

Pre-schoolers' Behavioural and Emotional Problems During the First Quarantine Due to COVID-19 Pandemic: The Role of Parental Distress and Screen Time

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Abstract. Lithuania was one of the countries that applied quarantine during the rise of COVID-19 pandemic in spring 2020, the duration of which was three months (from March 16th, 2020 to June 16th, 2020). Despite emerging literature showing negative effects of quarantine on children's mental health, insight into specific risk factors is lacking due to limited longitudinal data. The aim of the present study was to analyse changes in Lithuanian pre-schoolers' emotional and behavioural problems during the first quarantine due to COVID-19 pandemic and their relations to the potential risk factors such as parental distress and increase in daily screen time. Parents of 78 children aged 4 to 6 (31% girls and 69% boys, mean age at the first measurement 66.1 months ($SD = 10.33$)) completed Child Behaviour Checklist (CBCL/1½-5), questions on children's screen time and physical activity and reported their distress before the quarantine (November 2019–February 2020) and at the end of it (May–June 2020). Results showed that children had more behavioral problems, spent more time on screens and were less physically active during the quarantine, and their parents were experiencing more distress than before. However, parental distress emerged as the only variable that predicted preschoolers' emotional and behavioral problems during the quarantine after a child's previous problems were taken into account. This highlights the importance of targeting support towards families raising children with behavioral problems, as the challenges they were already facing increase during quarantine and their parents may be more susceptible to less desirable practices such as providing children with more screen time as a way to cope with this situation.

Keywords: COVID-19, preschool children, emotional and behavioural problems, screen time, parental distress.

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Ikimokyklinio amžiaus vaikų emocijų ir elgesio sunkumai pirmojo karantino dėl COVID-19 metu: tėvų patiriamą distreso ir ekranų laiko vaidmuo

Santrauka. Lietuva buvo viena iš šalių, pritaikiusių griežtą karantiną kilus pirmajai COVID-19 pandemijos bangai. Nors gausėja mokslinių duomenų, rodančių neigiamą karantino poveikį vaikų psichinei sveikatai, dėl tęstinių tyrimų stokos mažai žinoma apie konkrečius karantino metu ir jam pasibaigus patiriamų emocijų ir elgesio sunkumų rizikos veiksnius. Šio tyrimo tikslas buvo išanalizuoti Lietuvos ikimokyklinukų emocijų ir elgesio sunkumų pokyčius per pirmąjį karantiną dėl COVID-19 pandemijos ir jų sąsajas su galimais rizikos veiksniais, tokiais kaip tėvų patiriamas distresas ir ilgisnis prie ekranų leidžiamas laikas. Septyniasdešimt aštuonių 4–6 metų vaikų (31 % mergaičių ir 69 % berniukų, vidutinis amžius pirmo matavimo metu 66,1 mėn. ($SD = 10,33$)) tėvai užpildė Vaiko elgesio aprašą (CBCL/1½-5), atsakė į klausimus apie vaikų prie ekranų leidžiamą laiką ir fizinį aktyvumą bei įvertino savo patiriamą distresą pagal 6 punktų skalę prieš pirmąjį karantiną (2019 m. lapkritis–2020 m. vasaris) ir jo pabaigoje (2020 m. gegužė–birželis). Rezultatai parodė, kad karantino pabaigoje ir jam pasibaigus vaikai turėjo daugiau elgesio sunkumų, daugiau laiko praleido prie ekranų ir buvo mažiau fiziškai aktyvūs, o jų tėvai patyrė daugiau distreso nei iki karantino. Tačiau tėvų distresas išryškėjo kaip vienintelis kintamasis, kuris leido prognozuoti ikimokyklinio amžiaus vaikų emocijų ir elgesio problemas, atsižvelgiant į ankstesnius sunkumus. Šie rezultatai pabrėžia, kaip svarbu karantino metu ir jam pasibaigus teikti paramą ir specialistų pagalbą šeimoms, auginančioms elgesio sunkumų turinčius vaikus, nes jau iki karantino varginę sunkumai karantino kontekste stiprėja, o šių vaikų tėvai gali būti labiau linkę į nepalankias vaikų psichikos sveikatai praktikas, pavyzdžiui, suteikti vaikams daugiau ekranų laiko, kaip būdą susidoroti su šita situacija.

Pagrindiniai žodžiai: COVID-19, ikimokyklinis amžius, emocijų ir elgesio sunkumai, ekranai, tėvų distresas.

