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Original Article

Psychosocial impact of the COVID-19 pandemic on doctors' children: are we heading towards a mental health pandemic?

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Abstract

Background The coronavirus pandemic (COVID-19) may affect the behavior of children. Non infected children of doctors seem to be susceptible to psychosocial health disorders.

Objective To assess the psychosocial impact of the COVID-19 pandemic on children of doctors.

Methods This questionnaire-based survey filled up by doctors was done with the *Pediatric Symptom Check List-17* (PSC-17) to assess the psychosocial impact of the COVID-19 pandemic on doctors' children aged 10-15 years with no clinical evidence of being infected with coronavirus and possible contributing factors to mental distress/psychosocial health disorders. A PSC -17 Score of ≥15 was considered as a significant indicator of suspected psychosocial impact.

Results Children's mean age was 12.5 (SD 1.9) years, and 53.8% of them were male. Of 357 questionnaire responses, 36.1% had a significant PSC-17 score (>15) and a small, but significant inverse correlation was observed with age (r=-0.147; P=0.005). More screen time than usual was perceived by doctors to be the most common potential contributing factor (63%) to their children's psychosocial impact.

Conclusion The COVID-19 pandemic is likely to leave lasting effects on children's mental health. Parents should closely monitor children for any changes in psychosocial behavior, so that timely intervention can be considered. Psychosocial screening of children is needed and should be conducted at schools. **[Paediatr Indones. 2021;61:46-52 ; DOI: 10.14238/pi61.1.2021.46-52**].

Keywords: *coronavirus disease 2019 (COVID-19); pandemic; PSC-17*

The COVID-19 pandemic changed the world dramatically over the first three months of 2020. Children have also been affected by the stress of coping with the COVID-19 pandemic. While the number of children infected has been far less than adults, their emotional and behavioral well-being is a matter of great concern worldwide.[1-3]

Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered *Severe Acute Respiratory Syndrome Coronavirus-2* (SARS-CoV-2), also previously known as 2019-nCoV. The outbreak started in December 2019 in Wuhan, China from where it spread globally.[4] It was declared a *Public Health Emergency of International Concern* (PHEIC) by the *World Health Organization* (WHO) on January 30, 2020 and a global pandemic on March 11, 2020.[5,6] In February 2020, the WHO designated the disease, COVID-19, which stands for coronavirus disease 2019.[7]

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The behavior of children in any crisis reflect their emotional and psychosocial health. Sudden and drastic measures were taken to reduce the spread of this highly contagious virus, including lockdowns and school closures. The sudden change in lifestyle with online school activities, more screen time, and social distancing, engulfed many children with fear and anxiety, but children of doctors went through a unique experience. With the whole world dealing with the pandemic and doctors as frontline warriors, children of doctors observe their parents' battle against the virus. It is not hard to assume that the stress created by constant exposure to firsthand knowledge of COVID-19 effects might lead to mental stress and behavior anomalies among these children. The WHO, CDC, and UNICEF have all expressed concern about a possible mental health crisis in the future.[1-3] This study was conducted to assess the psychosocial impact of the COVID-19 pandemic on children of doctors, so that timely intervention can be taken.[8]

Methods

This questionnaire-based survey was conducted using a virtual snowball sampling technique from July 21-30, 2020. The questionnaire was filled by doctors who worked in different healthcare settings in several cities in Pakistan and had children aged 10-15 years who had no clinical evidence of being infected with coronavirus. A minimum required sample size of 377 was calculated using *Raosoft Software®*, keeping the presumed population of doctors at 1,000 with a 50% response distribution, 5% margin of error, and 95% confidence level. Children with previously diagnosed and treated mental health conditions were excluded from the study.

The PSC-17 was used to assess the psychosocial impact of the COVID-19 pandemic on children of doctors and factors possibly contributing to impaired psychosocial behavior, as perceived by parents. The PSC-17 contains subscales for internalizing behavior/anxiety/depression (I), attention (A), and externalizing behavior/conduct (E). The questionnaire records responses according to a modified Likert Scale (never=0 points, sometimes=1 point, and often=2 points; questions left unanswered or blank were scored as zero. Four or more responses left blank invalidated the questionnaire, thus, such questionnaires were excluded from the final analysis. A total PSC-17 score of 15 or more suggested an increased likelihood of presence of behavioral health disorder.[9,10]

This study and questionnaire were reviewed and approved by the institutional review board of Services institute of Medical Sciences/Services hospital, Lahore, Pakistan on July 21, 2020. The questionnaires and informed consent forms (*Google Form®*) were then circulated through the *WhatsApp®* communication platform. Of 377 returned questionnaires, 20 were invalid, hence, 357 questionnaires filled by doctor parents were included in final analysis.

