https://doi-ds.org/doilink/02.2026-22838583/GIJNR
Glorious International Journal of Nursing Research
(An International Peer-Reviewed Refereed Journal)
ISSN: 2583-9713 www.gloriousjournal.com

Smartphone Dependency, Sleep Disruption, And Emotional Regulation Among Adolescents : a descriptive correlational study

Uma [1] , Revathy [2]

1. Uma, Associate Professor, CON, Mother Theresa Post Graduate and Research Institution of Health Sciences, Puducherry

2. Revathy, Associate Professor, CON, Mother Theresa Post Graduate and Research Institution of Health Sciences, Puducherry

Corresponding Author: Uma
E-mail- uma.jevika@gmail.com

Article Information:

Type of Article: *original Article* ***Received On:*** *15.01.2026*

Accepted On: *01.02.2026* ***Published On****: 09.02.2026*

Abstract

Background : Mobile phones are mass-produced electronic devices that are an integral part of our lives due to its benefits . Adolescents may be particularly at risk of smartphone dependency and it affects the physical and mental health of the individual. Aims : This study aimed to investigate the impact of smartphone dependency , sleep disruption, and emotional regulation among adolescents. Methods and Materials: The study employed a descriptive correlational design involving 300 participants selected based on simple random sampling technique. Self-Structured Smartphone Addiction Scale, the Pittsburgh Sleep Quality Index for sleep disturbance, and the Emotional Exhaustion subscale of the Maslach Burnout Inventory–General Survey for emotional fatigue were used. Data were analysed using descriptive and inferential statistics included Pearson correlation using SPSS-27 to assess bivariate relationships between smartphone dependency with sleep disruption, and emotional regulation among adolescents. Findings: The results presented significant relationships among smartphone dependency, sleep disturbance, and emotional fatigue. Correlation analysis showed that smartphone dependency was moderately and positively associated with sleep disturbance ($r = 0.43$, $p < .001$) and emotional fatigue ($r = 0.35$, $p < .001$), while sleep disturbance demonstrated a strong positive correlation with emotional fatigue ($r = 0.64$, $p < .001$). Structural equation modeling further

https://doi-ds.org/doilink/02.2026-22838583/GIJNR
Glorious International Journal of Nursing Research
(An International Peer-Reviewed Refereed Journal)
ISSN: 2583-9713 www.gloriousjournal.com

confirmed these associations, revealing that smartphone dependency significantly predicted sleep disturbance (β = 0.45, p < .001) and emotional fatigue (β = 0.33, p = .005). In addition, sleep disturbance had a strong and significant effect on emotional fatigue (β = 0.56, p < .001). Analysis of direct and indirect effects indicated that smartphone dependency exerted both a direct effect on emotional fatigue (β = 0.32, p = .005) and an indirect effect through sleep disturbance (β = 0.22, p < .001), resulting in a substantial total effect (β = 0.41). Overall, these findings suggest that sleep disturbance partially mediates the relationship between smartphone dependency and emotional fatigue.

Conclusion: These findings emphasize the urgent need for early preventive strategies, digital literacy education, and healthy smartphone use practices among adolescents to promote better sleep hygiene and emotional well-being.

Keywords: Smartphone Dependency, Emotional Fatigue, Sleep Disturbance, Smartphone Dependency, Sleep Disruption, And Emotional Regulation.

1.Background

Mobile phones are mass-produced electronic devices, because of its many advantages, including easy access to information, social connectivity, workplace/financial applications, and entertainment, including games, mobile phones are mass-produced electronic gadgets that are an essential part of our lives[1,2]. Smartphones, on the other hand, are more sophisticated mobile devices with the same form factor and convenience of mobile phones, but they can also do many of the duties of a computer. Because of its many uses, smartphones have also gradually become an essential component of our relationships and daily lives [3, 4].

