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Determinants of smartphone addiction and psychological morbidity among school-going adolescents in Karaikal, Puducherry, India

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Abstract

Objectives

To identify the determinants of smartphone addiction and evaluate its association with psychological morbidity among school-going adolescents in Karaikal, Puducherry, India.

Methodology: A facility-based, cross-sectional study was conducted between September 2025 and February 2026, encompassing 645 students (grades 6–10) selected via multistage sampling. Data were collected using self-administered questionnaires, including the Smartphone Addiction Scale-Short Version (SAS-SV) and the General Health Questionnaire-12 (GHQ-12). Determinants were analyzed using univariate and multivariate logistic regression in SPSS.

Results

The prevalence of SMA and psychological morbidity were 28.5% and 26.0%, respectively. Multivariable analysis demonstrated a robust, independent association between SMA and psychological morbidity, with addicted adolescents facing nearly twice the odds of distress (AOR = 1.86, 95% CI: 1.26–2.75). Studying in a private school conferred a protective effect against psychological morbidity (AOR = 0.62). Key predictors of SMA included utilizing a smartphone for ≥ 1 hour before sleep (AOR = 2.36) and concurrent psychological morbidity (AOR = 1.83). Conversely, engaging in regular outdoor activities (AOR = 0.64) and condensed weekend phone usage (≥ 2 hours) (AOR = 0.45) served as significant protective factors against addiction.

Conclusion

Smartphone addiction is a prevalent determinant of psychological morbidity among school-going adolescents in Karaikal. Late-night screen exposure and limited physical activity exacerbate this vulnerability. These findings underscore the urgent need for integrating digital hygiene education, promoting outdoor recreation, and implementing targeted psychological counseling within school health programs, particularly in government institutions.

Introduction

The unprecedented penetration of digital technology has fundamentally altered the lifestyle of adolescents globally. India has witnessed a massive surge in smartphone penetration, emerging as the second-largest global market with over 700 million users.[1] Consequently, school-going adolescents have become early and heavy adopters of smartphones.[2,3] While smartphones offer vast educational and social benefits, excessive and uncontrolled usage has emerged as a growing public health concern.[4,5] The phenomenon of smartphone addiction, characterized by compulsive use, withdrawal symptoms, and functional impairment, is increasingly being recognized among school-going adolescents.[6,7] Several studies have reported associations between excessive smartphone use and adverse psychological

outcomes, including anxiety, depression, sleep disturbances, and reduced academic performance.[4,8] Adolescence is a critical developmental period marked by psychological, emotional, and social changes. Increased exposure to digital media during this phase may predispose individuals to behavioural addictions and mental health issues.[3,8–10] In India, the widespread availability of affordable smartphones and internet services has led to increased usage among younger populations.[2,11]

Among school-going adolescents, the constant urge to remain online, driven largely by social media validation and the "fear of missing out" (FOMO) significantly disrupts daily routines. A growing body of epidemiological evidence strongly links smartphone addiction (SMA) to a spectrum of psychological morbidities. Recent studies indicate that adolescents engaging in excessive smartphone use exhibit elevated rates of depression, anxiety, chronic stress, and severe sleep disturbances.[12] The late-night exposure to screens disrupts circadian rhythms, displaces physical activity, and compounds emotional instability, leading to lower self-esteem and heightened psychological distress.[13]

In the Indian context, the intense academic pressures placed on school-going adolescents often exacerbate their psychological vulnerability, leading many to utilize digital escapism as a maladaptive coping mechanism.[14] Recent regional studies in South India, including the Union Territory of Puducherry, highlight an alarming prevalence of excessive smartphone usage. Research conducted in Puducherry indicates that smartphone addiction among student populations can exceed 40%, correlating significantly with poor academic outcomes and diminished psychosocial well-being.[15] Furthermore, the rapid transition of rural and semi-urban districts like Karaikal into highly digitized spaces has shifted adolescent behavioural paradigms, exposing them to digital overuse in the absence of robust digital literacy or adequate parental mediation.[16]

Despite the increasing recognition of smartphone addiction as a formidable public health challenge, there remains a critical paucity of localized, community-specific data focusing on school-going adolescents in districts like Karaikal. Much of the existing literature disproportionately investigates metropolitan populations or university undergraduates. Understanding the specific sociodemographic determinants of SMA and its direct association with psychological morbidity in this specific, under-researched demographic is vital. Generating this localized evidence is a prerequisite for designing targeted, culturally appropriate public health interventions and school-based counselling programs. Therefore, this study aims to identify the determinants of smartphone addiction and evaluate its association with psychological morbidity among school-going adolescents in Karaikal, Puducherry, India.