Data were analyzed using *SPSS V20* software. Means and percentages were calculated for quantitative and qualitative variables where applicable. Shapiro-Wilk test was conducted to assess the normality of data distribution. Triage of scores was carried out based on the age and gender of the children. Analysis of PSC-17 scores with gender and age was done by Pearson's correlation.

Results

A total of 357 of the 377 questionnaire responses were included in the study, as 20 questionnaires were excluded because of incomplete answers. The mean age of children was 12.5 (SD 1.9) years, and 53.8% of them were male. Ages of children by year are shown in **Figure 1**. The frequency of responses to each PSC-17 subscale (internalization, attention, externalization scores) are shown in **Table 1**.

Since Shapiro-Wilk test showed that the data was not normally distributed. The data for age and PSC-17 score were log transformed. Thirty six point one percent (36.1%) of the responses were calculated to have a significant PSC 17 score (>15). Possible correlations of age and gender with total PSC-17 score and PSC-17 score >15 (cause for parental concern) were analyzed by Pearson's correlation coefficient. A small, but significant inverse correlation was observed with age and total PSC 17 score (r=-0.147; P=0.005) (**Table 2**). However, when the correlations were calculated for PSC-17 score of 15 or more (suspicion of psychosocial impact), only 14-year-olds were shown to have an inverse correlation (r=-0.162; P=0.002), while 12-year-olds retained their positive correlation

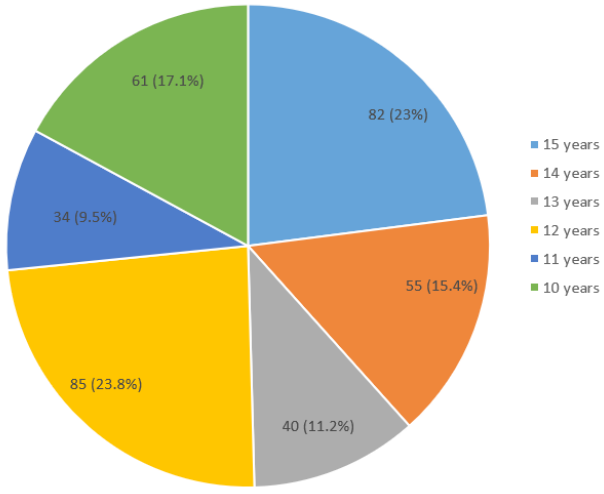

Figure 1. Age distribution of the participants

Table 1. PSC-17 Questionnaire responses submitted by parents

No.	Item	Never (%)	Sometimes (%)	Often (%)
	Internalization (I) score			
1	Feels sad, unhappy.	12.6	58.8	28.6
2	Feels hopeless.	50.4	42.0	7.6
3	Is down on self (low self-confidence)	49.6	42.0	8.4
4	Worries a lot.	32.5	48.7	18.8
5	Seems to be having less fun.	16.4	56.9	26.7
	Attention (A) score			
1	Fidgety, unable to sit still (restless/anxious/makes continuous small movements with hands and feet)	54.6	28.6	16.8
2	Daydreams too much	52.5	36.4	11.0
3	Distracted easily	33.6	47.1	19.3
4	Has trouble concentrating	33.6	47.1	19.3
5	Acts if driven by a motor (hyperactive/always on the go)	51.7	41.4	6.9
	Externalization (E) score			
1	Fights with other children	26.1	52.1	21.8
2	Does not listen to rules	20.5	59.8	19.7
3	Does not understand other people's feelings	31.1	55.5	13.4
4	Teases others	32.8	51.3	16
5	Blames others for his/her troubles	25.2	59.7	15.1
6	Refuses to share	29.4	63.0	7.6
7	Takes things that do not belong to him/her	60.7	30.8	8.5

Notes: The table shows the responses (%s) by the cohort of 357 responders to individual questions of the scale.

($r=0.230$; $P<0.05$).

An important part of our study included an overview of parental insight into the potential contributing factors of their children's behavior. Such parental perceptions are shown in **Table 3**. Population pyramids were plotted showing age groups (10-15 years) vs. parental perceptions of potential contributing factors on psychosocial impact (**Table 4**).