Introduction

Lithuania was one of the countries that applied quarantine during the rise of COVID-19 pandemic in spring 2020, the duration of which was three months (from March 16th, 2020 to June 16th, 2020). The kindergartens and preschool educational institutions were closed from the beginning of quarantine till the end of May, when only part of children returned to educational settings, and 60 percent remained at home till and during the summer.

There are several ways in which this extraordinary situation could have an adverse effect on the mental health of small children. One is related to changes in everyday routines and health-related behaviours, such as an increase in screen time and decrease in time spent being physically active (Bates et al., 2020; Breidokienė et al., 2021; Schmidt et al., 2020). The other concerns a substantial increase in parental distress (Adams et al., 2020) and its relation to greater incidence of children's emotional and behavioural problems during the pandemic (Spinelli et al., 2020). Despite the emerging literature showing negative effects of the quarantine on children's emotions and behaviour (Breidokienė et al., 2021; Jiao et al., 2020; Pisano et al., 2020), insight into potential risk and protective factors for child mental health during quarantine due COVID-19 pandemic is still lacking due to limited longitudinal data.

The aim of the present study was to analyse the changes in pre-schoolers' mental health (assessed via level of emotional and behavioural problems) and factors associated with it during the first quarantine due to COVID-19 pandemic. For this purpose, we analysed data from the larger longitudinal study on digital media use and child health, where the last measurement was carried out at the end of the quarantine. Based on preliminary findings

of behavioural and psychological effects of the COVID-19 pandemic and background research in developmental psychology and psychopathology, we hypothesized that:

H1: Preschooler's screen time and behavioral and emotional problems increased, physical activity decreased, and parental distress increased during quarantine.

H2: Preschooler's greater screen time, lower physical activity and higher parental distress are positively related to children's behavioral and emotional problems during quarantine.

Method

Sample and procedure

This research is part of a longitudinal study “Electronic Media Use and Young Children’s Health” (for more detailed information on it see Jusienė et al., 2019). Parents of toddlers and pre-school aged children living in various regions of Lithuania were invited to take part in the study through pre-school education institutions, health care specialists and social media. Data from two measurements have been used for this research: Time 1 measurement of this study started in November 2019 and ended in February 2020; Time 2 was conducted from May to June 2020, that is at the end of the first COVID-19 quarantine or right after it. As the questionnaires required parents to reflect on the family environment and child’s emotional and behavioral problems during the past two months, Time 1 data represents the period of autumn 2019, and Time 2 – period of spring 2020.

In order to evaluate the possible changes of study variables before and after the quarantine, data from two samples were used (see Figure 1 for visual representation of research design). The main sample was used to evaluate the change of the same children’s emotional and behavioural problems from pre-quarantine to post-quarantine. This main sample included 78 children (31% girls and 69% boys), aged 4 to 6 years old, not having chronic diseases, who participated in Time 2 measurement (71 of them also participated in Time 1 measurement). The average children’s age in this sample was 66.1 months ($SD = 10.33$) at Time 1 and 66.4 months ($SD = 10.6$) at Time 2. Of mothers, 88% had high university education, 5% – higher non-university, 6% – secondary professional, and 1% secondary non-professional or lower education. 81% of mothers were married, 14% lived with partners.

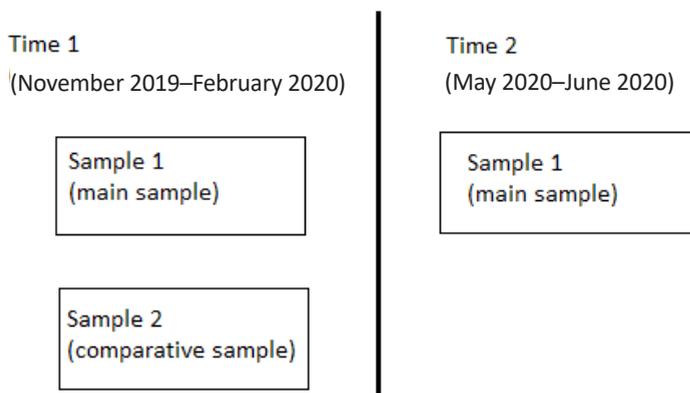
As some of the study variables, such as screen time, are age-dependent, we composed a comparative sample of the same age children from Time 1 measurement data, to compare the post-quarantine data to the data gathered from the parents of the same age children before quarantine (see Figure 1). This sample only included children who did not participate in Time 2 measurement and was designed to match the main study sample according to main sociodemographic characteristics. The comparative sample included 78 children (31% girls and 69% boys) aged 4 to 6, average age was 66.1 months ($SD = 10.3$). Of mothers, 79% had high university education, 12% – higher non-university, 5% – secondary professional, and 4% secondary non-professional or lower education. 75% of mothers were married,

25% lived with partners. The main and comparative samples did not differ according to gender (Chi-square = .000; $p = 1.000$), age by months (Mann Whitney $U = 2976.00$; $p = .815$), mother's education (Chi-square = 3.889; $p = .421$) and parents' marital status (Chi-square = .530; $p = .912$).