Methodology

A facility-based, cross-sectional study was carried out among school-going adolescents in Karaikal for a period of six months from September 2025 to February 2026. A multistage sampling technique was employed. Considering prevalence of smartphone addiction among school-going adolescents to be 23% from existing literature,[16] absolute precision of 5%, confidence interval of 95%, design effect of 2% and

non-response rate of 10%, the minimum required sample for the study was found to be 629 as calculated using the formula $n = 4pq/d^2$.[17] A multistage sampling technique was employed wherein out of the eight cluster of schools in Karaikal, one cluster of school was selected through simple random sampling. In the next stage, three schools were included through simple random sampling technique from the selected one cluster. In each chosen school, all students from class sixth to tenth were asked to provide written assent and parental consent form to participate in the survey. Finally, a total of 645 students completed the written assent and provided the parental consent to take part in the study. A face validated self-administered, semi-structured, questionnaire was employed for data collection. The study tool included sociodemographic variables, pattern of smartphone measured by smartphone addiction scale – short version, sleep pattern, physical activity level, psychological morbidity measured by General Health Questionnaire – 12. The collected data was entered in MS Excel 2020 version and analysed using standard software Statistical Package for the Social Sciences (SPSS) (v24.0; IBM Corp, Armonk, New York) software. The data was presented in the form of numbers and percentages for qualitative variables and mean & standard deviation or median for quantitative variables. Univariate and multivariate logistic regression was performed to identify determinants significantly associated with smartphone addiction and psychiatric morbidity, adjusting for confounders. Values of $p < 0.05$ was considered to be statistically significant. The institute's scientific and ethics committee approval were obtained before the commencement of the study (Refn. VMMC /2026/MAR/06).

Results

The present study aimed to identify the determinants of smartphone addiction (SMA) and evaluate its association with psychological morbidity among school-going adolescents in the transitional district of Karaikal, Puducherry. Among 645 students enrolled in this study, mean age of the study participants was 12.6 ± 1.2. Around 62% were females. 59% of students are from urban & semi-urban areas & 62.8% belongs to private schools. Majority of the students from nuclear family (64.3%). The socio-demographic details of the study population have been provided in Table 1.

Table 1
Socio-demographic details of the study participants (n = 645)

Socio-demographic characteristics		Frequency	Percentage
Gender	Female	399	61.9%
	Male	246	38.1%
School year	6th standard	113	17.5%
	7th standard	133	20.6%
	8th standard	171	26.5%
	9th standard	139	21.6%
	10th standard	89	13.8%
Residence	Rural	265	41.1%
	Urban	236	36.6%
	Semi-urban	144	22.3%
Type of school	Government	240	37.2%
	Private	405	62.8%
Type of family	Nuclear	415	64.3%
	Three Generation	71	11.0%
	Joint Family	159	24.7%
Child living with parents	Both Parents	577	89.5%

Among the 645 adolescents surveyed, 28.8% owned a personal smartphone, while around 71.2% reported not owning one. However, a large proportion of respondents (83.6%) had access to a smartphone through family or peers, whereas 16.4% lacked any access. Regarding the timing of smartphone use, nearly half of the participants reported higher usage during the evening (45.6%) and night (45.7%), with only 9.9% indicating increased use in the morning. Median duration of mobile phone usage was 3 years and median usage time every day was 1 hour. Bedtime smartphone screening was common, with 51.6% of adolescents acknowledging the habit, while 48.4% denied using smartphones at bedtime. The median bedtime screening with smartphones was found to be 50 minutes.