The results showed that more screen time than usual, isolation from peers and difficulties of online academic activities were picked as most likely contributing factors by the parents across all children age groups. Our results also revealed that gender may have an impact as well (**Table 5)** More parents considered screen time to be an important contributing factor (male children: 57.8%; female children: 69.2%) as well as isolation (male children: 50%; female children: 70.3%) (**Figure 2**).

Discussion

The aim of this study was to examine the psychosocial health of doctors' children during the COVID-19 pandemic as they observe their parents as frontline warriors against the coronavirus. In a study conducted in primary schools in the Hubei Province, China, 22.6% of students reported having depressive symptoms and 18.9% of students reported anxiety symptoms.[11] In another study conducted in Shaanxi Province, China, during February 2020 parents were asked to fill a questionnaire that incorporated the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5) criteria.[12] It was noted that children aged 3 to 18 years commonly displayed behavioral manifestations of anxiety including clinginess, distraction, fear of asking questions about the pandemic, and irritability.[13] Moreover, a large survey of young adult students in China reported that around one in four experienced at least mild anxiety symptoms.[14]

In the UK, early results from the *COVID-19 Supporting Parents, Adolescents and Children in Epidemics* (Co-SPACE) online ongoing survey of more than 1,500 parents showed that children in the age range of 4-10 years were more worried than those in the age range of 11-16 years. Fifty three percent (53%) of younger age group and 41 % of older age group were worried about family and friends catching infection while 33.5% of younger age group and 22% of older age group were worried about catching Covid-19

Table 2. Analysis of children's age and total PSC-17 score

Age	12 years	13 years	14 years
'R' static	0.189	-0.113	-0.228
P value	0.000	0.032	0.000

Table 3. Parental perceptions of potential contributing factors to psychosocial behavioral disorders in their children

Potential factors	Percentage of parents choosing the contributing factor
Any close family member infected by coronavirus	4.2
Grief or loss of someone because of coronavirus	3.4
Exposure to current social media news/discussions about coronavirus	33.9
Stress of parent/s being health professional	38.1
Difficulties in online school activities	43.2
Isolation/loneliness/missing peers	59.3
More screen time than usual	62.9

Table 4. Frequency of children with PSC-17 score above or below 15 with respect to age

Age	PSC-17 Score (%age of children)	
	< 15	≥ 15
10	13.4	9.24
11	8.68	5.04
12	6.44	10.08
13	7.84	2.52
14	12.04	2.52
15	15.41	6.72

Table 5. Frequency of children with PSC-17 score above or below 15 with respect to gender