The longitudinal study was started and conducted with the approval of the Regional Ethics Committee of Biomedical Research. Approval from the Ethical Committee of Psychological Research at Vilnius University in Lithuania was additionally gathered before the data collection at Time 2 for this research.

Figure 1

Study design



Instruments

Children's *emotional and behavioural problems* were assessed using a Lithuanian version of the Child Behaviour Checklist (CBCL/1½-5, Achenbach & Rescorla, 2000; Achenbach & Rescorla, 2010). It is a 100-item parent-report measure designed to record the problem behaviours of pre-schoolers. Each item describes a specific behaviour, and has to be rated from 0 – not true; 1 – somewhat or sometimes true; 2 – very true or often true, based on the preceding 2 months. We only used the composed scales for this research, e.g., the *Internalizing problems* scale for measuring emotional problems, and the *Externalizing problems* scale for behavioural problems. The internal consistency of the *Internalizing problems* factor (36 items, Cronbach's alpha = .92) and *Externalizing problems* factor (24 items, Cronbach's alpha = .91) in the main sample of this study is excellent.

Parents provided information on *screen time* by answering separate Likert scale questions about the duration their child usually spends using various screen-based devices on both weekdays and weekends. Average daily screen time was then calculated by converting ranks to minutes and applying special formula (see Jusienė, Rakickienė, Breidokienė, & Laurinaitytė, 2020, for detailed description).

Child's physical activity was reported by parents answering the question about how much time per day the child is physically active during the last two months by picking one of the options – “Less than 30 minutes”, “30–60 minutes”, “More than 60 minutes”.

Parental distress was measured with a set of 6 items asking about frequency of experiencing physical pain or symptoms, sadness/depression, irritability/bad moods, anxiety/distress, sleep problems, lack of energy during the past several months with five answer options: 1 (“Almost every day”), 2 (“Two-three times per week”), 3 (“Nearly once every week”), 4 (“Nearly once every month”), 5 (“Rarely or almost never”) (Cronbach's alpha = 0.80). The variable was recoded so that higher rank means greater distress.

All the data was provided by children's parents (mostly mothers) via online survey.

Results

To test the first hypothesis, we started by analyzing longitudinal data of the same children at the end of the quarantine (Time 2) and before quarantine (Time 1). Results showed that during quarantine children had more behavioral problems, spent more time in front of screens and were less physically active. Moreover, parents of the children experienced more distress during the lockdown than several months before (see Table 1 for comparison of study variables at two time points, Time1 and Time2). Comparing with the data collected before quarantine in comparative sample of the same age children, 4 to 6 year olds surveyed after quarantine also had more behavioral problems, used screens more and their parents were more distressed (see Table 1, the comparison of Sample 1 and Sample 2).

Table 1

Comparison of study variables measured at Time 1 (pre-quarantine) and Time 2 (post-quarantine)

Variable	Time	N	Mean Rank	Z	p
The comparison of Time 1 and Time 2 ^a					
Emotional problems	Time1	71	29.00	-.55	.585
	Time2	71	34.00		
Behavioral problems	Time1	71	28.67	-2.36	.018
	Time2	71	34.80		
Screen time	Time1	70	12.25	-6.99	<.000
	Time2	70	36.91		
Physical activity	Time1	71	14.42	-2.27	.023
	Time2	71	13.00		
Parental distress	Time1	67	18.07	-4.54	<.000
	Time2	67	33.49		
The comparison of Sample 1 (at Time 1) and Sample 2 (at Time 2) ^b					

Variable	Sample	<i>N</i>	Mean Rank	Z	<i>p</i>
Emotional problems	Sample 1	78	73.72	-1.32	.186
	Sample 2	78	83.28	2669.50	
Behavioral problems	Sample 1	78	67.53	-3.04	.002
	Sample 2	78	89.47	2186.50	
Screen use	Sample 1	74	56.82	-5.37	<.000
	Sample 2	78	95.17	1429.50	
Physical activity	Sample 1	78	80.23	-.71	.480
	Sample 2	77	75.74	2829.00	
Parental distress	Sample 1	77	61.98	-4.42	<.000
	Sample 2	78	93.81	1769.50	

Note. Bold text indicates a statistically significant difference with a *p*-value less than .05; Sample 1 – the comparable sample of children aged 4–6 years before quarantine, Sample 2 – the sample of children aged 4–6 years after quarantine.

