

# ผลด้านพฤติกรรมและจิตใจหลังเปิดเรียนแบบ onsite ของนักเรียนชั้นประถมศึกษา สังกัดกรุงเทพมหานคร หลังการระบาดของเชื้อโควิด 19

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## บทคัดย่อ

**วัตถุประสงค์** เพื่อศึกษาปัญหาทางพฤติกรรมและอารมณ์รวมถึงปัจจัยที่เกี่ยวข้องกับปัญหาดังกล่าว ในเด็กนักเรียนชั้นประถมศึกษาในประเทศไทย หลังกลับมาเปิดเรียนที่โรงเรียนเต็มรูปแบบ (onsite) ในภาคเรียนที่ 1 ปีการศึกษา 2565 หลังจากการระบาดของเชื้อโควิด 19

**วิธีการศึกษา** การวิจัยนี้ใช้การสำรวจแบบตัดเชิงขวาง (cross-sectional design) ในเด็กนักเรียนชั้นประถมศึกษา อายุ 6 - 13 ปี ในโรงเรียนรัฐบาลที่ได้รับการสุ่มเลือก 2 แห่ง ในพื้นที่เขต 1 (ราชเทวี, พญาไท, ดุสิต) จังหวัดกรุงเทพมหานคร หลังจากเปิดภาคเรียนที่ 1 ปีการศึกษา 2565 โดยใช้แบบสอบถาม Strengths and Difficulties Questionnaire (SDQ) ฉบับภาษาไทย เพื่อประเมินปัญหาและพฤติกรรมของเด็ก โดยให้ผู้ปกครองที่ดูแลหลักเป็นผู้ตอบแบบสอบถาม วิเคราะห์ปัจจัยที่สัมพันธ์กับปัญหาพฤติกรรมและอารมณ์โดยใช้ Pearson Chi-Square test, Fisher's Exact Test, multiple variable logistic regression

**ผลการศึกษา** เด็กนักเรียนที่ได้รับการประเมิน 430 คน โดย 69.3% ของนักเรียนทั้งหมดมีอายุ 6 - 9 ปี ศึกษาในระดับชั้นประถมศึกษาปีที่ 1 - 3 จำนวนเพศหญิงและเพศชายมีใกล้เคียงกัน จากการวิเคราะห์ข้อมูลทางสถิติพบว่า 9.8% ของเด็กนักเรียนแสดงปัญหาทางพฤติกรรมและสุขภาพจิตหลังกลับมาเรียนที่โรงเรียน ในภาคเรียนที่ 1 ปีการศึกษา 2565 โดยมีความชุกของปัญหาทางความสัมพันธ์กับเพื่อน 11.2% ปัญหาทางพฤติกรรมอยู่ไม่นิ่ง/สมาธิสั้น 10.9% ปัญหาด้านอารมณ์ 8.8% และพฤติกรรมเกร 7.4% ซึ่งปัญหาทางความสัมพันธ์กับเพื่อนไม่เชื่อมโยงกับปัจจัยใดๆ นอกจากนี้ปัญหาด้านพฤติกรรมอยู่ไม่นิ่ง/สมาธิสั้น สัมพันธ์กับเด็กที่มีโรคประจำตัวทางจิตใจ (OR=6.74) ส่วนปัญหาด้านอารมณ์เกี่ยวข้องกับเด็กที่มีปัญหานอนยาก และได้รับการช่วยเหลือจากพ่อแม่บางส่วนในการเรียนออนไลน์ นอกจากนี้ปัญหาด้านพฤติกรรมเกรเชื่อมโยงกับการเข้าถึงสื่อการเรียนออนไลน์ที่ไม่เพียงพอ (OR=3.42) และการมีความขัดแย้งระหว่างเด็ก - ผู้ดูแล (OR=10.11)

