

Original Research Article

Emotional and behavioural problems in school children and parental monitoring in relation to smartphone use: a community-based observation study

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ABSTRACT

Background: In this technology-driven world, smartphones have become a significant part of our lives, with the COVID-19 pandemic further increasing their usage in children. This surge has raised concerns regarding problematic smartphone use and its impact on mental health, particularly emotional and behavioural problems in school-aged children. Aim of the study was to assess emotional and behavioural problems in school children and parental monitoring in relation to smartphone use

Methods: The study was conducted among students of Jorhat District, Assam. Multistage random sampling was applied to obtain the sample size parental monitoring of children's digital activity (PARMON- CDA) scale. Both rural and urban schools were included. Emotional and behavioural problems were assessed using the strengths and difficulties questionnaire (SDQ). Problematic smartphone use (PSU) was assessed using the smartphone addiction scale-short version (SAS-SV). Parental monitoring over smartphone use was assessed using the PARMON-CDA questionnaire. Data analysed using appropriate statistical methods to determine associations between variables.

Results: Prevalence of emotional and behavioural problems was found to be 16.9%. The prevalence of smartphone addiction was found to be 25.28% in boys and 21.47% in girls. Statistical analysis revealed a positive correlation between problematic smartphone use and emotional and behavioural problems, while parental monitoring of smartphone use was negatively correlated with emotional and behavioural problems

Conclusions: The study highlights a positive correlation between excessive smartphone use and emotional and behavioural problems in children, emphasizing the need for effective parental monitoring and school-based interventions.

Keywords: Mental health, Problematic smartphone use, Parental monitoring

INTRODUCTION

In this Era of Digital India, Smartphones have become an integral part of our daily life. The COVID-19 pandemic has further increased smartphone use among school-going children due to the shift to online classes, contributing to rising concerns about excessive smartphone use. This trend persists even in the current post-COVID era, with lasting impacts on children's well-being.¹ Emotional and

behavioural problems refer to “any internalizing problems like anxiety, depression or externalizing factors like aggression, impulsivity and hyperactivity in a child which do not necessarily meet the threshold of ICD-10 or DSM-5 diagnostic criteria”.² Tracking the prevalence of emotional and behavioural problems among children is critical for understanding the magnitude of the issue. Many children lack the maturity to manage exposure to inappropriate content, leading to psychological

discomfort or behaviours like phubbing and nomophobia.³ When it comes to the negative relationship between emotional and behavioural issues and parental supervision, mostly everyone agrees.⁴ However, parental monitoring may also induce negative emotions in children. Thus, when the freedom of the child is limited to a great extent, they may feel trapped and react negatively by rebelling, becoming more secretive or insisting on doing the restricted activity even more.⁵

Digital devices provide significant physical and psychological stimulation, making the pursuit of social validation, such as receiving likes and comments on social media, a priority for many. This quest for validation can contribute to emotional and behavioural challenges.² In today's fast-paced world, parents often give children smartphones to keep them occupied, leading to excessive screen time and potential addiction. Children tend to imitate their parent's behaviour, especially when parents themselves spend time on phones after work, neglecting family interaction. Although many parents claim to limit screen time, active monitoring of what children watch or play is often lacking. Parental monitoring involves overseeing and keeping track of a child's online activities, including their browsing history, email communications and website visits.⁶

In recent years, there has been a growing number of cases related to excessive smartphone use and behavioural changes in children, but there is a lack of regional research and the available literature is mostly from Western contexts. Hence, the current study will allow us to understand the challenges faced by students and strategies to address this issue effectively. The study aimed to assess the emotional and behavioural problems in school children and parental monitoring in relation to smartphone use.

METHODS

It was a community-based cross-sectional study conducted in the Schools of Jorhat district, Assam for a period of one year. The Institutional Ethics Committee approved the study. The sampling method was multistage and the sample size was 700.

Sampling method

Stage 1

Jorhat district is divided into 5 blocks—Central Block, East block, Jorhat Block, North-West block and Titabor block, from which Jorhat block was randomly selected.

Stage 2

The Jorhat block was divided into Rural and Urban area. According to information provided by the school inspector, the ratio of urban to rural school in Jorhat Block was 1:4.

Stage 3

A total of 10 schools were selected using the lottery method.

(2 urban schools, 8 rural schools).

