

Impact of Covid-19 lockdown on the emotional health of schoolchildren in an urban Indian setting

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ABSTRACT

Background. Public health measures taken to prevent the spread of the Covid-19 pandemic can potentially impact the mental health of children. We assessed the prevalence and risk factors for childhood depression during the Covid-19 lockdown.

Methods. After 100 days of lockdown, we sent a survey questionnaire by WhatsApp to parents of school-aged children (5–16 years) in Chennai. The Short Mood and Feelings questionnaire was used as an objective screening tool to assess depression, with a score of 12 as the cut-off.

Results. There were 874 responses. The prevalence of childhood depression was 13.7%. Girls were more likely to be depressed than boys; 11–16-year-olds were more likely to be depressed than 5–10-year-old children. Children who had more than 4 hours online education had a higher likelihood of depression. Those who used a cell phone for online classes had a higher likelihood of depression compared to other devices, such as tabs or laptops. Children who slept less than 8 hours a day had a higher likelihood of depression while those who either did not sleep in the afternoon or slept less than 1 hour had a lower likelihood of depression. Children who were interacting with family over 1 hour per day had a lower likelihood of depression.

Conclusion. Overzealous online education, lack of adequate sleep and failure to spend quality time with the family can negatively impact the mental health of children.

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The impact of Covid-19 on the emotional health of children should be addressed by public health policy-makers and healthcare professionals.

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INTRODUCTION

The Covid-19 pandemic will probably unearth important mental health issues in children in both developing and developed nations. UNESCO estimates that over 90% of enrolled learners (over a billion students) worldwide are now out of education. Not much is known about the long-term impact of large-scale disease outbreaks on the mental health of children.¹ It is possible that there may be a considerable increase in anxiety and depressive symptoms among people who do not have pre-existing mental health conditions.² Evidence exists that this possibility has been under-recognized in China during the current pandemic.³

METHODS

We collected data through a voluntary, anonymous self-report questionnaire in English sent by WhatsApp after 100 days of lockdown. Children in the age group of 11–16 years were encouraged to fill the form while parents of children aged 5–10 years were asked to fill the form after discussing with their children. Inclusion criteria were schoolchildren residing in Chennai, aged 5–16 years. We used a cut-off score of 12 for the short mood and feelings questionnaire (MFQ). Ethics approval was obtained for this survey.

We studied sleep disturbances as these are not just a symptom or byproduct of depression, but in many patients, contribute to the onset and/or maintenance of depression.⁴ Evidence in the literature also suggests that negative family interactions contribute to childhood depression.^{5,6} For assessing screen time, we used the WHO recommendation of the limit of 2 hours/day.⁷ The recommendations of the WHO for children and youth aged 5–17 is to accumulate at least 60 minutes of moderate- to vigorous-intensity physical activity daily.⁸

Statistical analysis

All data were analysed using the Statistical Package for Social Science (SPSS, version 17) for Microsoft Windows. Descriptive statistics are presented as numbers and percentages. Data were expressed as mean (SD). A Chi-square test was used for comparison between two attributes with OR 95% CI. Multiple logistic regression was used. A two-sided $p < 0.05$ was considered statistically significant.

RESULTS

There were 874 responses with nearly equal gender distribution (men 49.8%). The prevalence of depression was 13.7%. Boys were less likely to be depressed than girls (OR 0.495, $p < 0.001$). Eleven- to 16-year-olds were more likely to be depressed than 5–10-year-old children (OR 1.52, $p = 0.035$).

We looked at the risk factors for childhood depression (Table I). Children who had more than 4 hours online education had a higher likelihood of depression. Children who used a mobile phone for online class had a higher likelihood of depression than children using devices such as a tablet or laptop. Children who slept less than 8 hours a day had a higher likelihood of depression while those who either did not sleep in the afternoon or slept less than 1 hour had a lower likelihood of

depression. Children who interacted with their family over 1 hour per day were less likely to have depression.

We also analysed the potential causes and lifestyle issues contributing to childhood depression (Table I).

Online classes

With regard to online classes, 41.2% had 1–2 hours of online classes per day, 40.2% had 3–4 hours a day, 9% had 5–6 hours, 2% had more than 6 hours a day, and 7.6% had no online classes. Children who had more than 4 hours online education were 1.7 times more likely to be depressed compared to children with less than 4 hours online classes per day. Children who used a cell phone for online class were twice as likely to be depressed compared to children using devices such as tablet or laptop.

Sleep

Sleeping patterns were variable. A total of 53.5% had 8–10 hours of sleep, 38.3% had 6–8 hours of sleep, 5.4% had 10–12 hours of sleep and 2.8% had less than 6 hours of sleep. Children who slept less than 8 hours a day were nearly 2.5 times as likely to be depressed compared to those who slept 8 hours at night.

With regard to afternoon naps, 77.7% did not sleep in the afternoons, 11.8% slept 1–2 hours and 9.6% slept less than 1 hour and 0.9% slept 2–4 hours. Children who either did not sleep in the afternoon or slept less than 1 hour were half as likely to be depressed compared to those who slept more than one hour in the afternoons.

Interaction with family members and friends

With respect to interaction with family members, 55.4% spent 2–4 hours, 31.1% spent 1–2 hours, 11.8% spent <1 hour and 1.7% spent no time interacting with their own family. Statistical

analysis showed that the children who interacted with family members over 1 hour per day were 3 times less likely to have depression compared to those who spent less than one hour per day. We also analysed interaction with friends, but the results were not statistically significant.

