Factors Related to Smartphone Addiction in Medical Students at the Universitas Sumatera Utara

Hot Parsaulian Siregar[1], Mustafa M. Amin[1*], M. Surya Husada[1]

[1]Department of Psychiatry, Faculty of Medicine, Universitas Sumatera Utara
*Corresponding author: mustafa.mahmud@usu.ac.id

Abstract

Background: *Smartphones* have become an essential device in everyday life in recent years; scientific impetus and the extraordinary evolution of technology have resulted in having to provide information in all subjects anytime and anywhere. Smartphones have grown in popularity among younger generations as a way to stay in touch with others and seek as much information as possible. Being taught too much can negatively affect health, including being easily distracted, fatigue, migraines, neck pain, decreased social engagement and academic achievement, drowsiness, forgetfulness, reduced hearing, and reduced focus. A need to assess circumstances in terms of addiction arises from repetitive individual behaviours that impair everyday functioning and social interactions.

Method: A cross-sectional design and a multivariate predictive model was used in this study. Purposive sampling of the non-probability kind was the sampling method employed in this study. Between November 2022 and January 2023, 200 students from the Faculty of Medicine at Universitas Sumatera Utara participated in the study. The study begins by filling in demographic data and the Indonesian version of the *Smartphone* Addiction Scale-Short Version (SAS-SV). After the results were obtained, data management and analysis were carried out using SPSS software. Linear regression is used when all the required conditions are met.

Result: The SAS-SV score was found to be related to independent characteristics such as gender, age, operating system, internet access, parental income, usage length, and sleep duration with $p<0.05$ and $R2=62.8\%$ (showing that the independent factors were related with a SAS-SV score of 62.8%). However, we discovered that independent variables like education level and other *smartphone* features did not statistically differ from zero ($p>0.05$). As a result, these variables have no impact on the SAS-SV score.

Conclusion: This study indicated that the following independent risk factors were linked to SAS-SV scores in medical students at the Universitas Sumatera Utara: gender, age, operating system, internet access, parental income, usage length, and sleep duration.

Keywords: *smartphone* addiction, *smartphone* addiction scale short version (SAS-SV) in Indonesian, medical faculty students.

M. M. Amin et al. (eds.), *Proceedings of the 6th International Conference on Neuroscience, Neurology and Psychiatry (ICONAP 2023)*, Advances in Health Sciences Research 71,
https://doi.org/10.2991/978-94-6463-310-8_14

Introduction

Smartphones have become essential devices in everyday life in recent years; scientific developments and the extraordinary evolution of technology have resulted in the availability of information in all subjects anytime and anywhere [1]. Smartphone has become a basic need; it facilitates one's life in terms of space and time, and it has become an integral global phenomenon of the younger generation. The positive impact of using smartphones, especially from the younger generation, can be used for education and teaching [2].

Excessive smartphone use negatively affects health, including lower academic performance and social engagement in real life, headaches, neck discomfort, weariness, sleep disruptions, memory loss, hearing loss, and impaired focus. Adolescents exhibit addictive behaviour more frequently than adults because they lack the same level of self-control. Many addictive behaviours that persist into adulthood develop throughout adolescence [3].

Similar to internet addiction, *smartphone* addiction has four primary elements: obsessive behaviour, tolerance, withdrawal, and functional impairment [4]. The use of *smartphones* in class is more relevant at the university level than at the school level because students already have *smartphones* and know how to use them properly [5]. One of the benefits of *smartphones* is that they make it easier for researchers and students to communicate and share information and that their varied applications allow people from different nations to exchange valuable experiences [6].

The survey response rate was 83.9% (574 out of 674), according to a study from Malaysia in 2020 by Yik et al. The smartphone addiction rate was higher among female medical students (68.5%) than male medical students (31.5%). Chinese (16%), Indian (15.5%), and other races (3.1%) are the following three largest racial groups after Malay (65.3%). The majority of students are between the ages of 19 and 23 [7]. A study from Iran in 2021 by Eisanazar et al. stated that the prevalence of males was higher than females by 1.54%, 3.55% for medical students undergoing clinical practice, and 2.40% for students living at home alone [8].

This study aimed to examine *smartphone* addiction among medical students at Universitas Sumatera Utara in Indonesia and assess the sociodemographic aspects and characteristics related to *smartphone* addiction.

Subject and Method:

This study is a cross-sectional study with a predictive multivariate research design. In this investigation, purposive sampling was employed in conjunction with a non-probability sampling technique. The research was conducted from November 2022 to January 2023. Two hundred students from the Faculty of Medicine at Universitas Sumatera Utara participated in the study. The study begins by filling in demographic data and the Indonesian version of the *Smartphone* Addiction Scale-Short Version (SAS-SV). A questionnaire explanation was completed prior to the questionnaire being filled out. After the results were obtained, management and data analysis was carried out using SPSS software. Linear regression is used when all the required conditions are met.