The most commonly reported reasons for smartphone use among the study participants were playing games (32.2%), boredom (30.7%), and learning purposes (26.2%). Communication accounted for 16.7%, while pleasure (9.3%), stress relief (8.4%), and habit-driven use (6.0%) were less frequently cited. Adaptation to others was the least reported reason (1.7%). With respect to frequently used applications, gaming apps (28.5%) were used most often, followed by videos (19.8%), education-related applications (18.4%), WhatsApp (16.4%), music (14.9%), and photo-related applications (11.9%). Regarding the

duration of use, maximum used application, call/social networking functions (30.7%) constituted the highest proportion, followed by gaming (28.5%), YouTube (21.9%), and education apps (18.4%). WhatsApp, photos, videos, and music were used maximally by 16.4%, 11.9%, 19.8%, and 14.9% of participants, respectively. Regarding internet access, 80.3% relied primarily on mobile data, while a very small proportion (0.5%) used a combination of Wi-Fi and mobile data. Average amount spent for mobile data was Rs. 302/- per day & average use of data was 1.5GB per day.

Participants also reported several perceived adverse effects of smartphone use. The most common were superficial approach to learning (13.0%), distraction (13.0%), and eye problems (11.0%). Other reported issues included sleep disturbances (6.5%), loss of interest (6.7%), mood modification (4.8%), daytime sleepiness (4.2%), isolation (3.4%), and musculoskeletal disorders (3.4%). Only a small proportion (1.2%) reported no adverse effects. In terms of sleep duration, the majority of students (95.7%) reported sleeping ≥ 6 hours per night, whereas 4.3% slept less than 6 hours. Only 23% of students were having some regular outdoor activity.

The Psychological morbidity of the adolescents in the present study was found to be 26.0%, while the remaining 74.0% showed no indication of psychological morbidity. Smartphone addiction among the respondents was documented to be 28.5% whereas 71.5% did not meet the criteria for smartphone addiction. These findings indicate that approximately one-fourth of the adolescents screened positive for psychological morbidity, and a similar proportion exhibited smartphone addiction, highlighting a notable overlap of mental health concerns and problematic smartphone use within this population.

Table 2 shows the results of the univariate logistic regression analysis examining factors associated with psychological morbidity among school-going adolescents. Adolescents aged ≥ 12 years had significantly higher odds of psychological morbidity (OR: 2.14, 95% CI: 1.28–3.58, p = 0.004), and those studying in ≥8th standard also showed increased risk (OR: 1.71, 95% CI: 1.17–2.50, p = 0.006). Compared to government school students, those in private schools had significantly lower odds (OR: 0.61, 95% CI: 0.43–0.88, p = 0.007). No significant associations were observed for residence, type of family, or living arrangements, although adolescents living without parents showed a higher, but statistically non-significant, risk (OR: 4.42, p = 0.106). Smartphone-related factors such as ownership, access, years of use, duration of use, bedtime use, sleep duration, weekend use, and outdoor activity did not show significant associations. However, spending ≥ 1 hour before sleep was significantly associated with higher psychological morbidity (OR: 1.61, 95% CI: 1.13–2.30, p = 0.009). Notably, smartphone addiction demonstrated a significant association, with adolescents showing addiction having twice the odds of psychological morbidity (OR: 2.04, 95% CI: 1.41–2.96, p < 0.0001).

Table 2
Univariate logistic regression analysis of factors associated with psychological morbidity among school-going adolescents

Factors Associated with psychological morbidity among school-going adolescents		OR	95% C.I.		p-value
			Lower	Upper	
Age	≤ 12 year	Ref			
	≥ 12 year	2.140	1.280	3.578	**0.004**
School year	< 8 standard	Ref			
	≥ 8 standard	1.709	1.169	2.497	**0.006**
Residence	Rural	(Ref)			
	Urban	0.825	0.554	1.230	0.346
	Semi-urban	0.813	0.511	1.295	0.384
Type of school	Government	(Ref)			
	Private	0.613	0.429	0.877	**0.007**
Type of family	Nuclear	(Ref)			
	Three Generation	1.035	0.586	1.829	0.905
	Joint Family	0.984	0.648	1.495	0.941
Child living with parents	Both Parents	(Ref)			
	Single Parent	1.178	0.661	2.100	0.578
	No Parent	4.418	0.731	26.700	0.106
Own smartphone	No	(Ref)			
	Yes	1.104	0.752	1.622	0.613
access to phone	No	(Ref)			
	Yes	1.328	0.806	2.189	0.266
Years Using smart phone	< 2 years	(Ref)			
	≥ 2 years	0.812	0.527	1.250	0.345
Duration using smart phone	< 1 hour	(Ref)			
	≥ 1 hour	1.287	0.860	1.926	0.221
Spending time before sleep	No	(Ref)			
	Yes	1.350	0.947	1.924	0.097