Stage 4

Class 3 and Class 4 were selected from each school and

One section was randomly selected from each class. (35 students from each section) to obtain a sample size of 700. With dropouts (19 students) and non-responders (31 students), the final sample size 650 was taken for analysis purpose.

Inclusion criteria

Students from class III and IV studying in different language mediums. Age group 7-9 years. Parents of students who are willing to give informed consent. Participants with at least one smartphone in the family.

Exclusion criteria

Children suffering from any chronic debilitating physical/mental illness. Children not staying with their parents.

Study tools

Informed consent form, Sociodemographic performa, SDQ.⁷ To assess the emotional and behavioural problems in children, SAS-SV.⁸ To assess problematic smart phone use in children, PARMON-CDA scale.⁹ To assess parental monitoring over children's smartphone use, Modified B.G Prasad scale for socioeconomic status assessment.¹⁰

Data collection method

After taking the permission from the office of school inspector and the principal of all 10 schools, brief interaction with the class teachers and students was conducted. The study was also explained to parents during a parent-teacher meeting. Thereafter, a manual was handed over to the students for their parents containing information about the study and informed consent was obtained. Once informed consent was obtained, a classroom session was held where students completed the 10-item SAS-SV under supervision. The PARMON-CDA questionnaire and the Sociodemographic Performa was given to the students to take home for parents to fill out. The completed forms were returned to the teachers, who then filled out the strength and difficulties questionnaire. Permission for translation and use of the questionnaires was obtained from the author. The SAS-SV was adapted for use among children by simplifying the language and modifying selected items to

ensure age appropriateness, which was validated before the study.

RESULTS

Out of 650 participants, the majority were boys (54.2%) and attended rural schools (80%), while 20% were from urban schools. The majority were 9 years old (57.8%), followed by 8 years old (36.8%) and 7 years old (5.4%). In terms of socioeconomic status, 30.2% belonged to class II and 29.8% were in class I. Most participants came from nuclear families (81.7%) and followed Hinduism (84%). Regarding parents' education, 24.3% of mothers were graduates and 22.9% had completed high school, while 2.9% were illiterate. Most fathers were graduates (29.4%) or had completed 12th grade (21.1%), with 0.6% being illiterate. Almost all parents were married (95.7%), with a few being widowed (4.2%) or divorced (0.2%).

The prevalence of emotional and behavioral problems was found to be 16.9%, while the prevalence of emotional problems was 20.57% in rural and 31.53% in urban children. Conduct problems were seen in 14.8% of rural children and 23.07% of urban school children, while hyperactivity was present in 9.23% and 16.15%, respectively. Peer problems were similar (33.85% rural vs 33.07% urban). Overall difficulties (total SDQ) were higher in urban (26.92%) than rural children (14.42%). About 19.88% and 26.17% of girls had emotional problems. Conduct problems were seen in 20.17% of boys compared to 12.08% among girls and hyperactivity in 12.2% of boys compared to 8.7% among girls. Peer issues affected 36.1% of boys and 30.5% of girls, while overall difficulties were reported by 17.61% of boys and 16.1% of girls.

Socioeconomic status, school type and parents' education were statistically significant predictors of emotional and behavioural problems, as per Table 1. As per Table 2, females showed significantly higher conduct, hyperactivity and total SDQ scores compared to males, while prosocial behavior scores were significantly higher in males. No significant gender difference was observed in emotional and peer problems.

As per Table 3, urban children had significantly higher emotional problem scores, while rural children showed significantly higher hyperactivity and total difficulty scores. Conduct problem scores were slightly higher in urban children, though the difference was not statistically significant. As per Table 4, abnormal SDQ scores were highest among children using smartphones mainly for gaming, followed by social networking and lowest among those using them for studies. Higher frequency and longer duration of smartphone use were significantly associated with abnormal SDQ scores. As per table 5, Emotional problems, conduct problems and hyperactivity showed a negative correlation and were statistically significant, while prosocial behaviour exhibited a positive correlation, which was statistically significant with parental monitoring. Emotional problems, conduct problems, hyperactivity and peer problems showed positive correlation which was statistically significant with smartphone addiction, while prosocial behaviour was statistically significant but had negative correlation with smartphone addiction. The correlation analysis between the PARMON-CDA scores and the SAS-SV scores indicates no significant relationship ($r=-0.064$, $p=0.105$).

Table 1: Association of emotional and behavioural problems with sociodemographic variables.

