



# Psychological distress and related factors among caregivers of children with attention-deficit/hyperactivity disorder during the COVID-19 pandemic

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Received: 23 December 2022 / Accepted: 27 April 2023 / Published online: 10 May 2023  
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## Abstract

The present study examined the relationships of caregiver factors (including caregivers' age, sex and educational year), child–family interactions (caregivers' difficulties in managing children's protective behaviors against COVID-19, learning and daily performance, children's conflict with elders and siblings, and parenting styles), and children's factors (attention-deficit/hyperactivity disorder [ADHD] and oppositional defiant disorder [ODD] symptoms) with psychological distress of the caregivers of children with ADHD in the COVID-19 pandemic. This study recruited 252 caregivers of children with ADHD to participate and complete a questionnaire collecting their psychological distress in the COVID-19 pandemic, demographics, difficulties in managing children's protective behaviors against COVID-19, learning and daily performance, and parenting styles as well as children's conflict with elders and siblings, and the ADHD and ODD symptoms. Hierarchical regression models were constructed to examine the factors related to psychological distress among caregivers. Factors across caregiver, child, and child–family interaction dimensions, including children's conflict levels with elders and siblings, inattention symptoms, and caregivers' difficulties in managing children's protective behaviors against COVID-19, learning and daily performance, female sex, and younger age were significantly associated with psychological distress among caregivers in various hierarchical regression models. Health professionals should take the relevant factors identified in this study when developing an intervention to relieve caregivers' psychological distress in the COVID-19 pandemic.

**Keyword** Attention-deficit/hyperactivity disorder · Parent · COVID-19 · Psychological distress · Psychological well-being

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Dear Editor

We read with enthusiasm the article by Calvano and colleagues regarding parental stress and mental health among parents of children during the COVID-19 pandemic in Germany [1]. The authors reported that parental stress increased significantly during the pandemic and that 12.3% and 9.7% of parents had very high levels of depressive symptoms and anxiety, respectively [1]. Mental health of children with pre-existing psychiatric disorders and their parents were adversely impacted by the COVID-19 pandemic [2]. Parents of children with psychiatric disorders such as attention-deficit/hyperactivity disorder (ADHD) may experience more severe impacts of the COVID-19 pandemic compared with parents of children without psychiatric disorders [3].

A meta-analysis confirmed that caregivers of children with ADHD experience greater parenting stress than those of nonclinical controls before the COVID-19 pandemic [4]. The COVID-19 pandemic has posed unique challenges for parents of children with ADHD for several reasons. First, ADHD symptoms might increase the difficulties for children in forgetting to adopt self-protective behaviors against COVID-19 such as washing hands frequently, wearing a mask, avoiding visiting crowded places, and practicing social distancing [4]. Second, during the COVID-19 pandemic, children with ADHD had fewer daily routines and more difficulties in remote learning than those without ADHD did [5]. Third, the COVID-19 pandemic may obstruct the social and medical support for parents. Identifying the factors related to psychological distress among parents of children with ADHD during the COVID-19 pandemic is essential to developing the intervention program for psychological well-being of parents.

According to an ecological model [6], parents, children, and child–family interaction factors can influence the psychological distress of parents of children during the COVID-19 pandemic. However, no study has examined the multidimensional factors of psychological distress among parents of children with ADHD during the COVID-19 pandemic. We conducted a cross-sectional survey study in Taiwan between August 2021 and January 2022 to examine the relationships of parents' factors (parents' difficulties in monitoring children's self-protective behaviors, learning and daily performance, and parenting styles), children's factors (ADHD and oppositional defiant disorder [ODD] symptoms), and child–family interaction factors (children's conflict levels with elders and siblings) with psychological distress of the parents of children with ADHD in the COVID-19 pandemic.

We invited 252 parents (52 fathers and 200 mothers;  $M_{\text{age}} = 41.70$  years) of children with ADHD consecutively from the child psychiatric outpatient clinics of two medical centers in Kaohsiung, Taiwan into this study. The inclusion criteria were parents of the child who was aged 6–18 years

and was diagnosed as having ADHD according to the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* [7]. All parents provided informed consent and completed self-report research questionnaires. The self-reported psychological distress of the parents in the COVID-19 pandemic was assessed using the Brief Symptom Rating Scale [8]. Parents' self-reported difficulties in monitoring children's self-protective behaviors (6 items) and learning and daily performance (5 items) and children's conflict levels with elders and siblings (2 items) were assessed. Parenting styles, including parental affection/care, parental overprotection, and authoritarian parenting were assessed using the Parental Bonding Instrument–Parent Version [9]. Children's ADHD and ODD symptoms were assessed using the Swanson, Nolan, and Pelham version IV Scale–Parent Version [10]. These characteristics of parents and their children with ADHD are shown in Supplementary Table 1.

