

Analysis of Smartphone Addiction and Related Behavioral Problems Among Children and Adolescents: An Institutional Based Study

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ABSTRACT

Background: Smartphone use has increased rapidly among children and adolescents and has become an important part of daily communication, education, entertainment, and social interaction. However, excessive and uncontrolled smartphone use may lead to addiction-like behavior and can be associated with emotional, behavioral, sleep-related, academic, and family-related problems.

Aim: To analyze smartphone addiction and related behavioral problems among children and adolescents.

Material and Methods: The present observational study was conducted among 122 children and adolescents. Participants who had access to or regularly used smartphones and fulfilled the eligibility criteria were included. Sociodemographic details, smartphone usage patterns, age at first exposure, personal smartphone availability, bedtime use, purpose of use, and academic impact were recorded using a predesigned proforma. Smartphone addiction was assessed using a structured and standardized questionnaire suitable for children and adolescents. Behavioral problems were evaluated through clinical interview and a structured behavioral assessment tool with input from both participants and parents or guardians. Data were analyzed using descriptive statistics and appropriate statistical tests, with $p < 0.05$ considered statistically significant.

Results: Out of 122 participants, smartphone addiction was present in 54 (44.26%), while 68 (55.74%) had no smartphone addiction. Mild addiction was observed in 22 (18.03%), moderate addiction in 20 (16.39%), and severe addiction in 12 (9.84%) participants. Smartphone addiction was significantly associated with urban residence ($p = 0.047$), daily smartphone

use for more than 4 hours ($p < 0.001$), personal smartphone availability ($p = 0.001$), bedtime smartphone use ($p < 0.001$), early smartphone exposure at or before 10 years of age ($p = 0.013$), and primary use for gaming or social media ($p = 0.004$). Behavioral problems such as irritability, sleep disturbance, reduced concentration, academic decline, social withdrawal, anxiety symptoms, depressive symptoms, and parent-child conflict were significantly higher among addicted participants.

Conclusion: Smartphone addiction was common among children and adolescents and was significantly associated with excessive use, bedtime use, early exposure, and behavioral problems. Early identification, parental supervision, and healthy smartphone-use practices are important to reduce adverse behavioral outcomes.

Keywords: Smartphone Addiction; Children; Adolescents; Behavioral Problems; Sleep Disturbance.

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Article History:

Received: 09-10-2017, Revised: 02-11-2017, Accepted: 22-11-2017

Access this article online

Website: www.ijmrp.com	Quick Response code 
DOI: 10.21276/ijmrp.2017.3.6.128	

INTRODUCTION

Smartphone use has become an important part of daily life among children and adolescents. Modern smartphones are no longer limited to calling and messaging; they provide continuous access to the internet, games, videos, social networking platforms, online learning, and entertainment applications. Because of portability, privacy, and constant connectivity, smartphones are used more frequently and for longer periods than many earlier digital devices. In children and adolescents, this pattern of use requires special

attention because this age group is still developing emotional regulation, impulse control, sleep habits, social skills, and academic discipline. Excessive or uncontrolled smartphone use during this developmental period may therefore interfere with routine activities and may contribute to behavioral and psychosocial problems.¹ Smartphone addiction is generally described as a pattern of excessive and poorly controlled smartphone use that causes functional disturbance in daily life. It

shares several features with other behavioral addictions, including preoccupation, loss of control, tolerance, withdrawal-like symptoms, repeated unsuccessful attempts to reduce use, and continued use despite negative consequences. Unlike substance-related disorders, smartphone addiction does not involve intake of a chemical substance; however, the behavioral pattern may still become compulsive and disruptive. Children and adolescents may show irritability when restricted from phone use, difficulty concentrating on studies, excessive checking behavior, preference for online interaction over face-to-face communication, and conflict with parents regarding screen time.²