Negative health effects, such as neck pain, accidents, poor mental health, and sleep problems, counterbalance the many advantages of a smartphone, such as enhanced productivity, connectivity, information availability, and portability [2]. Teenagers may be especially vulnerable because they have been observed to be viewing displays on computers, TVs, and gaming consoles. According to a comprehensive review of teenagers in India, the average rate of smartphone addiction was between 39% and 44%. In India, around 300 million people have smartphones [3]. According to surveys, up to 50% of teenagers and 27% of their parents believe they may have a cell phone addiction [4]. In order to provide their clients with appropriate and

https://doi-ds.org/doilink/02.2026-22838583/GIJNR
Glorious International Journal of Nursing Research
(An International Peer-Reviewed Refereed Journal)
ISSN: 2583-9713 www.gloriousjournal.com

balanced counseling based on existing scientific evidence, mental health providers must possess actionable evidence [5-6].

2. Methods and materials

Sleep disturbance was taken into consideration as a potential mediating variable in this study, which used a descriptive correlational approach to investigate the association between smartphone dependency and emotional tiredness. Using stratified random sampling, 300 participants were chosen based on the sample size determination table. Before any data was collected, each participant gave their agreement after being told of the goal of the study. self-organized smartphone adding scale. High internal consistency has been demonstrated by the scale (Cronbach's alpha is usually reported around 0.81).The Pittsburgh Sleep Quality Index (PSQI) is a commonly used self-report questionnaire that measures sleep disruptions over a period of one month. The Emotional Exhaustion subscale was employed in this study to measure emotional exhaustion.

3. Result

Table 1: Distribution of Participants by Demographic Variables (N = 300)

Variable	**Category**	**Frequency (n)**	**Percentage (%)**	**χ^2 Value , df**
Gender	Female	150	50	4.68,df= 1
	Male	150	50	
Age (years)	18–21	110	36	17.30, df= 2
	22–25	100	33	
	26–30	90	31	
Educational Status	Undergraduate	155	52	11.0, 17.30, df= 1
	Postgraduate	145	48	
Daily Smartphone Usage	Less than 5 hours	155	52	34.94, 17.30, df= 1
	More than 5 hours	145	48	

https://doi-ds.org/doilink/02.2026-22838583/GIJNR
Glorious International Journal of Nursing Research
(An International Peer-Reviewed Refereed Journal)
ISSN: 2583-9713 www.gloriousjournal.com

The distribution of participants across selected demographic variables was examined using the chi-square test. With respect to gender, an equal proportion of female and male participants (50% each) was observed, and the chi-square value indicated a statistically significant distribution ($\chi^2 = 4.68$, df = 1). Regarding age, 36% of the participants were in the 18–21 years age group, followed by 33% in the 22–25 years group and 31% in the 26–30 years group; the chi-square analysis revealed a significant difference among age categories ($\chi^2 = 17.30$, df = 2). In terms of educational status, 52% of the participants were undergraduate students and 48% were postgraduate students, with the chi-square value showing a significant variation between the groups ($\chi^2 = 11.0$, df = 1). Concerning daily smartphone usage, 52% of the participants reported using smartphones for less than five hours per day, while 48% reported usage of more than five hours daily; this distribution was also found to be statistically significant ($\chi^2 = 34.94$, df = 1).

Table:2,3,4 shows Results of Correlation and Structural Equation Modeling Analysis

Table 2. Correlation Analysis

Variables	1	2	3
1. Smartphone Dependency	—		
2. Sleep Disturbance	0.43***	—	
3. Emotional Fatigue	0.35***	0.64***	—

***p < .001

Table 3. Structural Equation Model Path Estimates

Path	□	p-value	Interpretation
Smartphone Dependency □ Sleep Disturbance	0.45	< .001	Significant
Smartphone Dependency □ Emotional Fatigue	0.33	0.005	Significant
Sleep Disturbance □ Emotional Fatigue	0.56	< .001	Significant

https://doi-ds.org/doilink/02.2026-22838583/GIJNR
Glorious International Journal of Nursing Research
(An International Peer-Reviewed Refereed Journal)
ISSN: 2583-9713 www.gloriousjournal.com