Characteristics		Normal	Borderline	Abnormal	x ²	P value
		N (%)	N (%)	N (%)		
Age (in years)	7	25 (71.4)	9 (25.7)	1 (2.9)	7.695	0.103
	8	160 (66.9)	37 (15.5)	42 (17.6)		
	9	258 (68.6)	51 (13.6)	67 (17.8)		
Gender	Male	226 (64.2)	64 (18.2)	62 (17.6)	8.032	0.9
	Females	217 (72.8)	33 (11.1)	48 (16.1)		
School type	Rural	366 (70.4)	79 (15.2)	75 (14.4)	11.627	0.003*
	Urban	77 (59.2)	18 (13.8)	35 (26.9)		
Mother education	Illiterate	16 (84.2)	3 (15.8)	0 (0)	30.393	0.007*
	Primary school	51 (86.4)	3 (5.1)	5 (8.5)		
	Middle school	62 (60.8)	19 (18.6)	21 (20.6)		
	High school	111 (74.5)	19 (12.8)	19 (12.8)		
	Higher secondary	52 (57.8)	13 (14.4)	25 (27.8)		
	Graduate	107 (67.7)	25 (15.8)	26 (16.5)		
	Post graduate	44 (60.3)	15 (20.5)	14 (19.2)		
Father education	Illiterate	2 (50)	0 (0)	2 (50)	40.192	<0001*
	Primary school	45 (91.8)	2 (4.1)	2 (4.1)		
	Middle school	32 (60.4)	13 (25.5)	8 (15.1)		
	High school	91 (69.5)	18 (13.7)	22 (16.8)		

Continued.

Characteristics		Normal	Borderline	Abnormal	x ²	P value
		N (%)	N (%)	N (%)		
	Higher	96 (71.1)	23 (16.8)	18 (13.1)		
	Secondary					
	Graduate	119 (62.3)	26 (13.6)	46 (24.1)		
	Post graduate	58 (68.2)	15 (17.6)	12 (14.1)		
Marital status	Married	425 (68.3)	90 (14.5)	107 (17.2)	7.33	0.119
	Divorced	0 (0)	1 (100)	0 (0)		
	Widow	18 (66.7)	6 (22.2)	3 (11.1)		
Family type	Joint	84 (70.6)	20 (16.8)	15 (12.6)	2.078	0.354
	Nuclear	359 (67.6)	77 (14.5)	95 (17.9)		
Religion	Hinduism	378 (69.2)	80 (14.7)	88 (16.1)	9.103	0.168
	Islam	49 (60.5)	15 (18.5)	17 (21)		
	Christian	10 (66.7)	0 (0)	5 (33.3)		
	Others	6 (75)	2 (25)	0 (0)		
Socio-economic	Class I	120 (61.9)	27 (13.9)	47 (24.2)	23.925	0.002*
Status	Class II	136 (69.4)	23 (11.7)	37 (18.9)		
	Class III	89 (75.4)	15 (12.7)	14 (11.9)		
	Class IV	85 (69.1)	28 (22.8)	10 (8.1)		
	Class V	13 (68.4)	4 (21.1)	2 (10.5)		

Note: P value<0.05, statistically significant.

Table 2: Comparison of emotional and behavioural problems according to gender in school children.

SDQ domain	Male		Female		t	P value
	Mean	SD	Mean	SD		
Emotional Problems	2.57	2.4	2.58	2.15	0.048	0.9618
Conduct Problems	1.59	1.76	2.09	1.95	3.3852	0.0008*
Hyperactivity	2.86	2.24	3.45	2.29	3.3072	0.0010*
Peer problems	2.69	1.88	2.94	1.81	1.676	0.0942
Prosocial	6.87	2.4	6.26	2.45	3.1984	0.0014*
SDQ total	9.71	6.71	11.05	6.07	2.664	0.0079*

SDQ=Strength and difficulty questionnaire, P value<0.05, statistically significant.

Table 3: Comparison of emotional and behavioural problems according to school type.

SDQ domain	Mean	SD	Mean	SD	t	P value
Emotional problems	2.42	2.21	3.21	2.39	3.5717	0.0004*
Conduct problems	1.8	1.83	2.12	0.18	1.7327	0.0836
Hyperactivity	3.39	2.3	2.31	2	4.9271	0.0001*
Peer problems	2.88	1.9	2.62	1.61	1.4588	0.1451
Prosocial	6.61	2.46	6.24	2.35	1.5675	0.1175
SDQ total	11.15	6.49	7.57	5.14	5.8486	0.0001*

SDQ=Strength and difficulty questionnaire, P value<0.05, statistically significant.

