

Psychological Impact of COVID 19 Pandemic on Mental Health of Children Admitted to a Tertiary Care Centre

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ABSTRACT

Background

To prevent the COVID 19 transmission and reduce the burden on health systems, schools were closed and classes shifted to home-based distance learning models with online learning activities. Being quarantined in homes caused great psychological burden to children. This study was done to study the impact of COVID 19 on mental health of children and their screen and sleep behaviour before and during the pandemic.

Methods

Admitted children aged between 4-14 years and their siblings of same age group were enrolled after getting informed consent from their parents. The information regarding their socio-demographic factors, screen time, sleep time, physical activity and psychological problems were assessed using Paediatric symptom checklist Questionnaire. Outcome was measured by the scores obtained according to their age. Screen time and sleep behaviour was assessed using the guidelines proposed by American Academy of Paediatrics.

Results

Twenty-seven (15.81%) of 171 children had psychological impairment. The (11-14)-year-olds and children living in urban area were more affected. All participants had abnormal screen time with respect to their age during COVID 19 pandemic and 99.4 % had increased screen time compared to pre COVID era. Abnormal sleep pattern was seen in 26.9 % and compared with pre-Covid times 73.6 % of the participants had less physical activity.

Conclusions

Implementation of psychosocial intervention and lifestyle modification strategies at community level is the need of the hour. Post Covid era remnant and sequelae of psychological impairment needs to be assessed.

Keywords: COVID 19; paediatric symptom checklist; psychological impairment; screen time; physical activity; sleep.

INTRODUCTION

A nationwide lockdown was implemented in India to tackle the spread of the Coronavirus.^{1,2} Children infected with corona virus (SARS-CoV2) reported having milder illness, low morbidity, with better prognosis and probably lesser susceptibility.³ Being forced to stay home for extended periods resulted in them having minimal interaction with their peers⁴ and decreased opportunities for exploration, physical activities, playground use.² Schools play a significant role, in supplying educational resources, an opportunity to communicate with teachers and receive

psychological counselling.⁵ Moreover, evidence shows that whenever they are beyond schooling, children become less active, have much prolonged screen time, irregular sleep schedule and less healthy diets resulting in excess weights.⁵⁻⁷ Terror of infection, dissatisfaction and boredom, lack of personal space at home and family's financial loss may have had impacts on mental health of children.⁸ This study was done to assess the impact of COVID19 pandemic on mental health, screen time and sleep behaviours of children. It also aims in comparing those behaviours during and before COVID 19 period.

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METHODS

The Paediatric Symptom Checklist (PSC) is a psychosocial screen designed to facilitate the recognition of cognitive, emotional, and behavioural problems so that appropriate interventions can be initiated as early as possible. The PSC consists of 35 items that are rated as “Never,” “Sometimes,” or “Often” present and scored 0, 1, and 2, respectively. The total score is calculated by adding together the score for each of the 35 items. For children and adolescents ages 6 through 16, a cut off score of 28 or higher indicates psychological impairment. For children ages 4 and 5, the PSC cut off score is 24 or higher. Items that are left blank are simply ignored (i.e., score equals 0). If four or more items are left blank, the questionnaire is considered invalid. A positive score on the PSC or Y-PSC suggests the need for further evaluation by qualified health professional.⁹ Permission was obtained to use the PSC as a study tool. Institutional Ethics and Research committee approval (05/21/IEC/JMMC & RI) was taken to do the study. Based on the prevalence of psychological disturbances observed in an earlier publication ‘Impact of COVID 19 pandemic on the mental health of children in Bangladesh:¹⁰ A cross sectional study with 95% confidence interval and 15% relative allowable error 171 children were recruited. After obtaining informed consent from a parent/legal guardian, children of 4-14 years who were admitted in Paediatric ward of a tertiary care hospital and their siblings of same age group were recruited over a period of eighteen months (February 2021- August 2022). The information regarding the socio-demographic factors (name, age, sex, place of living, knowledge about COVID 19, screen time, sleep time, physical activity and psychological problems were assessed using PSC Questionnaire. In children of 4-10 years parents were interviewed as per the PSC checklist. In children of 11-14 years Y-PSC checklist were filled by the child after taking assent from them. Psychological problems were assessed using Paediatric symptom checklist. Screen time was assessed using the guidelines proposed by American Academy of Paediatrics and WHO