Table 4. Direct and Indirect Effects

Effect Type	Path	□	p-value
Direct Effect	Smartphone Dependency □ Emotional Fatigue	0.32	.005
Indirect Effect	Smartphone Dependency □ Sleep Disturbance	0.22	<0 .001
Total Effect	Smartphone Dependency □ Emotional Fatigue	0.41	—

The results presented in the tables indicate clear and significant relationships among smartphone dependency, sleep disturbance, and emotional fatigue. Correlation analysis showed that smartphone dependency was moderately and positively associated with sleep disturbance ($r = 0.43$, $p < .001$) and emotional fatigue ($r = 0.35$, $p < .001$), while sleep disturbance demonstrated a strong positive correlation with emotional fatigue ($r = 0.64$, $p < .001$). Structural equation modeling further confirmed these associations, revealing that smartphone dependency significantly predicted sleep disturbance ($\beta = 0.45$, $p < .001$) and emotional fatigue ($\beta = 0.33$, $p = .005$). In addition, sleep disturbance had a strong and significant effect on emotional fatigue ($\beta = 0.56$, $p < .001$). Analysis of direct and indirect effects indicated that smartphone dependency exerted both a direct effect on emotional fatigue ($\beta = 0.32$, $p = .005$) and an indirect effect through sleep disturbance ($\beta = 0.22$, $p < .001$), resulting in a substantial total effect ($\beta = 0.41$). Overall, these findings suggest that sleep disturbance partially mediates the relationship between smartphone dependency and emotional fatigue.

4.Discussion and Conclusion

The results of this study shed light on the intricate connection between teenage smartphone dependence, sleep disturbance, and emotional exhaustion. The findings showed a strong positive relationship between emotional exhaustion and smartphone dependence. Amin, M.H.J., Alhadi, H.A., Mohamed, A.E.A., et al. conducted a cross-sectional study involving medical students in Sudan that looked at problematic smartphone use, sleep quality, and mental health outcomes. They found a significant correlation between smartphone addiction and poorer

https://doi-ds.org/doilink/02.2026-22838583/GIJNR
Glorious International Journal of Nursing Research
(An International Peer-Reviewed Refereed Journal)
ISSN: 2583-9713 www.gloriousjournal.com

sleep quality (r =.462, p <.001). Additionally, it was strongly linked to poorer mental health outcomes, such as indicators of psychological distress. In line with your link between smartphone dependence and sleep disturbance, it shows a strong link between excessive smartphone use and poor sleep quality [7-8].

Previous studies that have connected compulsive digital behaviors to psychological distress and emotional depletion are consistent with the positive correlation between smartphone dependency and emotional weariness. For example, Zhu (2025) found that among post-pandemic communities, smartphone addiction is strongly linked to higher levels of emotional tiredness and lower levels of life satisfaction [9]. The overstimulation of cognitive and emotional systems brought on by continuous digital engagement—especially on social media and messaging platforms, which need continuous attention and emotional involvement—can account for this association (Zhu, 2025) [8,9,10]. These results corroborate the claims made by Rodman et al. (2024) [11], who highlighted the emotional cost of hyperconnectivity by observing within-person emotional swings that correlated with changes in smartphone usage among adolescents.

Similarly, Cruz et al. (2023) used machine learning techniques to demonstrate the substantial correlation between self-reported weariness and psychological distress and behavioral variables like smartphone use at night. The emotional effects of digital conduct are linked to more general concepts of well-being and emotional control in addition to sleep and exhaustion [12].

Due to increased screen time, developmental sensitivity, and social media use, smartphone addiction has become a serious behavioral issue, especially for teenagers. Overuse of smartphones interferes with normal sleep cycles, resulting in shorter sleep durations and lower-quality sleep, which in turn exacerbates emotional disorders like mood swings, anxiety, and emotional exhaustion.These findings emphasize the urgent need for early preventive strategies, digital literacy education, and healthy smartphone use practices among adolescents to promote better sleep hygiene and emotional well-being.