**สรุป** หลังกลับมาเปิดเรียนที่โรงเรียนเต็มรูปแบบ (onsite) ในภาคเรียนที่ 1 ปีการศึกษา 2565 หลังการระบาดของเชื้อโควิด 19 พบว่า เด็กนักเรียนชั้นประถมศึกษามีปัญหาทางพฤติกรรมและอารมณ์ โดยพบมากในด้านความสัมพันธ์กับเพื่อน และด้านพฤติกรรมอยู่ไม่นิ่ง/สมาธิสั้น ปัญหาพฤติกรรมและอารมณ์สัมพันธ์กับเด็กที่มีโรคประจำตัวทางสุขภาพจิต มีปัญหาการนอนหลับ ได้รับความช่วยเหลือในการเรียนรู้จากผู้ปกครองที่ไม่เพียงพอในระหว่างเรียนออนไลน์ และมีความขัดแย้งกับพ่อแม่ ทั้งนี้ควรมีการวิจัยต่อเนื่องที่ติดตามแนวโน้มด้านสุขภาพจิตทั้งก่อนและหลังการระบาดของเชื้อโควิด 19 เพื่อจะได้เข้าใจและแก้ไขปัญหาเหล่านี้ให้มีประสิทธิภาพมากขึ้น โดยอาศัยความร่วมมือจากทั้งภาครัฐ ชุมชน โรงเรียน และครอบครัว ในการให้ความช่วยเหลือเด็กนักเรียนในด้านต่างๆ

**คำสำคัญ** ปัญหาทางพฤติกรรมและอารมณ์ เด็กนักเรียนชั้นประถมศึกษา เปิดเรียนที่โรงเรียน หลังจากการระบาดของเชื้อโควิด 19

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# Behavioral and Mental Impact of School Reopening During the COVID-19 Post-Pandemic in Elementary School Students Under Bangkok Metropolitan Administration: A Cross-Sectional Study

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## ABSTRACT

**Objective:** This study aimed to investigate the prevalence and associated factors of behavioral and mental health challenges in Thai primary school children post-school reopening in the 2022 academic year during the COVID-19 post-pandemic

**Method:** This cross-sectional study was conducted among elementary school students aged 6 - 12 years in randomly selected public schools within the educational institutions under the Office of Primary Education District 1 (Ratchathewi, Phayathai, Dusit) of Bangkok, Thailand, after the onset of Semester 1 in 2022. The survey period spanned from January to March 2023. The Thai version of the parent-rated Strengths and Difficulties Questionnaire (SDQ) was used to evaluate children's mental health and behaviors by primary caregivers. Pearson Chi-Square, Fisher's Exact Test, and multivariable logistic regression models were applied for analyzing associated factors.

**Results:** A total of 430 Students underwent assessment. Most children (69.3%) were aged 6 - 9 (grades 1 - 3), with almost equal gender representation. Our results indicated that 9.8% of children exhibited behavioral and mental health issues following the 2022 school year commencement. Prevalent difficulties included peer relationship (11.2%), hyperactivity/inattention (10.9%), emotional (8.8%), and conduct problems (7.4%). Although peer relationship problems did not associate significantly with any of the factors, Hyperactivity/inattention problems associate with children who had underlying psychological conditions (OR=6.74). Emotional issues were associated with sleep disturbances and partial assisting of parents during online courses. Additionally, conduct problems were linked with inadequate online learning access (OR=3.42) and having child - caregiver conflict (OR=10.11).

**Conclusion:** Thai primary school children faced various emotional and behavioral challenges upon the reopening of schools in Semester 1 of the 2022 academic year following the COVID-19 pandemic. Key issues included peer relationship problems and hyperactivity/inattention behaviors. These challenges were associated with mental health difficulties, sleep disturbances, inadequate parental support for online learning, and conflicts with parents. Continuous research tracking pre- and post-pandemic mental health changes is crucial for addressing these concerns. Effective support from the government, communities, schools, and families is necessary to facilitate a smoother transition for students returning to physical classrooms and address emotional and behavioral problems.

**Keywords:** Behavioral and mental problem, Thai elementary school students, school reopening, the COVID-19 post-pandemic