Result

The following are categorical data: gender, education level, operating system, internet connectivity, and other *smartphone* features are shown as percentages (%). Because the data are not normally distributed, numerical statistics such as age, parental income, use history and sleep length are presented as the median, maximum, and lowest. In this study, the number of samples was 200, comprising 85 men and 115 women. The most variable gender was female, namely 115 subjects (57.5%). From the variables of the educational level at the Faculty of Medicine, the highest is the 2022 period, namely 108 subjects (54.0%). Of the *smartphone* operating system variables, the most common was Android, namely 131 subjects (65.5%). From the variable use of internet access on *smartphones*, the most were those who accessed the internet using the pre-paid network, namely 102 subjects (51.0). Of the other *smartphone* function variables, the largest

number is online chat, namely 120 subjects (60.0%). The median value of the age variable is 20, with a minimum value of 18 and a maximum value of 24. The parents' income variable has a median value of 20 million rupiahs, a minimum value of 10 million, and a maximum value of 50 million. A minimum value of 2 hours and a maximum value of 8 hours comprise the variable length of *smartphone* use, with a median value of 6 hours. With a minimum value of 2 hours and a maximum of 8 hours, the median value of the sleep duration variable is 2 hours.

After the bivariate analysis, the backward approach was used to further prepare the data for multivariate analysis by filtering out data that suggested autocorrelation to obtain the best determinant coefficient. Based on Tables 1 and 2, the best match is obtained after performing linear regression twice because there is no autocorrelation, and the tolerance value is less than 0.4. When the backwards technique is used, all necessary assumptions (linearity, normality, zero residuals, no outliers, constants) to perform linear regression are met, allowing all previously stated independent variables to be examined further. Independent variables include age, gender, operating system, parental income, internet access, length of use, and sleep duration. It was shown to be associated with a SAS-SV score with a p-value of less than 0.05 and an adjusted R2 of 67.8% (meaning the independent component is connected to a SAS-SV score of 67.8%), as shown in Table 3.

Independent factors such as education level and other *smartphone* functions were not statistically significant (p>0.05). These variables are unrelated to the SAS-SV score.

Table 1. Demographical Characteristics

Demographical Characteristics	**Median (min-max)**	**n(%)**
Age (years)	20 (18 – 24)	
Gender		
- Male		85 (42,5)
- Female		115 (57,5)
Educational level		
- Period 2021		92 (46,0)
- Period 2022		108 (54,0)
Parents Income	20 (10 – 50)	
Operating System		
- Androids		131 (65,5)
- iOS		69 (34,5)
Internet access		
- Pre-paid		102 (51,0)
- Post-paid		98 (49,0)
Duration of Use	6 (2 – 8)	
Other Functions		
- Online chat		120 (60,0)
- Social Networking		80 (40,0)
Sleep Duration	4 (2 – 8)	

Table 2. SAS-SV model summary in the second multivariate analysis

Model	R	R Square	Adjusted R Square	Std. Error of theEstimate	Durbin-Watson
1	.830[a]	.690	.678	4.104	1.980

Table 3. Multivariate analysis of SAS-SV score-related independent factors

SAS-SV	*Correlation Coefficients*	Regresi Multivariat β	p
Constant		6,182	
Age	0,285	1,110	<0,001
Gender	-0,083	- 1,124	0,040
Operating System	0,100	1,514	0,021
Parents Income	0,229	0,187	<0,001
Internet Access	-0,143	- 2,063	0,001
Duration of Use	0,342	1,197	<0,001
Sleep Duration	- 0,165	- 0,525	0,048
Adjusted R^2 = 67,8%			