Table 1 provides the results of hierarchical regression models. Model 1 demonstrated that shorter years of education completed, parents' difficulties in monitoring children's self-protective behaviors, difficulties in monitoring children's learning and daily performance, and children's conflict levels with elders and siblings were significantly associated with psychological distress among caregivers. Sex and age were not significantly associated with caregiver psychological distress. Model 2 demonstrated that children's conflict levels with elders and siblings remained significant, whereas parents' difficulties in monitoring children's self-protective behaviors and difficulties in monitoring children's learning and daily performance became nonsignificant after the severity of children's ADHD and ODD symptoms was entered in the regression model. Moreover, only symptom of inattention, but not those of hyperactivity/impulsivity or ODD, was significantly associated with psychological distress among parents.

Because of lockdown or closure of schools and playgrounds due to the pandemic, children spent more time at home and had more interactions with siblings and elders than before the pandemic, increasing their chance of having conflicts with their siblings and elders. Parents face the child–family conflicts and may feel psychologically distressed. Inattention would make children with ADHD easily forget to adopt self-protective behaviors against COVID-19 and render it difficult to comply with parents' instructions. Inattention symptoms are also correlated to delaying the completion of learning tasks and increased fragmentation of the circadian pattern. Thus, inattention symptoms might be one of the major sources that increase parents' psychological distress in the COVID-19 pandemic.

We agree the appeal of Calvano and colleagues that parental stress is an important target point for interventions addressing the negative sequelae of the pandemic [1]. We suggested that enhancing parents' managing skills to

**Table 1** Hierarchical regression models for explaining psychological distress among parents of children with ADHD

	Model 1		Model 2	
	B (SE)	$\beta$ (p)	B (SE)	$\beta$ (p)
Parents' sex (Ref: female)	– 1.17 (0.69)	– 0.10 (0.09)	– 1.14 (0.69)	– 0.10 (0.10)
Parents' age (in year)	– <b>0.07 (0.03)</b>	– <b>0.12 (0.04)</b>	– 0.05 (0.03)	– 0.08 (0.18)
Parents' years of education completed (in year)	0.11 (0.10)	0.06 (0.31)	0.10 (0.10)	0.06 (0.32)
Difficulties in monitoring children's self-protective behaviors	<b>0.20 (0.08)</b>	<b>0.15 (0.02)</b>	0.08 (0.09)	0.05 (0.38)
Difficulties in monitoring children's learning and daily performance	<b>0.19 (0.07)</b>	<b>0.17 (0.007)</b>	0.14 (0.07)	0.12 (0.06)
Children's conflicts with elders and siblings	<b>0.80 (0.19)</b>	<b>0.25 (&lt;0.001)</b>	<b>0.60 (0.20)</b>	<b>0.19 (0.003)</b>
Parenting style: affection care	– 0.10 (0.06)	– 0.10 (0.11)	– 0.05 (0.06)	– 0.05 (0.40)
Parenting style: overprotection	0.15 (0.09)	0.10 (0.08)	– 0.16 (0.09)	0.11 (0.06)
Parenting style: authoritarianism	– 0.12 (0.11)	– 0.07 (0.27)	– 0.16 (0.11)	– 0.09 (0.15)
Children's inattention symptom			<b>0.12 (0.06)</b>	<b>0.15 (0.046)</b>
Children's hyperactivity/impulsivity symptom			0.06 (0.07)	0.08 (0.36)
Children' oppositional defiant symptom			0.08 (0.07)	0.10 (0.22)
Model diagnosis and fit				
<i>F</i> -value ( <i>p</i> -value)	9.54 (<0.001)		8.79 (<0.001)	
Variance inflation factor	1.10–1.34		1.13–2.53	
<i>R</i> <sup>2</sup> (adjusted <i>R</i> <sup>2</sup> )	0.26 (0.24)		0.31 (0.27)	

ADHD attention-deficit/hyperactivity disorder

support children's interactions with families and to reduce the psychological distress of parents during the COVID-19 pandemic should be contained in the guidance for ADHD management during the COVID-19 pandemic [11]. Given that child behavioral regulation skills can predict the changes of ADHD, ODD and anxiety symptoms related to the lockdown during the pandemic [12], behavioral interventions for enhancing children's behavioral regulation skills are recommended.

**Supplementary Information** The online version contains supplementary material available at <https://doi.org/10.1007/s00787-023-02220-w>.

**Author contributions** CST: conceptualization, funding acquisition, investigation, and writing the original draft. LJW and RCH: review and editing the draft. CYL: analyzing data. CFY: designing study and writing the original draft. All authors contributed to the article and approved the submitted version.

**Funding** This study was supported by grants from the Ministry of Science and Technology, Taiwan (MOST110-2635-B-182A-001). The funding agency did not have a role in this study.

**Data availability** The data used in this study are available upon reasonable request to the corresponding authors.

**Code availability** Not applicable.

## Declarations

**Conflict of interest** The authors have no conflicts of interest relevant to this article.

**Ethical approval** This study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Institutional Review Board of Chang Gung Medical Foundation (202002118BOC501) and Kaohsiung Medical University Hospital (KMUHIRB-E(I) 20200408).

**Informed consent** All participants provided written informed consent.

**Consent for publication** All authors consent to publish.

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