraction, irritability and fear of asking questions about the pandemic (Jiao et al., 2020). Similar to this study, parents reported that their children had problems such as aggressiveness, hypersensitivity, depression, hyperactivity, introversion, jealousy, autism, and sleep disorders during the COVID-19 pandemic (Figure 1). In addition, in many studies in the literature, it is reported to develop in children due to the covid epidemic problems such as not being separate from parents, loss of appetite, harmful behaviors, sudden unprovoked reactions, dependence on parents, attention disorders, sleep disorders, excessive aggression, depression (Akoglu & Karaaslan, 2020; Imran, Zeshan, & Pervaiz, 2020; Pisano, Galimi, & Cerniglia 2020; Jiao et al., 2020; Xie et al., 2020).

In this study, when asked how the families coped with behavioral problems seen in children, it was determined that 38.5% received counseling, 23% sent their children to special education and the rest applied individual solutions (Table 4). Ademhan Tural et al., (2020) reported in their study that the methods developed by parents of children with chronic diseases for helping with behavioral problems were more effective than those of parents of healthy children. Coping strategies include specific behavioral and psychological struggles to manage unexpected stressful life events that help manage and reduce stress (Ademhan Tural et al., 2020). It is recommended that parents with children with chronic diseases should be taught and supported. In coping with behavioral problems their children can become mentally and behaviorally healthy individuals through coping methods.

Conclusion: The Covid-19 pandemic has created many negative effects by affecting the whole world. Children and adolescents make up about 42% of the world's population. The most crucial vulnerable group in this ratio is children and adolescents with chronic diseases. Since children have not completed their development and cannot meet many of their needs, they become more open to psychosocial problems. It is important to teach and support the methods of coping with behavioral problems, especially to parents with chronically ill children, so that their children can become mentally and behaviorally healthy individuals

through coping methods. This study consists of a population of children and adolescents with and without chronic disease, living in different regions, and severely affected by the disease due to the Covid-19 pandemic. It is also a multicenter study that can help identify behavioral problems. It can also help confirm whether psychosocial and behavioral problems identified in children improve in the future as socialization progresses after pandemic quarantines.

Relevance for clinical practice: This study encompasses a population of children and adolescents, both with and without chronic diseases, residing in various regions that have been severely impacted by the COVID-19 pandemic. It is a multicenter study designed to shed light on behavioral issues. Pediatric nurses may find this study valuable in verifying whether psychosocial and behavioral problems observed in children will improve as socialization resumes following pandemic-related lockdowns. Moreover, the research can assist in accurately predicting psychological and behavioral symptoms in children and adolescents, regardless of chronic illness, arising from parent-child conflicts and the restrictions imposed during the pandemic. The findings from this study also emphasize the importance of addressing the challenges faced by children and adolescents, in addition to focusing on pandemic control. It is critical to identify those at significant risk of developing psychosocial problems during social isolation, including children both with and without chronic illnesses. Achieving this goal requires collaboration among healthcare professionals, educators, families, and policymakers to explore strategies for safeguarding children's mental health and considering the long-term repercussions of the COVID-19 pandemic. Given that children's physical and mental health, as well as their future productivity, are shaped by their early experiences, further research is warranted to incorporate the perspectives of children and their families.

Limitations: In the study, the mental physiopathology of the parents, which is a well-known factor that may affect the behavior of children who are more exposed to adversities during the pandemic, was not evaluated. In addition, the fact that the study data consists of the individual responses of the parents constitutes a limitation. Therefore, it cannot be generalized.

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