The concept of smartphone addiction has gained attention because smartphones combine several potentially reinforcing activities in one device. Social media provides immediate feedback through messages, likes, and notifications, while gaming applications provide reward-based stimulation and competition. Video streaming platforms offer continuous entertainment, and online chatting gives a sense of social connection. These features may encourage repeated use and make self-regulation difficult for children and adolescents. In this age group, curiosity, peer influence, fear of missing out, and the desire for social approval may further increase smartphone engagement. Therefore, problematic smartphone use should be understood not only as excessive screen time but also as a behavioral pattern influenced by emotional, social, and environmental factors.³

Adolescence is a period of rapid biological, psychological, and social change. During this phase, the individual gradually moves from parental control toward independence, while peer relationships and identity formation become increasingly important. Smartphones may support communication, learning, and access to information, but excessive dependence may disturb daily routine and reduce participation in offline activities. Children and adolescents who spend prolonged time on smartphones may neglect outdoor play, physical activity, hobbies, family interaction, and academic responsibilities. Over time, this imbalance may contribute to social withdrawal, poor academic performance, emotional dysregulation, and increased parent-child conflict.⁴ Sleep is one of the major areas affected by excessive smartphone use. Children and adolescents often use smartphones during evening hours or at bedtime for gaming, chatting, watching videos, or browsing social media. Bedtime use may delay sleep onset, reduce sleep duration, and disturb sleep quality. Bright screen exposure, emotional arousal from online content, and repeated notifications may interfere with the natural sleep-wake cycle. Inadequate sleep in children and adolescents is associated with daytime sleepiness, irritability, poor concentration, low academic performance, and behavioral difficulties. Therefore, assessment of smartphone use during bedtime is an important parameter in studies related to smartphone addiction.⁵ Smartphone addiction may also be associated with emotional and behavioral problems. Excessive use can become a coping mechanism for boredom, loneliness, anxiety, low mood, academic stress, or family conflict. At the same time, uncontrolled use may worsen these problems by reducing sleep, physical activity, academic engagement, and real-life social interaction. Behavioral manifestations may include irritability, anger outbursts, impulsivity, reduced attention span, defiant behavior when phone use is restricted, and decline in school performance. Emotional symptoms such as anxiety, sadness, loneliness, and low self-esteem may also coexist with

problematic smartphone use. Because these problems may influence each other, clinical assessment should include both smartphone usage patterns and behavioral symptoms.⁶

MATERIALS AND METHODS

The present study was designed as an observational study to analyze smartphone addiction and related behavioral problems among children and adolescents. Since the study was observational in nature, no intervention was performed, and the participants were evaluated based on their existing smartphone usage patterns, behavioral profile, and relevant sociodemographic and clinical characteristics. The hospital-based setting allowed evaluation of participants from varied socioeconomic and educational backgrounds, providing an opportunity to observe smartphone-related behavioral concerns in a clinical population. The study included children and adolescents who fulfilled the eligibility criteria and were available for assessment during the study period. A total of 122 participants were enrolled in the study. Participants were selected from those attending the hospital along with their parents or guardians. Both male and female participants were included to ensure adequate representation of smartphone usage patterns and associated behavioral problems across genders.

Inclusion Criteria: Children and adolescents within the eligible age group who had access to or regularly used a smartphone were included in the study. Participants whose parents or guardians were willing to provide informed consent and who themselves were willing to participate were considered eligible. Only those participants who were able to understand and respond to the assessment tools were included.

Exclusion Criteria: Children and adolescents with severe intellectual disability, major neurological illness, severe psychiatric illness requiring urgent intervention, or any medical condition that interfered with reliable assessment were excluded from the study. Participants who were unwilling to participate or whose parents or guardians did not provide consent were also excluded.

Methodology: The main parameters assessed in the study included age, sex, residence, socioeconomic status, type of family, parental education, parental occupation, academic performance, daily duration of smartphone use, purpose of smartphone use, age at first smartphone exposure, availability of personal smartphone, use of smartphone during bedtime, use of smartphone for gaming, social media, video streaming, online classes, and communication. Behavioral parameters included irritability, anger outbursts, sleep disturbance, reduced concentration, decline in academic performance, social withdrawal, anxiety symptoms, depressive symptoms, hyperactivity, impulsivity, conduct-related problems, and conflicts with parents or peers related to smartphone use.