Screen time

Excluding online classes, the amount of screen time spent by children on television, laptops, cell phones and video games was as follows: 36.4% spent 2–4 hours, 31.1% spent 1–2 hours, 14.4% spent 4–6 hours, 14.1% spent <1 hour, and 4% spent 6–8 hours. There was no statistical significance for the relationship between screen time (excluding online classes) and depression.

Physical exercise

With regard to physical exercise, 40.6% spent <30 minutes on exercise, 25.5% spent 30 minutes to 1 hour, 18% did no exercise, 12.2% did 1–2 hours and 3.7% did 2–4 hours. However, there was no statistical significance for the relationship between physical exercise and depression.

We used multiple logistic regression to assess the risk factors for depression (Table II) and found statistically significant differences in the gender, mode of online classes, hours of sleep per night and interaction with family at $p < 0.01$. Notably, not spending at least 1 hour quality time with family members (OR 2.715) and <8 hours of sleep per night (OR 2.088) were the most significant risk factors for childhood depression.

DISCUSSION

Population studies have reported prevalence rates of depressive disorders in children ranging between 0.4% and 2.5% in adolescents between 0.4% and 8.3%.^{9,10} In our study, we used

TABLE I. Likelihood of depression

Item	Description	Level of depression score (%)		p value	OR (95% CI)
		Depressed	Not depressed		
Total hours of online class per day (average)	>4 hours	20 (20.6)	77 (79.4)	0.04	1.76 (1.03–3.0)
	≤4 hours	100 (12.9)	677 (87.1)		
Mode of online class	Mobile phone	70 (19)	298 (81)	<0.001	2.14 (1.45–3.17)
	Other devices	50 (9.9)	456 (90.1)		
Hours of sleep per night (average)	<8 hours	72 (20.1)	287 (79.9)	0.001	2.44 (1.65–3.62)
	≥8 hours	48 (9.3)	467 (90.7)		
Hours of sleep in the afternoon (average)	≤1 hour	96 (12.6)	667 (87.4)	<0.01	0.52 (0.32–0.86)
	>1 hour	24 (21.6)	87 (78.4)		
Interaction with family members	≤1 hour	33 (28)	85 (72)	<0.001	2.99 (1.89–4.73)
	>1 hour	87 (11.5)	754 (86.3)		

OR odds ratio

TABLE II. Multivariate logistic regression analysis of likelihood of depression

Item	B	SE	Wald	p value	OR	95% CI of OR	
						Lower	Upper
Gender	-0.674	0.214	9.954	0.002	0.510	0.335	0.775
Age	0.396	0.229	2.986	0.08	1.485	0.948	2.326
Hours of online class	0.263	0.317	0.691	0.41	1.301	0.699	2.423
Mode of online class	0.688	0.214	10.365	0.001	1.990	1.309	3.024
Hours of sleep per night	0.736	0.213	11.962	0.001	2.088	1.376	3.168
Hours of sleep in the afternoon	-0.534	0.273	3.814	0.05	0.587	0.343	1.002
Interaction with family	0.999	0.246	16.535	<0.001	2.715	1.677	4.393
Constant	-1.579	0.960	2.709	0.1	0.206	-	-

SE standard error OR odds ratio

a cut-off score of 12 for the short MFQ, which is the cut-off recommended by the Child Outcomes Research Consortium, UK.¹¹ It is a validated screening tool for depression in children. Our survey revealed the prevalence of depression to be 13.7%, indicating that children had possibly experienced increasing depression exacerbated by the pandemic and the lockdown. Fear experienced by children can include the types of fears that are similar to those experienced by adults, which would include a fear of dying, a fear of close relatives dying, or a fear of what it means to be admitted to hospital.

As schools closed as part of necessary measures, children may no longer have that sense of structure and stimulation that is provided by that environment, and they end up with less opportunity to be with their friends and get the social support that is essential for good mental well-being. Learning is expected to continue digitally and school closures are likely to widen the learning gap between children from lower-income and higher-income families. Children from low-income households live in conditions that make home schooling difficult. Online learning environments usually require computers and a reliable internet connection.¹²

Public health policy-makers must address the psychological impact of this crisis on children. Children in poverty are particularly vulnerable because of underlying psychosocial stressors (e.g. home instability) and developmental and behavioural disorders.⁶

Psychologists have noticed three emerging patterns in schoolchildren during this pandemic.¹³ A first group of schoolchildren seem to prosper mainly because they are at home in a quieter and more conducive environment where they can thrive with the structure and support provided by their parents. These children enjoy online learning, and notably, they are not exposed to any adverse events, such as bullying or social exclusion. Similarly, there exists a second group of children who seem to be mildly affected in an adverse manner. Their developmental opportunities are on hold, as due to relatively fewer available resources for online learning, they are unable to interact with peers and thereby improve their social skills and no longer have access to practise what they were learning in a social setting. The third group includes children who unfortunately find themselves in families with an increasingly negative environment, and these children may potentially feel deprived of the safe haven offered by their schools.

However, it must be noted that our cohort of schoolchildren had no pre-existing mental health disorders. We could not find any published baseline data about the emotional health of children in Chennai before the Covid-19 pandemic.

Conclusion

Public health policy-makers and healthcare professionals need to acknowledge that pandemics (especially when associated with lockdown) can potentially negatively impact the psychological well-being of school-age children. In the event of similar future pandemics, strategies need to be in place to safeguard the psychological well-being of individuals by offering them timely and appropriate psychological support.

Conflicts of interest. None declared

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