Discussion

This study found a weak correlation between age and SAS-SV scores. This result is consistent with a study conducted in Turkey by Zencirici et al, who discovered a link between age and *smartphone* addiction among medical students; this difference between age groups was caused by several factors, including seeking emotional connection through various applications, the desire to have more free time, following fashion and interest in entertainment apps and games [3]. There was a very weak negative correlation between gender and SAS-SV score. In line with Nogreen et al. in India, this study found a relationship between gender and smartphone addiction among medical students [9]. Men perceive smartphones as a technology that allows them to be more independent. Men frequently accept and use mobile technology faster than women, whereas women primarily use smartphones for communication [10]. A very weak correlation strength was obtained between the smartphone operating system and the SAS-SV score. The strength of the correlation between parental income and SAS-SV scores was found to be very weak. This research is in line with that conducted by Khalily et al. in Pakistan, that the intensity of addiction is significantly higher in individuals from upper and middle socioeconomic classes [11]. There is a very weak negative correlation between internet access and SAS-SV scores. This research aligns with Baticulon et al.'s research in the Philippines, which found a relationship with internet access variables [12]. The connection between *smartphone* usage duration and SAS-SV scores was very weak. This study is consistent with that of Jain et al. in India, who discovered that the duration of daily *smartphone* use is related to *smartphone* addiction [13]. Increased *smartphone* use increases the risk of developing *smartphone* addiction symptoms. Overuse can lead to chronic use, implying that overuse is the most potent predictor of *smartphone* addiction [11]. Sleep duration and SAS-SV scores were found to have very weak negative strength. This study aligns with Deniz's study in Turkey, where sleep duration obtained a negative correlation. Excessive usage of devices at night raises the risk of sleep disruption. The use of *smartphones* in adolescents tends to occur frequently while in bed, even before going to bed; this causes sleep duration in adolescents who spend time at night using *smartphones*, causing sleep quality disturbances [14].

Conclusion

According to the findings of this study, the independent risk factors linked with the SAS-SV score in Universitas Sumatera Utara Medical Students were as follows: age, gender, operating system, parental income, internet access, duration of use, and duration of sleep. Knowing these variables allows doctors to pay more attention and to prepare the proper psychotherapy. It also allows institutions to provide more appropriate counselling or support to persons who are addicted to smartphones as soon as feasible.

References:

1. Gonçalves S, Dias P, Correia AP. Nomophobia and lifestyle: *smartphone* use and its relationship to psychopathologies. Computers in Human Behavior Reports. 2020 Aug 1;2.
2. Sengottaiyan K, Duraisamy B, Rathinaswamy A. COVID-19 lockdown and Smartphone usage, education or entertainment, among medical, engineering and arts students. First Edition. Shaik ZB, editor. India: ESN publications. 2020. 20 p.
3. Zencirci SA, Aygar H, Göktaş S, Önsüz MF, Alaiye M, Metintaş S. Evaluation of *Smartphone* addiction and related factors among university students. Int J Res Med Sci. 2018 Jun 25;6(7):2210.
4. Lin YH, Chiang CL, Lin PH, Chang LR, Ko CH, Lee YH, et al. Proposed diagnostic criteria for *smartphone* addiction. PLoS One. 2016 Nov 1;11(11).
5. Asatryan M. *Smartphone* Use Among University Students.
6. Onyeka B, Uchechukwu and A. Effects Of Demographic Factors *on Smartphone* Addiction Of Students In A. 2019; Available from: https://doi.org/10.24941/ijcr.36788.10.2019
7. Lei LYC, Al-Aarifin Ismail M, Mohammad JAM, Bahri Yusoff MS. The relationship of *smartphone* addiction with psychological distress and neuroticism among university medical students. BMC Psychol. 2020 Sep 11;8(1).
8. Eisanazar A, Najafi K, Mohammadi A, Sarlak C, Mirfarhadi N. Relationship Between *smartphone* Addiction and Stress and Life Satisfaction in Medical Students. Journal of Guilan University of Medical Sciences [Internet]. 2021 Jul 1;30(2):144–55. Available from: https://journal.gums.ac.ir/article-1-2375-en.html
9. Nowreen N, Ahad F. Effect of smartphone usage on quality of sleep in medical students. Natl J Physiol Pharm Pharmacol. 2018;8(9):1366.
10. Kamal S, Kamal S, Mubeen S, Shah A, Samar S, Zehra R, et al. Smartphone addiction and its associated behaviours among medical and dental students in Pakistan: A cross-sectional survey. J Educ Health Promot. 2022;11(1):220.
11. Khalily MT, Loona MI, Bhatti MM, Ahmad I, Saleem T. Smartphone addiction and its associated factors among students in twin cities of Pakistan. J Pak Med Assoc. 2020 Aug 1;70(8):1357–61.
12. Baticulon RE, Sy JJ, Alberto NRI, Baron MBC, Mabulay REC, Rizada LGT, et al. Barriers to Online Learning in the Time of COVID-19: A National Survey of Medical Students in the Philippines. Med Sci Educ. 2021 Apr 1;31(2):615–26
13. Jain P, Gedam SR, Patil PS. Study of smartphone addiction: prevalence, pattern of use, and personality dimensions among medical students from rural region of central India. Open J Psychiatry Allied Sci. 2019;10(2):132.
14. Gezgin DM. Understanding Patterns for smartphone Addiction: Age, Sleep Duration, Social Network Use and Fear of Missing Out [Internet]. Vol. 13, Cypriot Journal of Educational Sciences. 2018. Available from: www.cjes.eu