Research Article

Impact Of Adolescents Smartphone Use On Self -Regulation Skills

Zahraa Saeed Abdul Rahman[1]*, Mansour Abdullah Falah[2]

[1]MSc. in Department of Community Health Nursing, College of Nursing, University of Kufa, Iraq. E-mail: zahraas.altamimi@student.uokufa.edu.iq
[2]Prof. Ph.D. in Department of Community Health Nursing, College of Nursing, University of Kufa E-mail: mansura.alfatlawi@uokufa.edu.iq

Abstract

Background: Smartphone use has become commonplace in modern society, no longer limited to adults but now an essential part of teenagers' daily lives. However, excessive smartphone use is a growing concern, manifesting as uncontrolled use that leads to numerous psychological, physical, emotional, and social problems. In many cases, teenagers demonstrate an ability to adapt to and overcome the negative effects of risks in the digital world. Objective: This study aimed to assess the relationship between excessive smartphone use and self-regulation skills of educational behavior among adolescents. Methods: A descriptive cross-sectional design. The study preparation was carried out in 30 schools from 179 schools by a self-reported questionnaire, by answering the smartphone addiction scale as well as the self-regulation scale. The study employed a two-stage sampling method: In the first stage, schools were selected systematically randomly, and in the second stage, the total participants (384) were selected using a probability stratified sampling technique from different schools from diverse educational stages. Result: The finding indicated to a weak negative correlation between overall Smartphone Addiction Scale (SAS) scores and overall Academic Self-Regulation (SRQ-A) scores among adolescents ($r = -0.203$, $p < 0.001$). Conclusion: Based on these results, the potential influence of smartphone uses on adolescents' academic self-regulation, although the relationship is not strong. So that, the importance of developing educational efforts and supporting families through programs to develop self-regulation skills becomes clear, in addition to raising families' awareness to reduce excessive use of smartphones by monitoring mobile phone usage hours and encouraging teenagers to engage in sports and group activities.

Keywords: impact, excessive smartphone use, self- regulation, adolescent.

1. Introduction

Smartphone ownership has gotten considerably more widespread over the past decade since Apple's first iPhone smartphone device was debuted in 2007 [1], With 4.23 billion smartphones being used around the world [2], and probably it will reach over seven billion by 2026 [3]. adolescents— roughly 95% now claim having access to a personal smartphone and 46% say they are linked to the internet "almost constantly" [4]. The smartphone has become a vital component of daily life and study has revealed that many people grow so connected to their device that they experience separation anxiety when it is not with them [5]. However, Smartphones are advanced means of information technology, including access to the Internet and mobile communication. The smartphone has become the main tool enhancing Internet addiction in all ages [6]. With the rise of smartphones and increasing use of digital applications, adolescents use smartphones to avoid a variety of difficulties faced by them, and the pleasure coming from its use can lead to problematic smartphone use [7].

Excessive Smartphone Use (ESU) poses a significant challenge in contemporary society, yet its recognition as a distinct disorder remains ambiguous, and sometimes is also referred to as "smartphone addiction" remains debatable and is not yet recognized by the DSM-5 (DSM-5TR) [8]. Adolescents interactions, access information, and engage in social relationships, and has also had a profound influence on their health, including their well-being [9]. Excessive usage of smartphone to access internet and its applications (e.g. social media) can lead to adverse effects on health [10]. Accordingly, using a psychological model of addiction, mobile phone or smartphone dependence may be considered to fall within the spectrum of behavioral addictions, including symptoms such as salience, mood modification, withdrawal, tolerance, conflict and relapse [11].

Self-regulation has a pivotal impact on developmental outcomes including social and emotional well-being and academic functioning. Higher levels of self-regulation are associated with enhanced well-being including better mental health, the ability to maintain effective social relationships and global adaptive functioning in home and

school life [12].