Table 4: Association between smartphone use patterns and total difficulty score.

Variables		SDQ			x ²	P value
		Normal N (%)	Borderline N (%)	Abnormal N (%)		
Most relevant smartphone function	Browsing	62 (67.4)	12 (13)	18 (19.6)	128.04	<0.001*
	Study purpose	207 (80.2)	31 (12)	20 (7.8)		
	Gaming	16 (21.3)	16 (21.3)	43 (57.3)		
	Social networking	73 (63.5)	22 (19.1)	20 (17.4)		

Variables		SDQ			x ²	P value
		Normal	Borderline	Abnormal		
		N (%)	N (%)	N (%)		
	Texting and phone calls	85 (77.3)	16 (14.5)	9 (8.2)		
Frequency of use per day	>20 times	65 (47.1)	20 (14.5)	53 (38.4)	60.236	<0.001*
	10-20 times	120 (71.4)	29 (17.3)	19 (11.3)		
	<10 times	258 (75)	48 (14)	38 (11)		
Duration of use per day	Less than 1 hour	90 (96.8)	2 (2.2)	1 (1.1)	110.06	<0.001*
	1-3 hours	295 (70.9)	71 (17.1)	50 (12)		
	>3 hours	58 (41.1)	24 (17)	59 (41.8)		

Note: P value<0.05, statistically significant.

Table 5: Correlation of SDQ score with PARMON-CDA and SAS-SV score.

Variable		PARMON-CDA		SAS- SV Score	
		r	P value	r	P value
SDQ score	EP	-0.087	0.027*	0.333	<0.001*
	CPS	-0.117	0.003*	0.38	<0.001*
	H	-0.077	0.049	0.335	<0.001*
	PP	-0.02	0.619	0.246	<0.001*
	PS	0.107	0.006**	-0.102	0.009*

Note: P value<0.05, statistically significant.

DISCUSSION

Socioeconomic status, school type and parental education were statistically significant with emotional and behavioural problems, which is consistent with a study by Das et al that reported an association between children's emotional and behavioural issues and sociodemographic characteristics such as parental education, socioeconomic status and family type.¹¹ Replicating the study findings, Harikrishnan et al also found that emotional and behavioural issues were notably linked to both the school type and socioeconomic status.¹² Interestingly, children of highly educated mothers had more emotional and behavioural problems than those of illiterate mothers.

This may be suggestive of increased awareness leading to higher reporting or high academic expectations causing stress. In contrast, children of less-educated mothers may have a more relaxed upbringing with lower academic pressure. Similarly, a higher proportion of children with emotional and behavioural problems was observed among those whose fathers were graduates. This may be due to reduced parental monitoring resulting from work commitments or the greater financial ability to provide smartphones and other digital media, which may contribute to screen overuse and related behavioural issues. The current study found that 16.90% of school children had behavioural and emotional problems, in contrast Ahmed et al found a prevalence rate of 77.5% which was much higher.¹³ One possible explanation is that for higher prevalence can be that the participants were selected from a tertiary mental healthcare centre and already had a diagnosis of psychiatric disorder whereas in the present study efforts were made to screen children in

the community. On Analysis of the subscales of the SDQ the prevalence of emotional problem was 22.8%, conduct problems was 16.5%, hyperactivity was 10.6% and 33.5% for peer problems was 33.5%. Similarly, Nath et al found that peer problems were the most prevalent, followed by conduct and emotional issues, while hyperactivity symptoms were the least reported.¹⁴ Bryant et al reported higher mean scores for emotional and conduct problems suggesting greater behavioural difficulties.¹⁵ Similarly ortuño-Sierra et al found slightly higher emotional problems while conduct problem scores were comparable to the present study.¹⁶ The lower emotional and conduct problem scores in this study may be attributed to sociocultural factors, parenting styles, parental bonding and different assessment instruments. In the present study, the mean of externalizing problems like hyperactivity and conduct problems higher among girls and it was statistically significant when compared to males, while the peer problems were more among males as compared to girls but both boys and girls experience similar difficulties with peer relationships. Both genders showed similar levels of emotional problem with no statistical difference. In contrast a study by Bhat et al found that conduct problems were commonly found in boys, whereas girls had more emotional problems.¹⁷ Males showed significantly better prosocial behaviour in our study which contradicts many other studies where girls typically scored higher.