Hrs of use before sleep	< 1 hour	(Ref)			
	≥ 1 hour	1.609	1.126	2.299	**0.009**
Sleep duration	< 6 hour	(Ref)			
	≥ 6 hour	1.060	0.488	2.303	0.883
Weekend use	< 2 hrs	(Ref)			
	≥ 2 hrs	1.298	0.884	1.906	0.183
Outdoor act	No	(Ref)			
	Yes	1.062	0.701	1.610	0.775
Smart phone addiction	No	(Ref)			
	Yes	2.041	1.406	2.963	**< 0.0001**

The Table 3 presents the results of the multivariable logistic regression analysis assessing independent predictors of psychological morbidity among school students. After adjusting for relevant covariates, type of school and smartphone addiction remained significant determinants. Students studying in private schools had significantly lower odds of psychological morbidity compared with those studying in government schools (AOR = 0.62, 95% CI: 0.43–0.90; p = 0.011). Smartphone addiction persisted as a strong independent predictor. Students classified as having smartphone addiction exhibited nearly 1.9 times higher odds of psychological morbidity compared to their non-addicted counterparts (AOR = 1.86, 95% CI: 1.26–2.75; p = 0.002). Overall, the multivariable analysis highlights that **s**martphone addiction is a robust independent predictor of psychological morbidity among adolescents, while studying in a private school appears to confer a protective effect. Other demographic and smartphone-related factors did not retain significance after adjustment.

Table 3
Multivariable logistic regression analysis of factors associated with psychological morbidity among school-going adolescents

Factors Associated with psychological morbidity among school-going adolescents		AOR	95% C.I.		p-value
			Lower	Upper	
Age	≤12 year	Ref			
	≥ 12 year	1.545	0.815	2.930	0.182
School year	< 8 standard	Ref			
	≥ 8 standard	1.321	0.821	2.123	0.251
Type of school	Government	(Ref)			
	Private	0.619	0.428	0.895	**0.011**
Hrs of use before sleep	< 1 hour	(Ref)			
	≥ 1 hour	1.415	0.971	2.064	0.071
Smart phone addiction	No	(Ref)			
	Yes	1.858	1.255	2.751	**0.002**

The Table 4 summarizes the univariate logistic regression analysis examining factors associated with smartphone addiction among school-going adolescents. Students studying in class 8 or above had significantly higher odds of smartphone addiction compared to those in lower classes (OR = 1.50, p = 0.029). Possession of a personal smartphone was also a significant predictor (OR = 1.65, p = 0.008). Several smartphone use–related behaviours showed strong associations: using the phone for ≥ 1 hour daily (OR = 2.27, p < 0.0001), spending time on the phone before sleep (OR = 2.26, p < 0.0001), using the phone for ≥ 1 hour before sleep (OR = 3.05, p < 0.0001), and weekend phone use ≥ 2 hours (OR = 2.39, p < 0.0001) were all significantly linked to smartphone addiction. Adolescents with adequate sleep duration (≥ 6 hours) were less likely to be addicted (OR = 0.42, p = 0.013). Outdoor activity and presence of psychological morbidity also showed significant associations (OR = 1.69, p = 0.008 and OR = 2.04, p < 0.0001, respectively). Other sociodemographic factors such as age, residence, type of school, family type, and years of smartphone use did not demonstrate significant associations.

Table 4
Univariate logistic regression analysis of factors associated with smartphone addiction among school-going adolescents

Factors associated with smartphone addiction among school-going adolescents		OR	95% C.I		p value
			Lower	Upper	
Age	≤ 12 year	(Ref)			
	≥ 12 year	1.368	0.872	2.147	0.173
School year	< 8 standard	Ref			
	≥ 8 standard	1.496	1.041	2.149	**0.029**
Residence	Rural	(Ref)			
	Urban	1.298	0.880	1.913	0.189
	Semi-urban	1.131	0.718	1.781	0.596
Type of school	Government	(Ref)			
	Private	1.197	0.837	1.712	0.324
Type of family	Nuclear	(Ref)			
	Three Generation	1.045	0.596	1.830	0.879
	Joint Family	1.258	0.846	1.871	0.257
Child living with parents	Both Parents	(Ref)			
	Single Parent	1.178	0.673	2.064	0.566
	No Parent	0.633	0.070	5.710	0.684
Own smartphone	No	(Ref)			
	Yes	1.646	1.142	2.372	**0.008**
Access to phone	No	(Ref)			
	Yes	1.135	0.709	1.816	0.599
Years Using smart phone	< 2 years	(Ref)			
	≥ 2 years	1.156	0.745	1.795	0.518
Duration using smart phone	< 1 hour	(Ref)			
	≥ 1 hour	2.268	1.478	3.481	**< 0.0001**
Spending time before sleep	No	(Ref)			