2. Methodology

2.1 Study Design and Setting

A descriptive cross-sectional method is conducted on students selected from a diverse age group (12-19) years. The present study is carried out in the (30) schools for diverse stages, which include (middle schools, preparatory schools, and high schools) from the Najaf Al- Ashraf Centre. The study was created from 14th October,2025 until 9th of March,2026. The researcher used a two-stage sampling methods: The first stage, schools were selected systematically and randomly to ensure that the sampling was representative & coverage the student population. In the second stage, the total participants (384) were selected using a probability stratified sampling technique to select students from a diverse category.

2.2 Validity and Reliability

Validity was assigned to each of the study questionnaire's components based on linguistic appropriateness, correlation with the dimension of study variables to which it was assigned, and fit for the study population.

Reliability of the test assessed by delivering to 20 people from the study population who were not a part of the initial sample. The Cronbach's alpha was found to be 0.81. Statistical analysis achieved by SPSS version 27.

2.2 Ethical Consideration

This study was approved by the International Review Board at the College of Nursing, University of Kufa. The study was registered in Clinical Trials Registry (ClinicalTrials.gov) under the ID NCT06889888. Each participant was asked for their informed consent after ensuring they understood the purpose, procedures, and their rights in the study. Furthermore, to the overhead, the investigator told each sample that this is voluntary work, and they can leave anytime, even if the interview procedure isn't finished.

2.4 Data Collection Methods

The instrument used in this study consisted of two different scales: Smartphone Addiction Scale (SAS) and Academic Self-Regulation (SRQ-A), as well as sociodemographic Information for student who participant in their study.
Data were distributed and variances were examined using the independent samples t-test and one-way analysis of variance based on the sociodemographic characteristics of the participants. Results were presented descriptively using mean and standard deviation or percentages depending on the data type. Results were considered statistically significant if the p-value was less than 0.05.

Part I: Socio-Demographic Data: This part contains (7) items, which include age, gender, Academic stage divided into two stages (intermediate and preparatory), Place of residence, duration usage, Family Socioeconomic Status: which consist from (Occupation of father, Occupation of mother, Parents' educational attainment), and Monthly family income.

Part II: Smartphone addiction scale (SAS) The addiction scale was used to measure excessive smartphone that consisted of 6 factors and 33 items with a six-point Likert scale (1: ''strongly disagree'' and 6: ''strongly agree'') based on self-reporting.

Part III: academic self -regulation scale

This questionnaire consists from (33) item's concerns the reasons why children do their school work. The scale was developed for students in late elementary and middle school. (The comparable SRQ for adults is referred to as the Learning Self-Regulation Questionnaire.) To score the scale: Very True is scored 4; Sort of True is scored 3; Not Very True is scored 2; and Not at All True is scored 1.

3. Results

Table (1) showed the socio-demographic characteristics of the 384 adolescents included in the current study. The majority of participants were aged 15 years or younger (56.77%), see figure (1), with a mean age of 15.2 ± 1.9 years (min. to max.: 12–19), with 50% males and 50% females. Regarding academic stage, most adolescents were in the first intermediate (25.52%) and fifth preparatory (23.44%) grades, while the smallest group was in the sixth preparatory stage (4.95%). All participants (100%) resided in urban areas, see figure 4.4. Mobile phone usage varied, with 37.5% using phones ≤3 hours/day, 34.64% using them 4–6 hours/day, 11.98% using 7–9 hours/day, and 15.89% using ≥10 hours/day, with mean of 5.9 ± 5.2 hours/day (range 1–24).

Table (1): Distribution of Socio-Demographic Characteristics for the studied Adolescents (N=384).

Socio-Demographic Characteristics	Rating and Intervals	F.	%
Age Groups (Years)	<= 15	218	56.77
	16 - 17	119	30.99
	18 and More	47	12.24
	Mean ± SD (Min-Max)	15.2 ± 1.9 (12-19)	
Sex	Males	192	50
	Females	192	50
Academic stage	First Intermediate	98	25.52
	Second Intermediate	67	17.45
	Third Intermediate	57	14.84
	Fourth Preparatory	53	13.8
	Fifth Preparatory	90	23.44
	Sixth Preparatory	19	4.95
Place of residence	Urban	384	100
	Rural	0	0
Mobile phone usage duration (hours/day)	<= 3	144	37.5
	4 - 6	133	34.64
	7 - 9	46	11.98
	10 and More	61	15.89
	Mean ± SD (Min-Max)	5.9 ± 5.2 (1-24)	
Total		384	100%