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## INTRODUCTION

The extensive impact of the COVID-19 pandemic on daily life, both locally and worldwide, has been extensively studied. Families encountered uncertainties, reduced outdoor activities, and increased reliance on technology, leading to decreased social interactions with peers and educators.<sup>1,2</sup> Surveys conducted by UNICEF, The Children and Youth Council of Thailand, and the United Nations Population Fund highlighted how parental challenges had psychological repercussions on their children. The prolonged closure of schools contributed to various psychological challenges among children and teenagers, including anxiety, stress, boredom, and concerns about violence or abuse. Primary school children, especially, faced vulnerability due to pandemic restrictions, affecting their overall well-being.<sup>3</sup> The shift to online teaching in Semester 1 of Academic Year 2020 exacerbated anxiety and mental health issues for both students and parents.<sup>4</sup> In Thailand, research indicated that 41.1% of primary school children faced psychosocial problems, particularly those lacking adequate parental support for online learning.<sup>5</sup> Furthermore, students exhibit changes in characteristics, reluctance to participate, decreased life skills, and a decline in positive attitudes toward learning.<sup>6</sup> The development of vaccines and treatments for COVID-19 has led to decreased infection rates and milder symptoms.<sup>4</sup> Consequently, many nations reopened schools for in-person learning, with studies revealing increased behavioral challenges, parental conflicts, sleep disturbances, and mental health issues following the return to onsite classes.<sup>7-9</sup> In Thailand, as the pandemic eases, the Ministry of Education has reintroduced in-person learning with new safety guidelines emphasizing COVID-19 prevention measures. The 2022 school year resumed onsite classes on May 17, 2022.<sup>10</sup>

In collectivistic cultures like Thailand, drawing from Schwartz's Theory of basic human values, heightened concerns about social acceptance and conformity to group norms influence students' perceptions of their ability to manage academic demands and social interactions. Consequently, as students return to onsite learning, these

cultural factors contribute to increased academic expectations and performance pressure, potentially leading to heightened stress and anxiety.<sup>6,11,12</sup> However, limited research exists in Thailand regarding the behavioral and mental health problems after this transition. Hence, this study aims to assess prevalence and identify associated factors of the behavioral and emotional problems following the school reopening, in Thai primary school students. We highlight District 1 which surround our hospital (Ramathibodi Hospital, Bangkok).<sup>13</sup> The study's location selection in the area near the researcher's workplace aims to provide information for future planning, care, screening, or interventions for schools in District 1 in the future.

## Method

### Study Design and Population

This cross-sectional study was conducted in two randomly selected public primary schools within the educational institutions under the Office of Primary Education District 1 (Ratchathewi, Phayathai, Dusit). This district surrounds our hospital (Ramathibodi Hospital, Bangkok).<sup>13</sup> Educational institutions were selected via internet-based randomizer.<sup>14</sup> Teachers were then assigned to distribute the questionnaires randomly to parents. The study commences subsequent to the initiation of Semester 1 in the Academic Year 2022 (May 2020).<sup>13</sup> Our study was conducted between January and March of 2023. The researcher established communication with the primary caregiver of the children by working with the assigned teacher at every school that participated. Teachers and participants were provided with explanations on the questionnaires and survey techniques. Should they have any inquiries regarding the questionnaires or specifics of the study, they were encouraged to contact the researcher directly via phone and email. The questionnaires were delivered directly to the teacher by the researcher and then passed on to participants. After completing the envelope-sealed paper forms, the participants submitted them to the teachers, who then forwarded them to the researcher.

The sample size calculation resulted in the collection of 418 samples.<sup>15</sup> In this study, 430 parents of primary school students provided consent to participate in the research by signing consent forms and were identified as primary caregivers. The individuals were identified by responding affirmatively to the following insert question: “you are the primary caregivers who closely care for your children and can provide information about the child’s behavior after school reopening as specified in the questionnaire.”

The Thai version of the parent-rated SDQ was employed to evaluate children between the ages of 4 and 16, with particular emphasis on the age range of primary school kids in Thailand, which is around 6 to 12 years old, as indicated by the study’s measurements.<sup>16,17</sup> As a result, Childrens aged below 6 years and over 12 years were unable to participate in the research. Furthermore, those caregivers who declined to participate or requested withdrawal, in addition to those who submitted incomplete questionnaires, were excluded from the study.

The Institutional Review Boards of Mahidol University COA. MURA2023/41 granted approval for all study protocols, and every effort was made to ensure that individual identity remained anonymous.