Assessment of Smartphone Addiction: Smartphone addiction was assessed using a structured and standardized questionnaire suitable for children and adolescents. The questionnaire evaluated features such as excessive use, difficulty controlling smartphone use, preoccupation with smartphone activities, withdrawal-like symptoms when unable to use the phone, neglect of studies or daily activities, continued use despite negative consequences, and interference with sleep, family interaction, and social functioning. Based on the scoring system, participants were categorized according to the severity of smartphone addiction.

Assessment of Behavioral Problems: Behavioral problems were assessed through clinical interview and a structured behavioral assessment tool completed with input from both the participant and parent or guardian. The assessment focused on emotional symptoms, conduct problems, hyperactivity, peer relationship difficulties, sleep-related problems, attention difficulties, irritability, aggression, anxiety, low mood, and functional impairment. Parent-reported behavioral changes associated with smartphone use were also recorded.

Data Collection Procedure: After obtaining informed consent from parents or guardians and assent from the participants, relevant sociodemographic details were collected using a predesigned proforma. Information regarding smartphone access, pattern of use, duration of use, content preference, academic impact, sleep habits, family interaction, and behavioral changes was obtained through interview. The smartphone addiction scale and behavioral assessment questionnaire were then administered in a quiet and comfortable setting. Parents or guardians were interviewed separately wherever required to obtain reliable information regarding behavioral concerns.

Statistical Analysis

The collected data were entered into a spreadsheet and analyzed using appropriate statistical methods. Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to summarize sociodemographic variables, smartphone usage patterns, and behavioral parameters. Associations between smartphone addiction and behavioral problems were assessed using suitable statistical tests such as the chi-square test or Fisher's exact test for categorical variables and independent t-test or Mann-Whitney U test for continuous variables, depending on the distribution of data. A p-value of less than 0.05 was considered statistically significant.

RESULTS

A total of 122 children and adolescents were included in the present observational study. Among them, 54 participants (44.26%) were found to have smartphone addiction, while 68 participants (55.74%) did not have smartphone addiction. This shows that nearly two-fifths of the study population had some degree of problematic smartphone use.

Table 1 shows the distribution of participants according to the severity of smartphone addiction. Out of 122 participants, 68 (55.74%) had no smartphone addiction. Among those with smartphone addiction, 22 participants (18.03%) had mild addiction, 20 participants (16.39%) had moderate addiction, and 12 participants (9.84%) had severe addiction.

Table 2 shows the association between sociodemographic variables and smartphone addiction. Smartphone addiction was more commonly seen in the 15–18 years age group, where 18 out

of 54 addicted participants (33.33%) belonged to this age group, compared with 13 out of 68 non-addicted participants (19.12%). However, the association between age group and smartphone addiction was not statistically significant ($p = 0.106$). With respect to gender, smartphone addiction was observed more commonly among males. Among participants with smartphone addiction, 34 (62.96%) were males and 20 (37.04%) were females. However, this difference was not statistically significant ($p = 0.354$), suggesting that gender was not significantly associated with smartphone addiction in the present study. Residence showed a statistically significant association with smartphone addiction. Among participants with smartphone addiction, 36 (66.67%) belonged to urban areas, while 18 (33.33%) belonged to rural areas. In contrast, among participants without smartphone addiction, urban and rural participants were 32 (47.06%) and 36 (52.94%), respectively. This association was statistically significant ($p = 0.047$), indicating that smartphone addiction was significantly higher among urban participants. Regarding type of family, smartphone addiction was more frequent among participants from nuclear families. Among addicted participants, 39 (72.22%) belonged to nuclear families and 15 (27.78%) belonged to joint families. However, the association was not statistically significant ($p = 0.178$).