Table (2): showed the socio-demographic characteristics of the families of the 384 adolescents. Regarding fathers' and mothers' occupation, the majoraity of fathers (49.74%) were self-employed, while most mothers were housewives (81.25%). Fathers' educational attainment varied: 10.97% were illiterate, 21.67% had completed elementary school, 23.24% middle school, 17.49% preparatory school, 8.36% technical diploma, and 18.28% held a bachelor's degree or higher. Mothers' education showed that 12.24% were illiterate, 30.21% elementary school graduates, 22.66% middle school, 17.97% preparatory school, 5.73% technical diploma, and 11.2% had a bachelor's degree or higher.

Finally, monthly family income was adequate for 48.7% of families, somewhat adequate for 32.81%, and not adequate for 18.49%.

Table (2): Distribution of Socio-Demographic Characteristics for the family of the studied Adolescents (N=384).

Socio-Demographic Characteristics	Rating and Intervals	F.	%
Occupation of father	Employee	156	40.63
	Retired	29	7.55
	Self-Employed	191	49.74
	Unemployed	8	2.08

Ocuupation of mother	Employee	71	18.49
	Retired	1	.26
	Housewife	312	81.25
Parents' educational attainment of father	Unable to read and write	42	10.97
	Elementary school graduate	83	21.67
	Middle school graduate	89	23.24
	Preparatory school graduate	67	17.49
	Technical diploma graduate (institute)	32	8.36
	Bachelor's degree graduate or higher	70	18.28
Parents' educational attainment of mother	Unable to read and write	47	12.24
	Elementary school graduate	116	30.21
	Middle school graduate	87	22.66
	Preparatory school graduate	69	17.97
	Technical diploma graduate (institute)	22	5.73
	Bachelor's degree graduate or higher	43	11.2
Monthly family income	Adequate	187	48.7
	Somewhat adequate	126	32.81
	Not adequate	71	18.49
Total		384	100%

Table (3): showed the assessment of the smartphone use according to overall Items of Smartphone Addiction Scale among 384 adolescents. The table showed that the majority of adolescents (73.44%) fell within the moderate level of smartphone addiction, with a mean score of 3.40±0.77. this finding suggest that moderate smartphone use and potential addiction behaviours are prevalent among the studied adolescents.

Table (3): Assessment of the smartphone use according to Overall Items of Smartphone Addiction Scale among Adolescents (N=384).

Overall Items		F.	%	Mean ± SD	Assis.
Smartphone Addiction Scale (SAS)	Low	56	14.58	3.40±0.77	Moderate
	Moderate	282	73.44		
	High	46	11.98		