- Under 18 months - No screen time avoiding video chatting with parents/grandparents (18 months-24 months)
- Toddlers (18 months - 24 months) Little to no screen time recommended
- Preschool (3-5 years) - up to 1 hour per day
- Elementary school (6-10 years) - Up to 1 to 1.5 hours per day
- Middle school age (> 11 years) - Up to 2 hours per day

Sleep behaviour was assessed using the guidelines proposed by American Academy of Paediatrics. Children of 3-5 years should sleep 10 to 13 hrs per 24 hours (including naps) on a regular basis to promote optimal health. Children of 6-12 years should sleep 9-12 hours per 24hours (including naps) on a regular basis to promote optimal health. Teenagers 13-18 years of age should sleep 8-10 hours per 24hours (including naps) on a regular basis to promote optimal health. The purpose of this questionnaire was not to establish a final diagnosis of mental disorder and depression or to monitor depression severity but rather to screen for mental disorders as a ‘first step approach’. Subjects who screened positive at preliminary investigation were evaluated further to determine whether they meet the criteria for depressive or anxiety disorder. From the data collected numerical variables were expressed as mean and standard deviation. To study the impact of COVID 19 pandemic on mental health of children, screen time and sleep, frequency and percentages were applied. To obtain association between Psychological Impairment and other factors affecting mental health Chi square test and binary logistic regression was used.

RESULTS

Of the 171 children enrolled, 116 children were between age group of 4-10 and remaining 55 were between 11-14 years. Of these 104 (60.8%) were boys and 67 (39.2%) girls. Hundred and six (62%) were from rural areas and 65 (38%) were from urban background. Distribution of factors affecting mental health of children are shown in (Table 1). Forty-six (26.9%) of children had abnormal sleep pattern. All the children except one had increased screen time as

Table 1. Distribution of factors affecting mental health of children.

Distribution of factors affecting mental health of children	Frequency (%)
Parents Working	106 (62)
Parents tensed about financial condition	81(47.4)
COVID 19 infection in the family	42(24.6)
Household under quarantine	53(31.0)
Feeling bored by staying at home	160(93.6)

compared to pre covid era. Twenty-seven (15.8%) children showed psychological impairment.

Table 2 shows that the psychological impairment is significantly higher (p value 0.000) in children with age 11-14 years (34.5%) compared to the children with age 4-7 years (1.7%) and 8-10 years (12.1%).

Table 2. Association between Psychological Impairment and Age.

Age (years)	Psychological Impairment		p-value
	Absent	Present	
4-7	57 (98.3%)	1 (1.7%)	<0.001
8-10	51 (87.9%)	7 (12.1%)	
11-14	36 (65.5%)	19 (34.5%)	

Association between psychological impairment and other factors are shown in (Table 3). Psychological abnormality is significantly higher in urban area (27.7%) compared to rural area (8.5%). Also, psychological abnormality is significantly higher in children feeling bored by staying at home (16.9%) compared to the children feeling not bored by staying at home (p value 0.048) (Table 3).

Table 3. Association between Psychological impairment and child characteristics.

Child	Psychological Impairment		p-value
	Absent	Present	
Male	87 (83.7%)	17 (16.3%)	0.804
Female	57 (85.1%)	10 (14.9%)	
Rural	97(91.5%)	9(8.5%)	0.001
Urban	47(72.3%)	18(27.7%)	
Quarantine	45 (84.9%)	8 (15.1%)	0.867
No Quarantine	99 (83.9%)	19 (16.1%)	
Child Bored	133 (83.1%)	27 (16.9%)	0.048
Not bored	11 (100.0%)	0 (0.0%)	

No significant association was found between psychological impairment and family factors (Table 4). Table 5 shows that psychological impairment is significantly higher, (p value

0.003) in cases with decreased sleep duration due to pandemic (41.7%) compared to the cases with increased sleep duration (12.0%) and same duration (10.3%) (Table 5).