Table 3 describes the association between smartphone usage patterns and smartphone addiction. Daily duration of smartphone use showed a highly significant association with smartphone addiction ($p < 0.001$). Among participants with smartphone addiction, 27 (50.00%) used smartphones for more than 4 hours per day, compared with only 13 (19.12%) among those without smartphone addiction. Personal smartphone availability was also significantly associated with smartphone addiction ($p = 0.001$). Among addicted participants, 38 (70.37%) had their own personal smartphone, whereas only 16 (29.63%) did not have a personal smartphone. Smartphone use during bedtime showed a highly significant association with smartphone addiction ($p < 0.001$). Among addicted participants, 43 (79.63%) used smartphones during bedtime, compared with 29 (42.65%) among non-addicted participants. Age at first smartphone exposure was significantly associated with smartphone addiction ($p = 0.013$). Among participants with smartphone addiction, 33 (61.11%) had first exposure to smartphones at or before 10 years of age, compared with 25 (36.76%) among non-addicted participants. The primary purpose of smartphone use was also significantly associated with smartphone addiction ($p = 0.004$). Among addicted participants, gaming was the most common purpose, reported by 23 participants (42.59%), followed by social media/chatting in 16 participants (29.63%). In contrast, online classes or study-related use was more common among non-addicted participants, seen in 23 participants (33.82%).

Table 1: Distribution of participants according to severity of smartphone addiction

Smartphone addiction status	Frequency	Percentage
No smartphone addiction	68	55.74%
Mild smartphone addiction	22	18.03%
Moderate smartphone addiction	20	16.39%
Severe smartphone addiction	12	9.84%
Total	122	100.00%

Table 2: Association of sociodemographic variables with smartphone addiction

Variable	Total n (%)	Smartphone addiction present n = 54	Smartphone addiction absent n = 68	p value
Age group				0.106
6–10 years	37 (30.33%)	12 (22.22%)	25 (36.76%)	
11–14 years	54 (44.26%)	24 (44.44%)	30 (44.12%)	
15–18 years	31 (25.41%)	18 (33.33%)	13 (19.12%)	
Gender				0.354
Male	70 (57.38%)	34 (62.96%)	36 (52.94%)	
Female	52 (42.62%)	20 (37.04%)	32 (47.06%)	
Residence				0.047
Urban	68 (55.74%)	36 (66.67%)	32 (47.06%)	
Rural	54 (44.26%)	18 (33.33%)	36 (52.94%)	
Type of family				0.178
Nuclear family	79 (64.75%)	39 (72.22%)	40 (58.82%)	
Joint family	43 (35.25%)	15 (27.78%)	28 (41.18%)	

Table 3: Association of smartphone usage pattern with smartphone addiction

Smartphone usage parameter	Total n (%)	Smartphone addiction present n = 54	Smartphone addiction absent n = 68	p value
Daily duration of smartphone use				<0.001
Less than 2 hours/day	39 (31.97%)	8 (14.81%)	31 (45.59%)	
2–4 hours/day	43 (35.25%)	19 (35.19%)	24 (35.29%)	
More than 4 hours/day	40 (32.79%)	27 (50.00%)	13 (19.12%)	
Personal smartphone availability				0.001
Yes	64 (52.46%)	38 (70.37%)	26 (38.24%)	
No	58 (47.54%)	16 (29.63%)	42 (61.76%)	
Smartphone use during bedtime				<0.001
Yes	72 (59.02%)	43 (79.63%)	29 (42.65%)	
No	50 (40.98%)	11 (20.37%)	39 (57.35%)	
Age at first smartphone exposure				0.013
≤10 years	58 (47.54%)	33 (61.11%)	25 (36.76%)	
>10 years	64 (52.46%)	21 (38.89%)	43 (63.24%)	
Primary purpose of smartphone use				0.004
Gaming	37 (30.33%)	23 (42.59%)	14 (20.59%)	
Social media/chatting	32 (26.23%)	16 (29.63%)	16 (23.53%)	
Video streaming	25 (20.49%)	10 (18.52%)	15 (22.06%)	
Online classes/study	28 (22.95%)	5 (9.26%)	23 (33.82%)	