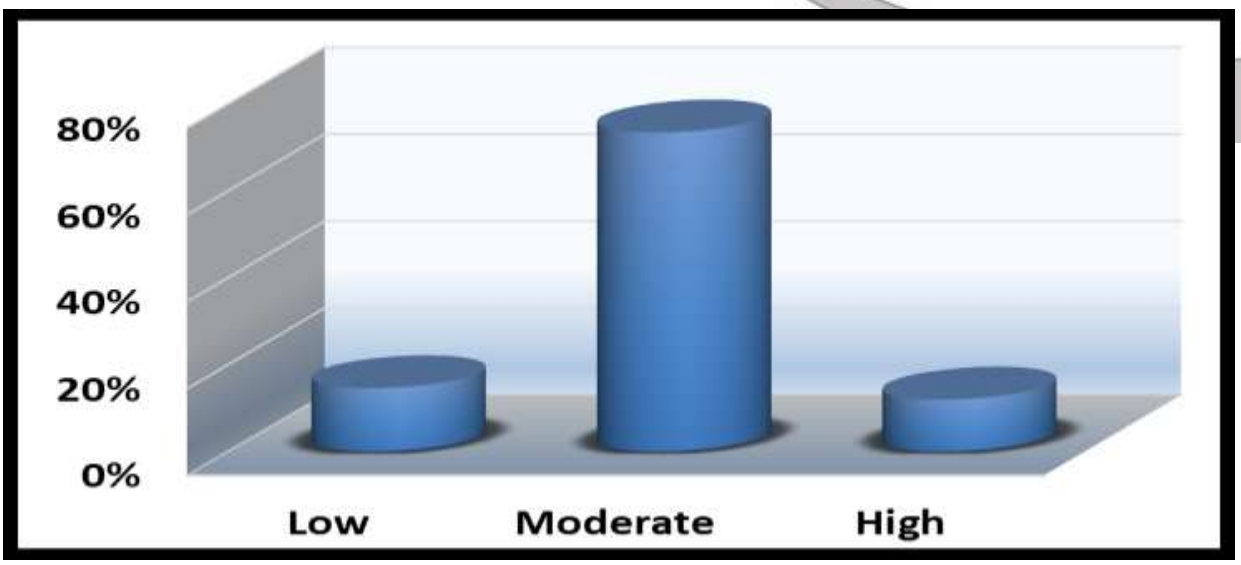

Figure (1): Bar chart of the assessment of the smartphone use according to Overall Items of Smartphone Addiction Scale among Adolescents (N=384).

Table (4): showed the assessment of the self-regulation skills according to Overall Items of Academic Self-Regulation Scale among the studied adolescents. The majority of the adolescents (53.91%) demonstrated balanced motivation, while 20.83% showed moderate external motivation and only 6.25% exhibited low external motivation. In contrast, 17.71% of the adolescents demonstrated moderate autonomous motivation, and only 1.30% exhibited high autonomous motivation. The overall mean score (−0.34 ± 1.57) indicates a balanced motivational orientation among the adolescents, reflecting neither strong external control nor high autonomous self-regulation in their academic activities.

Table (4): Assessment of the self-regulation skills according to Overall Items of Academic Self-Regulation Scale among Adolescents (N=384).

Overall Items		F.	%	Mean ± SD	Assis.
Academic Self-Regulation (SRQ-A)	Low external motivation	24	6.25	-0.34 ± 1.57	Balanced motivation
	Moderate external motivation	80	20.83		
	Balanced motivation	207	53.91		