### Measurement and Assessment

The independent variables in this study encompassed details about children and primary caregivers, focusing on demographics, lifestyle, and educational aspects. Data were collected through multiple-choice questions in general questionnaires. Student information included age, gender, education level, medical and mental health conditions (Yes/No), COVID-19 contraction worries (Minimal/Enough/Too worries), family conflicts (Yes/No), and conflicts with teachers (Yes/No). Parental data covered education level, caregiver’s medical condition (Yes/No), and family finances (Good/Moderate/Bad). The questionnaire also addressed lifestyle elements such as transportation, access to learning materials during online classes (Adequate/Inadequate), caregiver assistance during online classes, sleep problems (Yes/

No), Parents’ preference for their children’s learning style, and time spending in physical activity or homework post the start of the 2022 school year. All factors were selected based on previous studies that identified significant influences on the behavioral and psychological problems of children during the COVID-19 period.<sup>6-8</sup> Non-qualitative data include conflicts, COVID-19 contract worries, access to learning materials during online classes, and finances; perspectives were subjectively defined by the primary caregiver without specific concrete details.

We assessed behavioral and mental problems in Thai primary school children after semester 1 in the academic year 2022. The Thai version of the parent-rated Strengths and Difficulties Questionnaire (SDQ) was used.<sup>16</sup> The reliability of SDQ, measured by Cronbach’s alpha coefficient, was 0.76.<sup>18</sup> The dependent variable was the prevalence of children with indicating at borderline or problems in every domain of SDQ, The total difficulties were divided into four domains and categorized in two groups as normal and borderline with problematic for both the overall total difficulties and each specific domain, with a difference in cut-point of the score. The total difficulties score is derived from the summary total score in every domain, except for prosocial behavior. Scores of total difficulties ranging from 0 to 15 are considered normal, 16 to 40 are borderline and problematic.<sup>16,18</sup>

### Data Analysis

Descriptive statistics (number and frequencies) were used to characterize children and their main caregiver. Prevalence proportions of behavioral and mental problems among the studied children were calculated. Univariable analysis explored the association between mental health outcomes and each independent variable by using Pearson Chi-Square Test or Fisher’s Exact Test. Only variables showing statistical significance ( $p$ -value<0.05) in univariable analysis were included in the multivariable analysis. A multivariable logistic regression accounted for all independent variables simultaneously, reporting odds ratios and 95% confidence intervals (95% CI). IBM SPSS Statistic Version 26 was used

for descriptive analysis, while STATA version 13.1 was employed for the multivariable analysis.

## RESULTS

### Demographic data, lifestyle and education information

In this study, data were collected from 430 children and their primary caregivers. Table 1 presents a comparison of characteristics among parents, children, lifestyle, and issues related to online learning, as well as the study outcomes (total difficulties or each domain of SDQ or prosocial SDQ). The analysis revealed no statistically significant differences between the two schools, except for variations in children's sex, parental assistance during online courses, and the duration of physical activity or home and school commuting.

Most children (69.3%) were aged 6 - 9 (grades 1 - 3), with almost equal gender representation. A majority reported no underlying medical or psychological disorders. A small percentage faced conflicts either with caregivers (1.6%) or teachers (2.6%). The majority of students expressed moderate worry about contracting COVID-19. Regarding educational and lifestyle aspects, 8.6% had inadequate access to online learning resources, and 22.3% had no parental assistance (more prevalent in School B than in School A). Following the start of the 2022 school year, 12.1% reported sleep issues, and most spent  $\leq 2$  hours on homework.

Primary caregivers were predominantly parents (98.4%) with higher education (88.4%) and 10.7% reported no medical conditions. A majority were less worried about contracting COVID-19 and preferred their children to physically attend school post-reopening.

### Psychological and Behavioral Challenges:

Post the 2022 school year commencement, 9.8% exhibited behavioral and mental issues. Prevalent difficulties were in peer relationship (11.2%), hyperactivity/inattention (10.9%), emotional (8.8%), and conduct problems (7.4%) respectively. No statistically significant association was found between any variable factors and peer relationship problems or prosocial behavior (table 3).

Table 4 shows that children with an underlying psychological condition correlated with increased mental and behavioral issues (OR=4.63 [95% CI=1.53-14.05]). After adjusting for significant variables, children with psychological conditions were significantly more likely to exhibit hyperactivity/inattention problems (OR=6.74 [95% CI=2.11-21.54]). Emotional problems were associated with sleep issues, and parents assisting children during online courses. Additionally, conduct problems correlated with inadequate online learning access (OR=3.42 [95% CI=1.34-8.72]) and having child - caregiver conflict (OR=10.11 [95% CI=2.08-49.00]).