Conflicts of interest: The authors declare no conflicts of interest.

https://doi-ds.org/doilink/02.2026-22838583/GIJNR
Glorious International Journal of Nursing Research
(An International Peer-Reviewed Refereed Journal)
ISSN: 2583-9713 www.gloriousjournal.com

References

1. Smartphone addiction among university students in Riyadh, Saudi Arabia. Alosaimi FD, Alyahya H, Alshahwan H, Al Mahyijari N, Shaik SA. Saudi Med J. 2016;37:675–683. doi: 10.15537/smj.2016.6.14430. [DOI] [PMC free article] [PubMed] [Google Scholar]
2. Smartphone use and smartphone addiction among young people in Switzerland. Haug S, Castro RP, Kwon M, Filler A, Kowatsch T, Schaub MP. J Behav Addict. 2015;4:299–307. doi: 10.1556/2006.4.2015.037. [DOI] [PMC free article] [PubMed] [Google Scholar]
3. Smartphone use and its addiction among adolescents in the age group of 16-19 years. Bhanderi DJ, Pandya YP, Sharma DB. Indian J Community Med. 2021;46:88–92. doi: 10.4103/ijcm.IJCM_263_20. [DOI] [PMC free article] [PubMed] [Google Scholar]
4. Mobile phone addiction as an emerging behavioral form of addiction among adolescents in India. Gangadharan N, Borle AL, Basu S. Cureus. 2022;14:0. doi: 10.7759/cureus.23798. [DOI] [PMC free article] [PubMed] [Google Scholar]
5. Associations between smartphone use and mental health and well-being among young Swiss men. Studer J, Marmet S, Wicki M, Khazaal Y, Gmel G. J Psychiatr Res. 2022;156:602–610. doi: 10.1016/j.jpsychires.2022.10.036. [DOI] [PubMed] [Google Scholar]
6. Association of smartphone use duration with physical fitness among university students: focus on strength and flexibility. Li W, Cui Y, Gong Q, Zhu Z. Int J Environ Res Public Health. 2022;19 doi: 10.3390/ijerph19127386. [DOI] [PMC free article] [PubMed] [Google Scholar]
7. Amin, M.H.J., Alhadi, H.A., Mohamed, A.E.A. *et al.* Impact of smartphone addiction on health status, mental well-being, and sleep quality among medical students in Sudan. *BMC Psychiatry* **24**, 965 (2024). https://doi.org/10.1186/s12888-024-06377-9
8. Zhu C, Li S, Zhang L. The impact of smartphone addiction on mental health and its relationship with life satisfaction in the post-COVID-19 era. Front Psychiatry. 2025 Mar 18;16:1542040. doi: 10.3389/fpsyt.2025.1542040. PMID: 40171312; PMCID: PMC11960497
9. Quality of sleep among bedtime smartphone users. Krishnan B, Sanjeev RK, Latti RG. Int J Prev Med. 2020;11:114. doi: 10.4103/ijpvm.IJPVM_266_19. [DOI] [PMC free

article] [PubMed] [Google Scholar]

10. Problematic smartphone use: a conceptual overview and systematic review of relations with anxiety and depression psychopathology. Elhai JD, Dvorak RD, Levine JC, Hall BJ. J Affect Disord. 2017;207:251–259. doi: 10.1016/j.jad.2016.08.030. [DOI] [PubMed] [Google Scholar]
11. Rodman, A.M., Burns, J.A., Cotter, G.K. *et al.* Within-Person Fluctuations in Objective Smartphone Use and Emotional Processes During Adolescence: An Intensive Longitudinal Study. *Affec Sci* **5**, 332–345 (2024). https://doi.org/10.1007/s42761-024-00247-z
12. Human phase response curve to a single 6.5 h pulse of short-wavelength light. Rüger M, St Hilaire MA, Brainard GC, Khalsa SB, Kronauer RE, Czeisler CA, Lockley SW. J Physiol. 2013;591:353–363. doi: 10.1113/jphysiol.2012.239046. [DOI] [PMC free article] [PubMed] [Google Scholar]