Table 4: Association of behavioral problems with smartphone addiction

Behavioral problem	Total n (%)	Smartphone addiction present n = 54	Smartphone addiction absent n = 68	p value
Irritability	55 (45.08%)	37 (68.52%)	18 (26.47%)	<0.001
Sleep disturbance	56 (45.90%)	39 (72.22%)	17 (25.00%)	<0.001
Reduced concentration	51 (41.80%)	35 (64.81%)	16 (23.53%)	<0.001
Decline in academic performance	45 (36.89%)	30 (55.56%)	15 (22.06%)	<0.001
Social withdrawal	34 (27.87%)	24 (44.44%)	10 (14.71%)	0.001
Anxiety symptoms	32 (26.23%)	21 (38.89%)	11 (16.18%)	0.009
Depressive symptoms	24 (19.67%)	16 (29.63%)	8 (11.76%)	0.025
Hyperactivity/impulsivity	30 (24.59%)	18 (33.33%)	12 (17.65%)	0.074
Parent–child conflict related to smartphone use	60 (49.18%)	40 (74.07%)	20 (29.41%)	<0.001

Table 5: Association between severity of smartphone addiction and overall behavioral problem category

Smartphone addiction severity	Normal behavior n (%)	Borderline behavioral problems n (%)	Abnormal behavioral problems n (%)	Total	p value
No smartphone addiction	52 (76.47%)	12 (17.65%)	4 (5.88%)	68 (100.00%)	<0.001
Mild smartphone addiction	9 (40.91%)	8 (36.36%)	5 (22.73%)	22 (100.00%)	
Moderate smartphone addiction	5 (25.00%)	8 (40.00%)	7 (35.00%)	20 (100.00%)	
Severe smartphone addiction	3 (25.00%)	5 (41.67%)	4 (33.33%)	12 (100.00%)	
Total	69 (56.56%)	33 (27.05%)	20 (16.39%)	122 (100.00%)	

Table 4 shows the association between behavioral problems and smartphone addiction. Irritability was significantly higher among participants with smartphone addiction. It was present in 37 addicted participants (68.52%), compared with 18 non-addicted participants (26.47%), and this association was statistically significant ($p < 0.001$). Sleep disturbance was also significantly associated with smartphone addiction. Among addicted participants, 39 (72.22%) had sleep disturbance, while only 17 (25.00%) of non-addicted participants reported sleep disturbance. This association was statistically significant ($p < 0.001$), indicating that smartphone addiction may be strongly linked with poor sleep patterns. Reduced concentration was present in 35 addicted participants (64.81%), compared with 16 non-addicted participants (23.53%). This difference was statistically significant ($p < 0.001$), suggesting that smartphone addiction may negatively affect attention and concentration. Decline in academic performance was observed in 30 addicted participants (55.56%), compared with 15 non-addicted participants (22.06%). The association was statistically significant ($p < 0.001$), showing that smartphone addiction was significantly related to academic difficulties. Social withdrawal was seen in 24 addicted participants (44.44%), compared with 10 non-addicted participants (14.71%). This association was statistically significant ($p = 0.001$), suggesting that excessive smartphone use may be associated with reduced social interaction. Anxiety symptoms were present in 21 addicted participants (38.89%), compared with 11 non-addicted participants (16.18%). This association was statistically significant ($p = 0.009$). Depressive symptoms were also more common among addicted participants, seen in 16 participants (29.63%), compared with 8 participants (11.76%) among non-addicted participants, with a statistically significant association ($p = 0.025$). Hyperactivity and impulsivity were reported in 18 addicted participants (33.33%) and 12 non-addicted participants (17.65%). Although these symptoms were more frequent in the addicted group, the association was not statistically significant ($p = 0.074$). Parent-child conflict related to smartphone use was one of the most common behavioral problems. It was present in 40 addicted participants (74.07%), compared with 20 non-addicted participants (29.41%).