## DISCUSSION

This study represents the initial exploration of behavioral and mental issues after the full reopening of schools in Bangkok for Semester 1 of 2022. Our study among primary school children found that 9.8% exhibited borderline to prominently abnormal scores for total difficulties, while 0.9% displayed prosocial behavior issues. This rate was notably lower than the transitional period (January to March 2022) at 41.1%<sup>5</sup>, yet higher than the pre-pandemic level of 1.6%.<sup>20</sup> We speculate that increased prevalence during the pandemic might be due to prolonged stress faced by children and parents.<sup>19</sup> Parents spending more time with their children, including involvement in their online learning at home, possibly contributed to reported issues. As schools fully reopened, responsibility shifted to teachers, resulting in reduced reported issues at home, though still higher than pre-COVID times.<sup>21-23</sup> Furthermore, an experimental phase before Semester 2 of the 2021 academic year closure in early 2022 allowed children to attend onsite classes as preferred, alongside online learning<sup>24</sup>, aiding some children in adaptation. In addition, our study took a survey from January to March 2023 (eight months after the school's full reopening) that might have more children in adaptation, and parents provided retrospective assessments. This may have resulted in fewer reported issues than anticipated.

**TABLE 1** Demographic data, lifestyle and education information

Children's factor	Total N=430 (%)	School (A) N=204 (47.4%)	School (B) N=226 (52.6%)
Age			
6 - 9 year	298 (69.3)	146 (71.6)	152 (67.3)
10 - 12 year	132 (30.7)	58 (28.4)	74 (32.7)
Studying in grade 1 - 3	298 (69.3)	149 (73)	149 (65.9)
Female*	224 (52.1)	95 (46.6)	129 (57.1)
Having underlying medical conditions	60 (14)	27 (13.2)	33 (14.6)
Having underlying psychological conditions	16 (3.7)	8 (3.9)	8 (3.5)
Childrens' COVID-19 contraction worries			
Minimal	45 (10.5)	21 (10.3)	24 (10.6)
Normal	376 (87.4)	179 (87.7)	197 (87.2)
Excessive	9 (2.1)	4 (2)	5 (2.2)
Having sleep problem (after the start of the 2022 school year)	52 (12.1)	19 (9.3)	33 (14.6)
Having conflicts with the teacher	11 (2.6)	4 (2)	7 (3.1)
Having child - caregiver conflict	7 (1.6)	3 (1.5)	4 (1.8)
Activity duration (after the start of the 2022 school year) >1 hr*	244 (56.7)	134 (65.7)	110 (48.7)
Homework duration (after the start of the 2022 school year) ≤2 hr	401 (93.3)	194 (95.1)	207 (91.6)
Inadequate access to online learning resources	37 (8.6)	15 (7.4)	22 (9.7)
Parental assistance during online courses*			
All	102 (23.7)	59 (28.9)	43 (19)
Sometime	232 (54)	106 (52)	126 (55.8)
No	96 (22.3)	39 (19.1)	57 (25.2)
Home and school commuting duration*			
<1 hour	379 (88.1)	170 (83.3)	209 (92.5)
≥1 hour	51 (11.9)	34 (16.7)	17 (7.5)
Having transporting difficulties	42 (9.8)	24 (11.8)	18 (8)
<b>Parents' Factor</b>			
Educational level			
High school or below	50 (11.6)	25 (12.2)	25 (3.1)
Undergraduate or above	380 (88.4)	179 (87.7)	201 (89)
Good financial status	429 (99.7)	32 (15.7)	37 (16.4)
Having underlying medical condition	46 (10.7)	21 (10.3)	25 (11.1)
Parents' COVID-19 contraction worries			
Minimal	7 (1.6)	3 (1.5)	4 (1.8)
Normal	400 (93)	192 (94.1)	208 (92)
Excessive	23 (5.3)	9 (4.4)	14 (6.2)
Parents' preference for their children's learning style			
Online	1 (0.2)	0	1 (0.4)
Onsite	401 (93.3)	192 (94.1)	209 (92.5)
Both/Mix	28 (6.5)	12 (5.9)	16 (7.1)

\*Statistically significant differences between the two schools; children's sex, parental assistance during online courses, and the duration of physical activity or home and school commuting.