Possible reasons can be that boys may be more engaged in structured social activities (e.g., sports, team games) and girls may experience social pressures that affect their willingness to display prosocial behaviours in school settings. The study also reported a higher prevalence of

conduct problems and hyperactivity among boys, while girls who exhibited these issues had higher mean scores, suggesting greater severity among affected girls. Behavioural expression and reporting differences may explain this finding. Boys often show more visible physical restlessness, leading to easier identification, whereas girls with excessive talking or social behaviours are frequently overlooked. Since the SDQ was teacher-reported, assessment bias may also have contributed, with disruptive behaviours in boys being more readily noticed than subtler manifestations in girls. Consequently, girls may be underdiagnosed and those identified may represent more severe cases. The prevalence of behavioural disorders is higher in the urban school going children (26.92%) as compared to their counterparts from the rural areas (14.7%). Urbanization is associated with greater social isolation, parental employment constraints leading to reduced supervision and exposure to higher rates of adverse childhood experiences such as bullying and peer pressure which aligned with the findings by Dube et al.¹⁸

In the present study the prevalence of PSU was higher in boys as compared to girls which aligned with a study by Bansal et al.¹⁹ The prevalence PSU was more among children of urban school than those of rural schools, which was similar to the findings of Hamza et al.²⁰ There is a possibility that due to easier access to smartphones, better internet availability and the social trend, PSU may be more common among children in urban areas. Additionally, limited outdoor spaces and busy parental schedules may also lead to more smartphone use. While in rural areas, children may have fewer digital resources, more outdoor activities, which may reduce their screen time. Total difficulty scores and smartphone use patterns were found to be significantly associated in the present study. These findings align with previous studies, which have also identified excessive smartphone use particularly for social networking and gaming as a predictor of problematic smartphone use and associated mental health concerns.²¹ Nikitha et al similarly observed that increased daily mobile phone usage was significantly associated with excessive mobile phone use.²² However, educational use of smartphones was mostly associated with normal difficulty scores, suggesting that constructive smartphone engagement, such as academic learning or research, has a less detrimental impact on psychological well-being. Study by Deka et al reported a positive correlation between parental control and SDQ scores, indicating that increased parental control might raise the risk of psychopathology in adolescents.²³

However, current study focused on younger children. This difference in findings may be due to developmental variations. Younger children benefit more from structured supervision, while excessive control in adolescents may lead to resistance, stress or emotional difficulties. Significant positive correlation was found between behavioural problems and the SAS-SV score which maybe suggest that as PSU (SAS-SV score) increases,

behavioural problems also tend to increase and was supported by Twenge et al who reported that increased screen time is generally linked to lower psychological well-being.²⁴ However, was no significant correlation between PARMON-CDA and SAS-SV score. The lack of a significant correlation between parental monitoring and both peer problems and smartphone use suggest that there may be confounding factors, such as peer influence, parental bonding and social environment, that may play a key role in smartphone addiction and peer relationships. A study found that parental monitoring negatively predicted problematic mobile phone use, suggesting that structured guidance can help reduce excessive smartphone dependence.²⁵ The finding highlights the complexity of parental influence and suggest that the quality and approach of monitoring, rather than just its presence, may determine its effectiveness. Parental bonding with the children can also be one reason for the mixed results.

The study, however, had its limitations. Because it was a cross-sectional study, a causal relationship could not be established. Self-reporting questionnaires were used in this study; there is a possibility that parents might have provided more acceptable or socially desirable answers. The study does not account for other potential contributors to emotional and behavioral problems, such as peer relationships, parenting styles, academic stress, parental bonding or detailed mental health history.

CONCLUSION

As technology continues to evolve, it is important to prioritize children's psychosocial well-being and develop targeted strategies to mitigate the adverse effects of excessive screen time. The study reveals how increased screen time can lead to emotional dysregulation and externalizing problems. By engaging both parents and teachers in the assessment process, it highlights the need for a collaborative approach to address these challenges. The findings advocate for enhanced parental monitoring, balanced smartphone usage and the implementation of school-based interventions to counteract the negative impacts of excessive smartphone use. By working together, parents, teachers and society can create a healthier digital environment for children. The goal isn't to eliminate screen time but to help children use technology in a way that supports their growth, learning and emotional well-being.

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