Table 4. Association between Psychological impairment and family factors.

Parents	Psychological Impairment		p - value
	Absent	Present	
Working	88 (83.0%)	18 (17.0%)	0.585
Not working	56 (86.2%)	9 (13.8%)	
Financial concern	70 (86.4%)	11 (13.6%)	0.452
No Financial concern	74 (82.2%)	16 (17.8%)	
COVID in family	35 (83.3%)	7 (16.7%)	0.858
No COVID	109 (84.5%)	20 (15.5%)	

Table 5. Association between Psychological impairment with screen time, sleep and physical activity.

Others	Psychological Impairment		p-value
	Absent	Present	
Screen time Same	1 (100.0%)	0 (0.0%)	0.557
Screen time More	143 (84.1%)	27 (15.9%)	
Sleep Duration Same	35 (89.7%)	4 (10.3%)	0.003
More	95 (88.0%)	13 (12.0%)	
Less	14 (58.3%)	10 (41.7%)	
Physical Activity Same	10 (76.9%)	3 (23.1%)	0.453
More	29 (90.6%)	3 (9.4%)	
Less	105 (83.3%)	21 (16.7%)	

DISCUSSION

The outbreak of COVID-19 profoundly affected young children. The speed with which the pandemic changed the whole situation, made it difficult to analyse the impact of the shock in a timely manner. Mental health of the youth are considered to be the most important part of any country, COVID-19 pandemic is a disaster that had already taken place in the world which destroyed the harmonious balance between mental health and physical health. This study focused on psychological issues among children due to COVID 19 pandemic. Psychological impairment was analysed using a validated questionnaire – PSC checklist which can be used as a screening tool. In this study it was found that 27 children (15.8%) had psychological impairment. Psychological impairment was more in male according to this study but there was no statistically significant association with gender. Children between the age group of 11-14 years were more affected with a p value of 0.000. A significant correlation was found between psychological impairment and the place of living.

Children coming from urban area were more affected with COVID 19 pandemic. As per the study conducted by Sabina et al, children who live in urban areas with their parents were more prone to suffer mental health-related problems as compared to the rural area.¹¹ The reason behind this scenario may be that the lockdown was perfectly maintained in urban areas than rural areas and children were forced to stay home anyway. On the other side, children in rural areas were free to move and could play with their friends. About 93.5% of children were feeling bored by staying home and this had a statistically significant association with mental status of children. As per this study there was no significant association between psychological impairment and whether parents were working, parents tensed about the financial condition, presence of COVID 19 infection or household members being in quarantine. Mental health can be easily restored, when all problems get subdued. Mental health is quite essential for maintaining peace and tranquillity in every human being, and thereby the community. Hence emergency measures are needed at the community and school level to assist and support psychologically affected children to tide over the COVID crisis. Excessive screen time particularly during leisure time, places children at increased risk of poor physical and psychosocial health. There were concerns about the increased screen time during the COVID-19 pandemic, especially by students, as they had chances of increased accessibility and acceptability of digital and internet-enabled devices. There was a significant disruption in existing educational activities due to COVID-19, with more than 90% of students estimated to have been seriously affected by the closure of academic institutions worldwide as per the study conducted by Jena et al.¹² In India also schools were shut down in mid-March of 2020 and remained shut over the course of the year. However, very soon academic activities were gradually resumed with a shift to an online mode of education. This shift in education to online platforms created concerns among parents and teachers about the possible harms associated with increased screen time during COVID-19. The concern was in part grounded in the already increased exposure of students to screen time following COVID-19