**TABLE 2** Prevalence of behavioral and emotional strengths and problems, according to the Strengths and Difficulties Questionnaire (SDQ). (N=430)

	N (%)
Total difficulties*	42 (9.8)
Emotion problem	38 (8.8)
Conduct problem	32 (7.4)
Hyperactivity/Inattention behaviors	47 (10.9)
Peer relationships problem	48 (11.2)
Prosocial behavior	4 (0.9)

\*The total difficulties score is derived from the summary total score in every domain, except for prosocial behavior. Scores ranging from 0 to 15 are considered normal, 16 to 40 are borderline and problem.

Our study following full school reopening revealed a lower prevalence of psychosocial issues among children compared to similar studies in China.<sup>7,9</sup> This disparity may be due to contextual differences. The Chinese study, conducted in 2020 during the early phases of the pandemic with limited preventive measures, likely significantly impacted children due to heightened family-related concerns. In contrast, our study, conducted two years after the Chinese study, potentially benefited from the availability of COVID-19 vaccines and improved preventive measures.<sup>4</sup> These advancements might have reduced parental concerns, consequently alleviating the burden on children. Furthermore, our study in only one district in Bangkok has a smaller sample size compared to studies conducted in China.<sup>7,9</sup>

The prolonged periods of social distancing and limited social interaction during the lockdowns may have significantly impacted children's social skills and their ability to connect with peers.<sup>25</sup> This was consistent with our expectations regarding the most common domain of difficulties, peer relationship, accounting for 11.2% as shown in Table 2. This finding correlates with another COVID-19 impact study done in Thailand<sup>5</sup>; However, in

Table 4, no statistical association was observed with any variable factor. It's plausible that in our research, the variable factors did not sufficiently elucidate the establishment of relationships with peers. This contrasts with the approach of a Chinese study that delved deeper into social interactions.<sup>9</sup>

Our results identified hyperactivity and inattention as the second most prevalent difficulties, accounting for 10.9% of all issues. Children with underlying psychological conditions were 6.74 times more likely to display these behaviors compared to those without such conditions (OR=6.74 [95% CI=2.11-21.54]). This could be attributed to the classroom environment or children's underlying psychological conditions influencing their distraction or anxiety, thereby affecting their focus and behavior regulation.<sup>26-29</sup>

Furthermore, children experiencing sleep problems after the school reopened showed significant associations with emotional problems (OR=2.64 [95% CI=1.16-6.03]) This aligns with findings from high school students in Lithuania, who reported better study quality and physical health but faced challenges such as worse sleep quality, shorter sleep duration, and poorer self-reported mental health while learning in person during the COVID-19 pandemic.<sup>8</sup> This could result from the adjustments in waking and sleeping times due to attending school, involving preparation before leaving home, and increased travel time to and from school. This is different from learning solely at home, which does not require much preparation or pre-learning routines.<sup>21,30</sup>

To support their mental well-being, it's crucial to establish structured routines both at school and at home. This involves encouraging parents and guardians to create consistent schedules. Additionally, making classroom modifications such as minimizing distractions, providing quiet spaces, or introducing sensory-friendly elements can create a better learning environment, especially for children with psychological conditions and sleep problems. Recognizing the necessity for a gradual adjustment period after school reopening is essential. Reducing workload or homework demands during this

**TABLE 3** Factors associated with total SDQ and subdomains. N=430

	Total difficulties %		P-value	Emotional problem %		P-value	Conduct problem %		P-value	Hyperactivity/ Inattention behaviors %		P-value	Peer relationship problem %		P-value
	Normal	Borderline +Problem		Normal	Borderline +Problem		Normal	Borderline +Problem		Normal	Borderline +Problem		Normal	Borderline +Problem	
Children's age			0.308			0.540			0.468			0.013*			0.452
6 - 9 year	68.6	76.2		68.9	73.7		68.8	75		67.4	85.1		69.9	64.6	
10 - 12 year	31.4	23.8		31.1	26.3		31.2	25		32.6	14.9		30.1	35.4	
Studying in			0.505			0.806			0.944			0.013*			0.674
Grade 1 - 3	68.8	73.8		69.1	71.1		69.3	68.7		67.4	65.1		69.6	66.7	
Grade 4 - 6	31.2	26.2		30.9	28.9		30.7	31.3		32.6	14.9		30.4	33.3	
Having underlying psychological conditions	2.8	31.3	0.014*	3.6	5.3	0.643	3.5	6.3	0.337	2.3	14.9	0.001*	3.9	2.1	1.000
Childrens' COVID-19 contraction worries			0.114			0.404			0.252			0.040*			0.358
Minimal	9.5	19		9.9	15.8		9.8	18.8		9.4	19.1		11	6.3	
Normal	88.4	78.6		87.8	84.2		87.9	81.3		88.8	76.6		87.2	89.6	
Excessive	2.1	2.4		2.3	0		2.3	0		1.8	4.3		1.8	4.2	
Having sleep problema	11.6	16.7	0.339	11	23.7	0.034*	11.6	18.8	0.255	11.2	19.1	0.116	12	12.5	0.927
Having child - caregiver conflict	1.3	4.8	0.143	1.5	2.6	0.479	1	9.4	0.011*	1.6	2.1	0.558	1.3	4.2	0.178
Inadequate access to online learning resources	8.2	11.9	0.389	8.4	10.5	0.555	7.5	21.9	0.013*	7.6	17	0.047*	8.6	8.3	1.000