	Yes	2.256	1.581	3.218	**< 0.0001**
Hrs of use before sleep	< 1 hour	(Ref)			
	≥ 1 hour	3.047	2.141	4.338	**< 0.0001**
Sleep duration	< 6 hour	(Ref)			
	≥ 6 hour	0.422	0.214	0.832	**0.013**
Weekend use	< 2 hrs	(Ref)			
	≥ 2 hrs	2.392	1.657	3.451	**< 0.0001**
Outdoor act	No	(Ref)			
	Yes	1.694	1.146	2.503	**0.008**
psychiatrics assessment	No	(Ref)			
	Yes	2.041	1.406	2.963	**< 0.0001**

The Table 5 illustrates the multivariable analysis which showed that using a smartphone for ≥ 1 hour before sleep significantly increased the odds of smartphone addiction (AOR = 2.36, p = 0.001). Students with sleep duration ≥ 6 hours also had higher odds of addiction (AOR = 2.09, p < 0.0001). Weekend phone use ≥ 2 hours and engaging in outdoor activities were protective factors (AOR = 0.45, p = 0.030 and AOR = 0.64, p = 0.035, respectively). Psychological morbidity remained strongly associated with smartphone addiction (AOR = 1.83, p = 0.003).

Table 5
Multivariable logistic regression analysis of factors associated with smartphone addiction among school-going adolescents

Factors associated with smartphone addiction among school-going adolescents		OR	95% C.I.		p value
			Lower	Upper	
School year	< 8 standard	Ref			
	≥ 8 standard	1.452	0.982	2.148	**0.062**
Own smartphone	No	(Ref)			
	Yes	0.786	0.526	1.174	0.240
Duration using smart phone	< 1 hour	(Ref)			
	≥ 1 hour	0.967	0.594	1.574	0.893
Spending time before sleep	No	(Ref)			
	Yes	0.927	0.549	1.563	0.776
Hrs of use before sleep	< 1 hour	(Ref)			
	≥ 1 hour	2.356	1.407	3.944	**0.001**
Sleep duration	< 6 hour	(Ref)			
	≥ 6 hour	2.087	1.407	3.095	**< 0.0001**
Weekend use	< 2 hrs	(Ref)			
	≥ 2 hrs	0.446	0.215	0.923	**0.030**
Outdoor act	No	(Ref)			
	Yes	0.635	0.417	0.968	**0.035**
psychiatrics assessment	No	(Ref)			
	Yes	1.830	1.224	2.735	**0.003**

Discussion

The present study findings reveal a substantial prevalence of both smartphone addiction (28.5%) and psychological morbidity (26.0%) in this demographic, underscoring a critical and intertwined public health challenge.

The observed 28.5% prevalence of SMA is consistent with the escalating trend of digital dependency among Indian adolescents. While slightly higher than the 23% estimated in some regional literature,[18] it

aligns with recent studies from South India that report addiction rates hovering between 25% and 35% among high school students.[19] The widespread accessibility of smartphones evident from our finding that 83.6% of students had access despite only 28.8% owning one, highlights that lack of personal ownership does not preclude excessive usage. Furthermore, the 26.0% prevalence of psychological morbidity is alarming but mirrors global data indicating a rising tide of anxiety, depression, and stress among adolescents exposed to highly digitized environments.[20]

A key finding of this study is the temporal pattern of smartphone usage and its strong predictive value for addiction. Multivariable analysis demonstrated that using a smartphone for ≥ 1 hour before sleep significantly increased the odds of addiction (AOR = 2.36). Bedtime screening disrupts sleep hygiene and is often driven by unregulated access to gaming and social media—the two most frequent applications reported by our participants. This is supported by previous research indicating that late-night digital engagement is a primary driver of compulsive smartphone use due to impaired self-regulation during evening hours.[21]

Interestingly, engaging in regular outdoor activities emerged as a significant protective factor against SMA (AOR = 0.64). Physical activity provides a structured, dopamine-regulating alternative to digital consumption, reinforcing the need for schools and communities to prioritize sports and outdoor recreation.[22] Similarly, weekend phone use of ≥ 2 hours was surprisingly found to be protective (AOR = 0.45) in the multivariable model. This could imply that adolescents who condense their heavy usage to weekends may exhibit better weekday self-regulation, as opposed to those who compulsively use devices daily.