Table 5 shows the association between severity of smartphone addiction and overall behavioral problem category. Among participants without smartphone addiction, 52 (76.47%) had normal behavior, 12 (17.65%) had borderline behavioral problems, and only 4 (5.88%) had abnormal behavioral problems. Among participants with mild smartphone addiction, normal behavior was seen in 9 (40.91%), borderline behavioral problems in 8 (36.36%), and abnormal behavioral problems in 5 (22.73%). In the moderate addiction group, only 5 participants (25.00%) had normal

behavior, while 8 (40.00%) had borderline behavioral problems and 7 (35.00%) had abnormal behavioral problems. Among participants with severe smartphone addiction, 3 (25.00%) had normal behavior, 5 (41.67%) had borderline behavioral problems, and 4 (33.33%) had abnormal behavioral problems. The association between severity of smartphone addiction and behavioral problem category was statistically significant ($p < 0.001$).

DISCUSSION

A total of 122 children and adolescents were included in the present study, and smartphone addiction was observed in 54 participants (44.26%), while 68 participants (55.74%) had no smartphone addiction. This prevalence was higher than that reported by Kwon et al. (2013), who studied 540 Korean adolescents with a mean age of 14.5 years and found addiction-related symptoms in 15 boys (16.60%) and 16 girls (26.60%) during clinical cut-off validation of the Smartphone Addiction Scale-Short Version. The higher proportion in the present study may be because the participants were recruited from a tertiary care hospital, where behavioral and psychosocial concerns may be more commonly represented than in a school-based sample.⁷ In the present study, 68 participants (55.74%) had no smartphone addiction, while 22 (18.03%) had mild, 20 (16.39%) had moderate, and 12 (9.84%) had severe smartphone addiction. Thus, mild and moderate addiction together formed the major proportion of affected cases. Sánchez-Martínez et al. (2009), in a cross-sectional study of 1,328 adolescents aged 13–20 years in Madrid, reported that 41.70% were intensive mobile phone users and the estimated prevalence of cell phone dependence was 20.00%. Compared with their study, the present study showed a higher addiction prevalence of 44.26%, suggesting that smartphone-related dependence may be more frequent in the present hospital-based sample than earlier reports based on general adolescent populations.⁸ Smartphone addiction was more common in the 15–18 years age group in the present study, where 18 addicted participants (33.33%) belonged to this age group, compared with 13 non-addicted participants (19.12%), although the association was not statistically significant ($p = 0.106$). Chóliz et al. (2012), in a study of 2,833 adolescents aged 12–18 years, developed the Test of Mobile Phone Dependence and described dependence-related features such as abstinence, lack of control, tolerance, and interference with daily activities among adolescents. The present study similarly indicates that older adolescents may show greater vulnerability to smartphone addiction, probably because of greater independence, peer communication, gaming, and social media exposure during this age period.⁹

In the present study, smartphone addiction was more common among males, with 34 addicted participants (62.96%) being male and 20 (37.04%) female; however, this association was not statistically significant ($p = 0.354$). Bianchi et al. (2005) found that problematic mobile phone use was predicted by younger age, extraversion, and low self-esteem, while gender was not the only determining factor. This is comparable with the present finding, where male predominance was observed numerically, but the difference was not statistically significant, suggesting that psychological and behavioral factors may be more important than gender alone in determining problematic smartphone use.¹⁰ Residence showed a statistically significant association with smartphone addiction in the present study, as 36 addicted participants (66.67%) were from urban areas and 18 (33.33%) were from rural areas ($p = 0.047$). In contrast, Yang et al. (2010), in a large study of 11,111 adolescent students in Southern Taiwan, included both urban and rural districts and found that problematic cellular phone use was associated with aggression, insomnia, suicidal tendencies, smoking, and low self-esteem across sex and age groups. The present study extends this observation by showing that urban residence may further increase the risk, possibly due to easier internet access, greater smartphone availability, and higher exposure to social media and gaming platforms.¹¹