due to an increase in various activities that involved screen viewing including gaming, social media use, and watching videos over online digital platforms. In this study, we assessed the impact of the COVID-19 pandemic on the amount and pattern of screen time among the participants and the results were consistent to above concerns. A striking observation of this study was all the study participants (100%) had abnormal screen time with respect to their age group with 99.4 % participants had increased screen time compared to pre COVID pandemic. Meyer et al. reported that > 8 hours /day of screen time was associated with increased chance of depression, loneliness, and stress during the COVID-19 pandemic in American adults, However, in the same study, total sitting time was not associated with any abnormal mental health outcome.¹³ In our study 18.1 % of children have increased screen time > 8 hours. There was no significant association between psychological impairment and increased screen time as per this study. Monique M et al conducted a longitudinal cohort study to the trend of screen time use among children during COVID 19 pandemic and concluded that screen time among children increased during the COVID-19 pandemic and remained elevated even after many public health precautions were lifted.¹⁴ Sleep health is very important for overall health and neurodevelopment in childhood, with poor sleep leading to increased risk of chronic illnesses, behavioural difficulties, and poorer memory. Behavioural factors like screen time and physical activity can influence sleep pattern. This study investigated sleep duration changes during the pandemic compared to pre lockdown period and revealed that 26.9 % of the study participants had abnormal sleep time during this pandemic out of which 69 % were males. About 14% of the children in this study had decreased sleep duration. A study conducted by Maristella et al found no changes in sleep duration, but a shift to later sleep midpoint during the pandemic periods¹⁵ which is contradictory to our study showing that there is change in duration of sleep. Also, this study shows that there is a significant association with psychological impairment with a p value of 0.003. In a study conducted by Ritvik et al it was found that sleep quality improved during the lockdown period and there

was a significant increase in the time taken to go to bed and there is increased sleep latency.¹⁶ In a cross-sectional study conducted by Gaby et al in England it was found that quality of sleep had been changed badly than to pre COVID era¹⁷ which is consistent with our study. For a healthy lifestyle, the World Health Organization (WHO) and other authors recommend 60 min of moderate-to-vigorous daily for children and low levels of recreational screen time.¹⁴ As per this study about 73.6 % of the participants have less physical activity compared with previous times and there is no significant association between physical activity and psychological impairment. Nearly 39 % of the study participants were having no or physical activity < 1 hour. Among that 67 % were male and 33 % were female. According to this study association between abnormal screen time and physical activity could not be made since all the study participants had abnormal screen time with respect to their age. Genevieve et al conducted a study on effects of the COVID-19 pandemic on physical activity and sedentary behaviour in children living in the U.S. which showed that children's physical activity had decreased whereas children's sedentary behaviour had increased in the-COVID-19 period.¹⁸ As per this study about 36% of parents reported their child had done much less physical activity, whereas only about 11% of parents reported their child had done much more physical activity when compared to pre COVID era. Certain measures that can be suggested includes increasing communication with children to address their fears and concerns, playing games with them to alleviate loneliness and encouraging activities that promote physical activity. Furthermore, parents should pay attention to sleep difficulties and prevent

increased daytime sleep and also suggest sleep hygiene and relaxation methods.

CONCLUSIONS

There is a need to ameliorate children's access to mental health services by using both face to face as well as digital platforms on a war footing. Schools, parents, teachers should take initiative to help spread information about good sleep hygiene which will help to enhance immunity and restore well-being. For this, collaborative network of parents, children, psychiatrists, psychologists, paediatricians, and NGOs are required. There is a need for 'tele mental health care facility' accessible to the public. This would be crucial to prevent or manage the mental health challenges of children. The focal point of the health care system and policymaking should be prevention, promotion, and interventions corresponding to the public mental health system.

Limitations: This study should have been done on school basis in both private and government aided as a multicentre study to get a better picture of the current scenario, but we were unable to do so due to the social restrictions prevailing at that time. A follow up study needs to be done to assess the sequelae of the increase in usage of screen time, abnormal sleep pattern and reduced physical activity after returning to formal school education. We have not taken a feedback on the positive effects of increased screen time and availability of online support in the education and overall development of children.

Conflict of interest: None.

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