Gender	PSC-17 Score (%age of children)	
	< 15	≥ 15
Male	32.8	21
Female	31	15.1

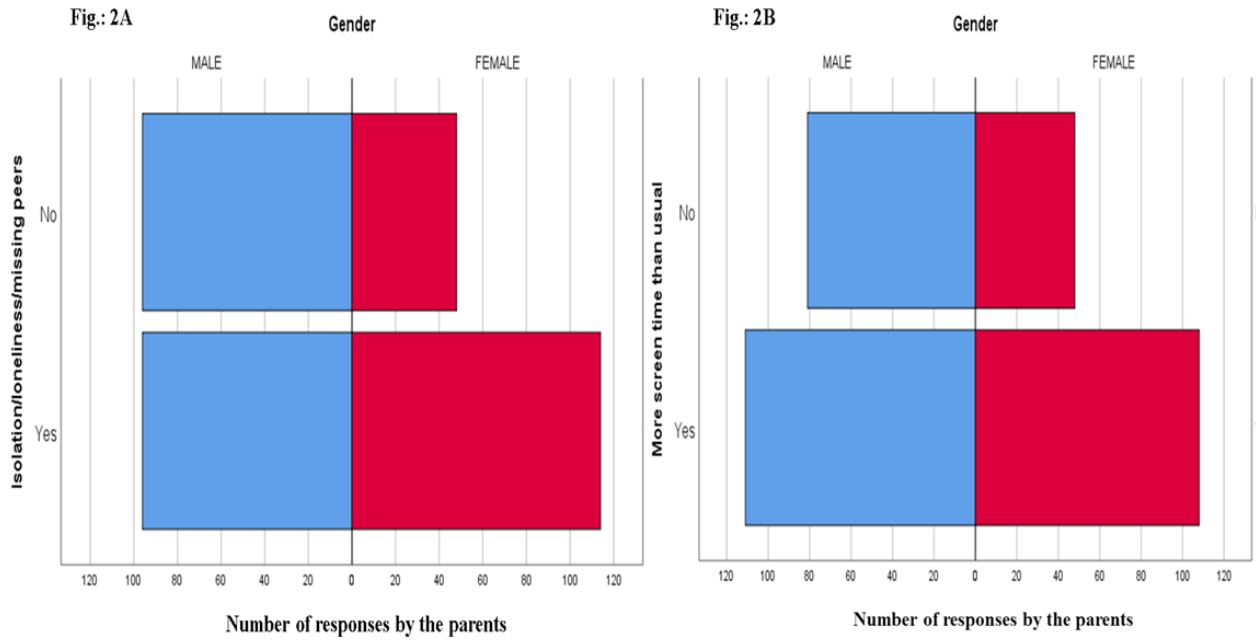

Figure 2. Responses by the parents for potential contributing factors for their children (with respect to gender). 2A: Isolation/loneliness/missing pears. 2B: More screen time than usual.

themselves.[15]

We used the PSC-17, which is a psychosocial screening tool designed to facilitate the recognition of cognitive, emotional, and behavioral problems, so that appropriate, timely intervention can be implemented. We selected parents who were working doctors and had children in the age range of 10-15 years as our sample population, because this adolescent age range is unique and crucial for one's psychosocial well-being in the long run. Multiple physical, emotional, and social changes make children in this age group vulnerable to mental health problems, which may continue undetected into adult life. An estimated 10-20% of adolescents globally experience mental health conditions, yet these remain underdiagnosed and undertreated.[16] The PSC-17 has been widely used clinically and in research for more than a decade, yielding higher rates for detecting psychosocial dysfunction than clinical judgement, and case rates comparable to the PSC-35, other psychosocial screening tools, and semi-structured interviews. The PSC-17 is a shorter, validated, and reliable version of the *Pediatric Symptom Checklist-35* (PSC-35), a parental measure of children's psychosocial function.[17]

A cumulative PSC-17 score of 15 or more was found in 36.1% of children in our study, which indicates a possibility of presence of behavior health disorder. Subscale analysis revealed that parents had noted that their children showed remarkable psychosocial changes in areas of behavioral conduct, like fighting with other children, not listening to rules, not understanding other peoples' feelings, teasing others, blaming others for his/her troubles, and refusing to share. Moreover, in our survey, parents were concerned about their children having less fun and feeling sad or unhappy most of the time, which was not unexpected due to lockdowns, school closures, missing peers, and sudden drastic changes in lifestyle.

We also surveyed possible contributing factors to changes in children's psychosocial behavior, as perceived by parents. More screen time than usual was a matter of great concern for parents. It is quite understandable, as the COVID-19 pandemic has limited outdoor activities and forced students to switch to online schooling. In addition to lockdowns, one or both of parents surveyed were doctors who had to continue their work duties, resulting in children of both genders spending more time engaged in online

activities, such as gaming or social media. Almost half of our cohort (43.2%) had difficulty in online schooling, with more males than females. Children aged 10 years encountered the greatest difficulty in keeping pace with online school activities. This could be attributed to the sudden change in schooling method, to which it was difficult to adjust. Children of this age are generally undergoing a transitional phase of emotional and physical growth and development.[18]

Another contributing factor was that 15-year-olds (males > females) had greater exposure to social media and COVID-19 news and updates than younger children. Keeping in mind the havoc of the early pandemic and health professionals' risk of catching the highly contagious virus, it is understandable that older children would be concerned about pandemic updates, as well as the direct and indirect effects on their parents.

Moreover, our survey revealed that more than one-third (38.3%) of parents perceived that their children were concerned about their work as a health professional at a time when most of people around them were at home maintaining social distance. In addition, almost 60% of parents perceived that their children were under stress because of loneliness and missing their peers. Disease containment measures such as school closures, lockdowns, and social distancing were contributing factors. Loneliness is the painful emotional experience of a discrepancy between actual and desired social contact.[19] Loneliness is a negative emotion that should be addressed in a timely way, as it may have long term effects into adulthood.[20]

The strengths of our study were the focus on the 10-15-year-old age group and children of doctors, as well as PSC-17 use, which to our knowledge was its first application on children during the COVID-19 pandemic. Further study involving all children of all age groups and follow up is need of the hour. Children of other health care professionals should be screened in order to catch problems early.

In conclusion, the COVID-19 pandemic will likely leave long-lasting effects on the mental health of children. Parents should closely monitor children for any changes in psychosocial behavior, as timely intervention may be needed. We suggest that psychosocial screening of children should be conducted by schools so that we will be prepared to deal with a potential future mental health pandemic.

Conflict of Interest

None declared.

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