	Moderate autonomous motivation	68	17.71		
	High autonomous motivation	5	1.30		

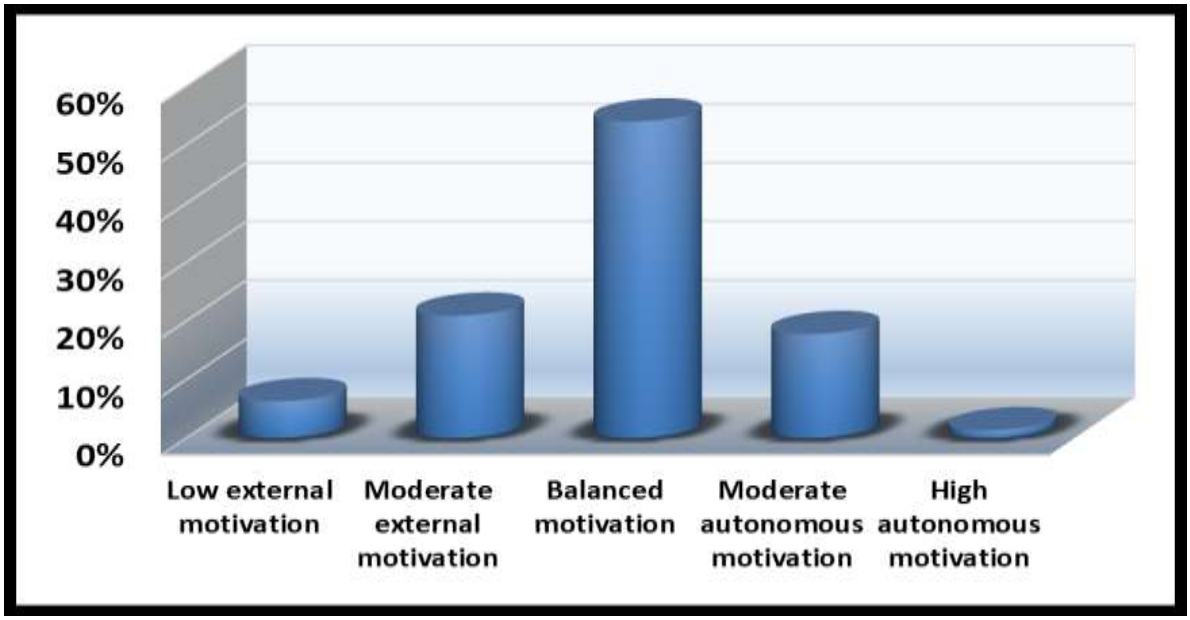

Figure (2): Bar chart of Assessment of the self-regulation skills according to Overall Items of Academic Self-Regulation Scale among Adolescents (N=384).

Table (5): showed a statistically high significant negative correlation between the overall Smartphone Addiction Scale (SAS) scores and the overall Academic Self-Regulation (SRQ-A) scores among adolescents ($r = -0.203$, $p < 0.001$).

Table (5): Pearson Correlation between overall Smartphone Addiction Scale (SAS) scores and overall Academic Self-Regulation (SRQ-A) scores among adolescents.

Variable		Academic Self-Regulation (SRQ-A)
Smartphone Addiction Scale (SAS)	Pearson Correlation	-0.203
	Sig.	<0.0001 (HS)

	N	384

5. Discussion

The results indicated that the majority of participants were 15 years old or younger, accounting for more than half of the sample (56.77%), with 50% males and 50% females. Regarding the academic stage, most adolescents were in the first intermediate (25.52%), while the smallest group was in the sixth preparatory stage (4.95%). All participants (100%) resided in urban areas. Mobile phone usage varied, with 37.5% using phones ≤3 hours/day, 34.64% using them 4–6 hours/day. The results of the Smartphone Addiction Scale indicated an overall moderate level of addiction based on the total scale scores. This suggests that addictive behaviours are present to some extent among the participants. High scores on some items can be attributed to disruptions in daily life or excessive use, while low scores on other items reflect a lesser degree of withdrawal symptoms or dependency .In the same context , the current study's findings, more than half of participants have balanced motivation this can be explained by the fact that individuals possess the ability to regulate their behaviour and control the management of their lives, as this motivation promotes self-regulation, thus limiting excessive smartphone use In the same vein,[13] agreed that reducing distractions also means that teenagers with higher levels of self-control and a greater sense of control are able to limit their smartphone use .see https://doi.org/10.5281/zenodo.18983282

The results reveal a weak negative relationship between excessive smartphone use and self-control, which indicates that adolescents with low self-control are more likely to engage in excessive use of smart devices. However, the weak strength of the relationship indicates that low self-control may not be the sole factor influencing excessive smartphone use among adolescents. Previous studies have found similar results [14,15]. These results highlight the importance of self-control among adolescents in the development of interventions for reducing excessive smartphone use. Studies have demonstrated that excessive smartphone use negatively affects sleep quality among adolescents [16]. Encouraging adolescents to engage in physical activity during their free time, as well as promoting habits such as setting their phones to silent, “do not disturb,” or airplane mode before bedtime, may help reduce excessive smartphone use and improve sleep quality.

6. Conclusions

The study showed that the majority of participants were 15 years old or younger. The level of smartphone addiction among the target group (adolescents) was found to be moderate. The results indicate that the majority of adolescents possess balanced motivation. In light of the results, a statistically significant negative correlation is evident between smartphone addiction and self-regulation.

Acknowledgments

The authors would like to express their gratitude to Professor Mansour Abdullah Falah for his invaluable supervision and guidance throughout this study.

Special thanks to Finally, we extend our appreciation to all individuals and institutions that supported this research.