**TABLE 3** Factors associated with total SDQ and subdomains. N=430 (continuous)

	Total difficulties %		P-value	Emotional problem %		P-value	Conduct problem %		P-value	Hyperactivity/ Inattention behaviors %		P-value	Peer relationship problem %		P-value
	Normal	Borderline +Problem		Normal	Borderline +Problem		Normal	Borderline +Problem		Normal	Borderline +Problem		Normal	Borderline +Problem	
Parental assistance during online courses			0.109			0.043*			0.824			0.159			0.753
All	23.2	28.6		24	21.1		23.4	28.1		22.7	31.9		23.3	27.1	
Sometime	53.1	61.9		52.3	71.1		54.3	50		53.8	55.3		53.9	54.2	
No	23.7	9.5		23.7	7.9		22.4	21.9		23.5	12.8		22.8	18.8	
Parents' preference for their children's learning style			0.138			0.070			0.495			0.012*			0.062
Online	0.3	0		0.3	0		0.3	0		0.3	0		0.3	0	
Onsite	94.1	85.7		94.1	84.2		93.5	90.6		94.5	83		94.2	85.4	
Both/Mix	5.7	14.3		5.6	15.8		6.3	9.4		5.2	17		5.5	14.6	
School			0.981			0.741			0.124			0.051			0.195
A	90.2	9.8		90.7	91.6		94.6	90.7		92.2	86.3		86.8	90.7	
B	90.3	9.7		9.3	8.4		5.4	9.3		7.8	13.7		13.2	9.3	

a. Present after the start semester 1 of the 2022 school year

\*For indicating statistical significance (p-value<0.05) by using Pearson Chi-Square Test or Fisher's Exact Test

**TABLE 4** Significant association between factors and psychosocial problem by using multivariable logistic regression

	Adjusted Odd Ratio	95% confidence interval
<b>Total difficulties<sup>a</sup></b>		
Children with an underlying psychological condition <sup>b</sup>	4.63*	1.53-14.05
<b>Emotional problem<sup>a</sup></b>		
Parental assistance during online courses compared with no support <sup>b</sup>		
All subjects	2.62	0.67-10.24
Sometime	4.22*	1.24-14.32
Children with sleep problem <sup>b</sup>	2.64*	1.16-6.03
<b>Conduct problem<sup>a</sup></b>		
Inadequate access to online learning resources <sup>b</sup>	3.42*	1.34-8.72
Having child - caregiver conflict <sup>b</sup>	10.11*	2.08-49.00
<b>Hyperactivity/inattention<sup>a</sup></b>		
Children with an underlying psychological condition <sup>b</sup>	6.74*	2.11-21.54
Parents preferring mixed online and onsite, compared to onsite only <sup>b</sup>	3.64*	1.37-9.64
Parents preferring online only compared to onsite only <sup>b</sup>	1	empty
Inadequate access to online learning resources <sup>b</sup>	2.41	0.92-6.27
Children's age 6 - 9 year <sup>b</sup>	1.73	0.33-8.97
Studying in grade 1 - 3 <sup>b</sup>	1.92	0.37-9.86
Childrens' COVID-19 contaction worries <sup>b</sup>		
Minimal worries	2.41*	1.01-5.76
Excessive worries	4.03	0.76-21.26

\* For indicating statistical significance (p-value < 0.05) by using multivariable logistic regression