Smartphone usage patterns were strongly associated with addiction in the present study. Among addicted participants, 27 (50.00%) used smartphones for more than 4 hours per day, 38 (70.37%) had a personal smartphone, 43 (79.63%) used smartphones during bedtime, and 33 (61.11%) had first smartphone exposure at or before 10 years of age. Jenaro et al. (2007), in a study of 337 college students, reported that problematic internet and cell phone use were associated with psychological, behavioral, and health-related correlates, including anxiety and insomnia. The present study shows similar findings in a younger clinical population, where greater access, longer use, and bedtime use were significantly associated with addiction.¹² Sleep disturbance was one of the most important behavioral problems in the present study and was reported in 39 addicted participants (72.22%) compared with 17 non-addicted participants (25.00%), with a statistically significant association ($p < 0.001$). Munezawa et al. (2011), in a nationwide cross-sectional survey of 95,680 Japanese adolescents, reported that 84.40% used mobile phones daily, 8.30% used mobile phones for calling after lights out every day, and 17.60% used them for text messaging after lights out every day; both forms of use after lights out were associated with sleep disturbances. The present findings are consistent with this study and suggest that bedtime smartphone use may contribute to poor sleep quality, delayed sleep onset, and daytime dysfunction in children and adolescents.¹³

In the present study, emotional and academic problems were significantly more frequent among participants with smartphone addiction. Reduced concentration was seen in 35 addicted participants (64.81%) compared with 16 non-addicted participants (23.53%), academic decline in 30 (55.56%) compared with 15 (22.06%), anxiety symptoms in 21 (38.89%) compared with 11 (16.18%), and depressive symptoms in 16 (29.63%) compared with 8 (11.76%). Lepp et al. (2014), in a study of college students, analyzed 496 participants for cell phone use and 490 for texting, and found that cell phone use and texting were negatively related

to academic performance and positively related to anxiety. The present study supports these observations in children and adolescents by showing a significant relationship between smartphone addiction, poor concentration, academic decline, anxiety, and depressive symptoms.¹⁴

The present study also found that behavioral problems increased with the severity of smartphone addiction. Among participants without smartphone addiction, abnormal behavioral problems were seen in only 4 participants (5.88%), whereas abnormal behavioral problems were seen in 5 participants (22.73%) with mild addiction, 7 (35.00%) with moderate addiction, and 4 (33.33%) with severe addiction, with a statistically significant association ($p < 0.001$).

Ha et al. (2008), in a study of 595 Korean adolescents, reported that potentially excessive cellular phone users had difficulty controlling use and showed more depressive symptoms, higher interpersonal anxiety, and lower self-esteem. The present findings are comparable and indicate that increasing smartphone addiction severity is associated with worsening behavioral and emotional problems in children and adolescents.¹⁵

CONCLUSION

The present study showed that smartphone addiction was common among children and adolescents, affecting 44.26% of participants. Smartphone addiction was significantly associated with longer duration of use, bedtime use, personal smartphone availability, early exposure, and entertainment-based use such as gaming and social media. Behavioral problems including irritability, sleep disturbance, reduced concentration, academic decline, anxiety, depressive symptoms, and parent-child conflict were more frequent among addicted participants. Early identification, parental supervision, and healthy smartphone-use practices are important to reduce behavioral problems in children and adolescents.

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Source of Support: Nil.

Conflict of Interest: None Declared.

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Cite this article as: Manoj Kumar Mahato, Bal Kishan. Analysis of Smartphone Addiction and Related Behavioral Problems Among Children and Adolescents: An Institutional Based Study. *Int J Med Res Prof.* 2017 Nov; 3(6): 558-64. DOI:10.21276/ijmrp.2017.3.6.128