Consent for Publication

Informed consent from patients was not required due to the retrospective nature of the study, as approved by the Ethics Committee.

Authors' Contributions

1. Za. Sa A.Ra.: Contributed to the study conceptualization, methodology, treatment planning design, dosimetric analysis, data interpretation, and drafting of the original manuscript.
2. Ma. Ab. Fa.: Contributed to data acquisition, clinical data collection, and treatment planning support and assisted in dosimetry evaluation and validation of results.

3. All authors read and approved of the final manuscript and agree to be accountable for all aspects of the work.

Conflict of Interest
The authors declare no conflict of interest.

References

1. Harris B, Regan T, Schueler J, Fields SA. Problematic Mobile Phone and Smartphone Use Scales: A Systematic Review. Frontiers in Psychology. 2020;11.
2. Hussain Z, Griffiths MD, Sheffield D. An investigation into problematic smartphone use: The role of narcissism, anxiety, and personality factors. J Behav Addict. 2017;6(3):378-86.
3. Ratan ZA, Parrish AM, Alotaibi MS, Hosseinzadeh H. Predictors of smartphone addiction and its effect on quality of life: a cross-sectional study among the young adults in Bangladesh. Front Digit Health. 2025;7:1351955.
4. Minich M, Moreno M. Real-world adolescent smartphone use is associated with improvements in mood: An ecological momentary assessment study. PLoS One. 2024;19(5):e0298422.
5. Panova T, Carbonell X. Is smartphone addiction really an addiction? J Behav Addict. 2018;7(2):252-9.
6. Turgeman L, Hefner I, Bazon M, Yehoshua O, Weinstein A. Studies on the Relationship between Social Anxiety and Excessive Smartphone Use and on the Effects of Abstinence and Sensation Seeking on Excessive Smartphone Use. Int J Environ Res Public Health. 2020;17(4).
7. Song HY, Kim JH. Smartphone Use Type, Fear of Missing Out, Social Support, and Smartphone Screen Time Among Adolescents in Korea: Interactive Effects. Front Public Health. 2022;10:822741.
8. Oweda J, Schmitgen MM, Henemann GM, Gerdes M, Wolf RC. Machine learning based classification of excessive smartphone users via neuronal cue reactivity. Psychiatry Research: Neuroimaging. 2025;346:111903.
9. Benvenuti M, Wright M, Naslund J, Miers AC. How technology use is changing adolescents' behaviors and their social, physical, and cognitive development. Current Psychology. 2023;42(19):16466-9.
10. Boumosleh J, Jaalouk D. Smartphone Addiction among University Students and Its Relationship with Academic Performance. Global Journal of Health Science. 2017;10(1).
11. Kuss DJ, Kanjo E, Crook-Rumsey M, Kibowski F, Wang GY, Sumich A. Problematic Mobile Phone Use and Addiction Across Generations: the Roles of Psychopathological Symptoms and Smartphone Use. J Technol Behav Sci. 2018;3(3):141-9.
12. Kaunhoven RJ, Dorjee D. How does mindfulness modulate self-regulation in pre-adolescent children? An integrative neurocognitive review. Neurosci Biobehav Rev. 2017;74(Pt A):163-84.
13. Hrbackova K, Hladik J, Petr Safrankova A. What role do self-regulatory mechanisms play in the risky use of digital media by adolescents? Front Psychol. 2025;16:1675778.
14. Li J, Zhan D, Zhou Y, Gao X. Loneliness and problematic mobile phone use among adolescents during the COVID-19 pandemic: The roles of escape motivation and self-control. Addict Behav. 2021;118:106857.
15. Ding Y, Wan X, Lu G, Huang H, Liang Y, Yu J, et al. The associations between smartphone addiction and self-esteem, self-control, and social support among Chinese adolescents: A meta-analysis. Front Psychol. 2022;13:1029323.
16. Leow MQH, Chiang J, Chua TJX, Wang S, Tan NC. The relationship between smartphone addiction and sleep among medical students: A systematic review and meta-analysis. PLoS One. 2023;18(9):e0290724.