<sup>a</sup> For indicating dependent variables

<sup>b</sup> For indicating independent variables

period can assist these children in adapting to the classroom without excessive stress.<sup>28,31</sup>

Our study highlights links between child-caregiver conflict, inadequate online learning resources, and conduct problems in Thai school-age children. This echoes previous research highlighting the vulnerability of children to mental health issues when lacking parental support and necessary resources, straining their relationships with caregivers.<sup>5,9</sup> The demanding nature of parenthood intensified during the COVID-19 pandemic,

as parents juggled multiple responsibilities and spent more time with their children. This scenario led to potential conflicts and difficulties in maintaining consistent discipline, impacting the quality and continuity of their children's academic learning. Notably, this differs from in-person schooling, which often requires children to demonstrate higher levels of discipline, self-management, and self-control.<sup>32</sup>

The primary strength of this study is its distinction as the first exploration of behavioral and mental issues

following the full reopening of schools in Bangkok for Semester 1 of 2022, post the decline of COVID-19 and transition to an endemic state. The study contributes valuable evidence on the prevalence of behavioral and mental problems as perceived by parents. Additionally, it establishes a connection between the characteristics of children, their parents, lifestyle, learning-related issues, and the behavioral and mental health of children according to their parents' observations. The study's location selection in the area near the researcher's workplace provides information for future planning, care, screening, or interventions for schools in District 1. Furthermore, the identification of hyperactivity and inattention as the second most prevalent difficulties, along with their association with underlying psychological conditions, informs our intention to select schools in the vicinity of the researcher's workplace. This information can guide future planning for care, screening, or interventions, especially for children who visit our hospital. Ultimately, the study's findings can contribute to the design of preventive psychoeducational interventions aimed at optimizing the psychological well-being of children.

This study encounters several limitations. Initially related to selection bias, it relies on a small sample size and exclusively focuses on students in public schools in Bangkok, Thailand, excluding those from private or specialized institutions. Consequently, the study's outcomes may not offer a comprehensive representation of the diverse spectrum of Thai primary school children.

Secondly, there are limitations in the study design. It's essential to acknowledge that this study solely depends on subjective parent-administered questionnaires and lacks direct interviews. The factors considered are based on broad answer choices, offering a general perspective that does not have psychometric validation in answer choices of characteristics among parents, children, lifestyle, and issues related to online learning. In addition, specific details regarding mental health (including symptoms, diagnosis and treatment), social skills, interaction with others, policies about COVID-19, and adaptability skills could significantly influence children's

adjustment, learning, and behavior when returning to onsite schooling. Further investigation is necessary to explore the correlation between behavioral and emotional issues post-onsite learning and specific characteristics involving the child, parents, learning systems, home environment, and school environment.<sup>5,7-9</sup> Conducting surveys among both students and educators, supplemented by interviews, could enhance understanding in these areas.

Lastly, in term of the generalizability of this study, conducted as a cross-sectional survey during an improved phase of the COVID-19 situation when the Ministry of Education allowed in-person learning to resume under Thailand's 'new normal' guidelines, caution is required in interpreting the study's implications for public health.<sup>10</sup> The circumstances during the survey might have significantly differed from the present scenario. Additionally, due to the study's sole focus on post-school reopening in-person learning and its cross-sectional nature, establishing direct cause-and-effect relationships between various factors and behavioral or mental issues is challenging. Therefore, conducting longitudinal research spanning from before the COVID-19 outbreak to post-containment could provide valuable insights into the patterns of behavioral or emotional disorders and related variables.

## CONCLUSION

Thai primary school children faced various emotional and behavioral challenges upon the reopening of schools in Semester 1 of the 2022 academic year following the COVID-19 pandemic. Key issues included peer relationship problems and hyperactivity/inattention behaviors. These challenges were associated with mental health difficulties, sleep disturbances, inadequate parental support for online learning, and conflicts with parents. Continuous research tracking pre- and post-pandemic mental health changes is crucial for addressing these concerns. Effective support from the government, communities, schools, and families is necessary to facilitate a smoother transition for students returning to

physical classrooms and address emotional and behavioral problems.

#### Conflict of interest

None.

#### Author's contributions

Sawinee Wongsettee was involved in method design, data collection, data analysis, and reviewing/editing the manuscript. Passaporn Lorterapong revised and approved the final manuscript.

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