^a results of Wilcoxon signed ranks test

^b results of Mann–Whitney U test

To test the second hypothesis, regression analyses were carried out with behavioral and emotional problems after quarantine (Time 2) as dependent variables. First, we entered screen time, physical activity and parental distress at Time 2 as predictors into the analysis, showing that both screen time and parental distress predict behavioral problems and parental distress predict emotional problems in children who have experienced quarantine due to COVID-19 pandemic. However, when previous emotional problems measured at Time 1 were taken into account, only this variable and parental distress emerged as significant predictors of children's emotional problems at Time 2 (see Table 2). The behavioral problems at Time 2 were predicted only by earlier behavioral problems.

Table 2

Multiple regression analysis for the study variables predicting emotional and behavioral problems at Time 2 (post-quarantine)

Variable	<i>t</i>	<i>p</i>	β	<i>F</i>	<i>df</i>	<i>p</i>	<i>R</i> ²
<i>Dependent variable –Emotional problems at Time 2</i>							
Overall model				19.02	4.66	<.001	.54
Emotional problems at Time 1	7.20	<.001	.64				
Screen use at Time 2	-.52	.606	-.05				
Physical activity at Time 2	-.27	.787	-.02				
Parental distress at Time 2	2.28	.026	.20				

Variable	<i>t</i>	<i>p</i>	β	<i>F</i>	<i>df</i>	<i>p</i>	<i>R</i> ²
<i>Dependent variable – Behavioral problems at Time 2</i>							
Overall model				28.69	4.66	<.001	.64
Behavioral problems at Time 1	8.50	<.001	.75				
Screen use at Time 2	-.06	.950	-.01				
Physical activity at Time 2	-.17	.870	-.01				
Parental distress at Time 2	1.09	.280	.09				

Note. Bold text indicates a statistically significant difference with a *p*-value less than .05

Discussion

Of the two hypotheses tested with this research, the first was partially confirmed, as the comparison of post-quarantine data with pre-quarantine data of the same children and with analogous data of the comparable sample of children and their parents who did not experience quarantine showed an increase in screen time and decrease in physical activity of quarantined children as well as increase in parental distress. Interestingly, only behavioral, but not emotional problems reported by parents of pre-schoolers have increased. This could be interpreted in light of developmental psychopathology research, which shows that although child behavioral problems are usually more readily noticed by caregivers, the rate of externalizing-internalizing comorbidity is relatively high, and children with behavioral problems are at risk for subsequently accumulating emotional problems (Wilner et al., 2016).

The second hypothesis was not confirmed, as parental distress emerged as the only quarantine-related variable that predicted mental health of preschoolers after previous mental health was taken into account. This result provides two important insights. First, although research has already demonstrated that greater parental distress during COVID-19 quarantine is related to higher levels of child emotional and behavioral problems (e.g. Spinelli et al., 2020), the longitudinal design of our study gives further evidence that parental distress is an important risk factor for negative child mental health outcomes during quarantine due to COVID-19 pandemic. Second, this finding adds substantially to the emerging literature showing links between quarantine-related changes in health-related behaviors, such as using more screens, and children's mental health problems, that do not take into account baseline problems of children (e.g. Braidokienė et al., 2021). Our results suggest that although longer screen time is related to greater emotional and/or behavioral problems in children during quarantine, this relation could be explained by the preceding problems and reflect the tendency of parents to use more screens while taking care of children who were more difficult to manage in the first place. On the other hand, we gathered data on emotional and behavioral problems of children not long from the beginning of the first COVID-19 quarantine and it is possible that negative effects of changes in health-related behaviors could become evident later. Therefore, more longitudinal research spanning across longer periods of time is needed for further insight into

the risk and protective factors for child mental health after the COVID-19 quarantine. On a practical level, our results also highlight the importance of support for families during times of quarantine and specifically support for families raising children with behavioral problems, as the problems they were already facing still increase during quarantine and their parents may be more susceptible to less desirable practices (such as providing children with more screen time) as a way to cope with this situation.

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