An anomalous finding in our study was that a sleep duration of ≥ 6 hours was associated with higher odds of SMA (AOR = 2.09). Given that the vast majority (95.7%) of our sample reported sleeping ≥ 6 hours, this finding should be interpreted with caution. It may suggest that in this specific cohort, smartphone addiction displaces active daytime tasks (like studying or physical activity) rather than significantly curtailing absolute sleep volume, or it may be an artifact of self-reported sleep data.[23]

The bidirectional relationship between digital addiction and mental health was robustly evident. Multivariable analysis confirmed that adolescents with smartphone addiction had nearly twice the odds of exhibiting psychological morbidity (AOR = 1.86). This corroborates the "digital escapism" hypothesis, wherein adolescents experiencing academic or psychosocial stress retreat into virtual environments, which in turn exacerbates their psychological distress through isolation, cyberbullying, or social comparison.[24]

Furthermore, the type of school was a significant independent determinant of psychological well-being. Students in private schools had significantly lower odds of psychological morbidity compared to their government school counterparts (AOR = 0.62). This disparity may stem from better socioeconomic stability, more robust academic support systems, stricter campus regulations regarding mobile phone possession, or greater access to school-based counselling services in private institutions.[25]

This study provides much-needed localized data from Karaikal, a semi-urban district with rising digital penetration but limited adolescent behavioral health research. The use of validated tools (SAS-SV and GHQ-12) and multistage sampling enhance the validity of findings. However, the study has limitations. The cross-sectional design precludes the establishment of temporal causality between smartphone addiction and psychological morbidity. Additionally, the reliance on self-reported questionnaires may introduce recall and social desirability biases, particularly regarding screen time and mental health symptoms. Future longitudinal and interventional studies are needed to explore causality and evaluate preventive strategies.

In conclusion, the study affirms that smartphone addiction is a prevalent and formidable determinant of psychological morbidity among school-going adolescents in Karaikal. The significant associations with late-night screen time and the lack of outdoor activities highlight clear avenues for intervention. The results highlight the need for school-based digital hygiene and responsible smartphone use education, integration of adolescent mental health screening into school health programs, parental guidance modules focusing on screen-time regulation, promoting physical activity to counterbalance digital dependency. Targeted psychological support and counselling, particularly in government schools, are urgently required to mitigate the adverse mental health impacts of the digital age.

Declarations

Ethics and Consent to Participate declarations

Ethics approval obtained from the Institutional Ethics Committee of Vinayaka Missions Medical College and Hospital, Vinayaka Missions Research Foundation – Deemed to be University (Ethics approval Number: VMMC /2026/MAR/06). Written assent was obtained from all participants and written informed consent obtained from parents.

Conflicts of interest:

None declared

Clinical Trial Number in the manuscript

Not applicable

Consent to Publish declaration

Not applicable.

Accordance Statement

The study was conducted in accordance with the ethical standards of the Declaration of Helsinki, the guidelines of the Indian Council of Medical Research (ICMR), and the regulations approved by the Institutional Ethics Committee (IEC). All procedures followed the relevant institutional and national guidelines for research involving human participants.

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Nil

Author Contribution

N.R., L.C., and M.K. contributed to the conceptualization of the study, design of the methodology, definition of intellectual content, literature search, data analysis, manuscript preparation, editing, and review. U.U. and S.K. contributed to the study design, definition of intellectual content, data analysis, manuscript editing, and review. Y.K. contributed to the study design, definition of intellectual content and data analysis. N.R. was responsible for data acquisition and served as the guarantor for the manuscript. All authors reviewed and approved the final manuscript.

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Data Availability

The dataset generated and analysed during the current study is not publicly available due to confidentiality protection of adolescent participants but is available from the corresponding author on reasonable request

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