

Smartphone Use and Addiction among Secondary School Students in Kuantan, Malaysia

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ABSTRACT

Background: Smartphone addiction has become a social problem in Malaysia as smartphone users increase drastically. Previous study revealed that smartphone addiction has a negative effect on the physical and psychosocial of a human being. **Aims:** This study aims to examine smartphone use and addiction among secondary school students. **Methods:** A cross-sectional study was employed involving 203 secondary school children at a secondary school in Malaysia. A set of a questionnaire consisting of two parts was used; (1) Part A: Sociodemographic, (2) Part B: Smartphone Addiction Scale in Malay version (SAS-M). **Results:** Finding from this study showed that there was a long duration of smartphones use was detected during the weekend with more than three hours per day and social media (81.8%) was the frequently visited function in the smartphones. These group of students were not addicted to smartphones, however, more than half of the students (57.6%) have a high risk of smartphones addiction. There is also a significant negative weak correlation between smartphone use and smartphone addiction during weekday and weekend with ($p < 0.05$; $r_2 -0.354, -0.360$), respectively. **Conclusion:** This study provides insight into the use of smartphone and smartphone addiction in secondary school students from a Malaysian perspective.

Keywords: Secondary School Students, Smartphone Use, Smartphone Addiction.

INTRODUCTION

The current forms of information and communication technology especially mobile phones and smartphones have changed peoples' daily life drastically, mainly school students. Mobile phones is defined in the dictionary as a telephone with access to a cellular radio system so it can be used over a wide area, without a physical connection to a network. It is surprising that a tiny smartphone is built on a mobile computing platform with a more advanced computing ability and connectivity ⁽⁹⁾. The smartphone and its numerous applications offered quick access to the Internet and social media through various mediums such as WhatsApp, Facebook, Twitter, Instagram, and Skype ⁽¹⁾. Apart from making phone calls, smartphones are now equipped a

range of function to be used, such as for playing games, chatting with friends using messenger systems, and searching for information. Given the convenience and variety of functions, smartphones are widely popular, and the number of users is rapidly increasing with more than 1.08 billion users across the globe in the early 2012 ⁽¹²⁾.

In Malaysia, currently there are 42.3 million smartphone users compared to in 2005 with only 16.2 million mobile phone subscriptions⁽⁹⁾. Handheld device ownership such as mobile phone alone has increased more than 200% over the past 10 years. An exploratory study reported that making phone calls and sending text messages are the most common use of smartphones ⁽¹⁰⁾ This type of usage is typically categorised for integration and social interaction as it involves connecting with others and fulfilling social roles ⁽¹³⁾.

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Although it is a convenient method to communicate with people, this technology has been associated with undesirable side-effects. The most frequent negative side-effect is chronic addiction or excessive human-machine interactions⁽⁴⁾. Furthermore, excessive use of smartphone also leads to interference with concentration at school or work and physical disturbances such as stiffed neck, blurred vision, wrist or back pain, and sleep disruption ⁽⁸⁾.
quality improvement in intensive care.

School and university students are the most common groups targeted by telecommunication companies. The students are interested in possessing smartphones on which much of the time were dedicated in thinking and choosing the best device to own. This subsequently led to a significant increase in the number of adolescents possessing smartphones, which will increase the likelihood of smartphone addiction⁽⁶⁾. Smartphone addiction could be considered as a form of technological addiction. Griffiths (1999) operationally defined these addictions as non-chemical behavioural addictions that involve human-machine interaction⁽⁵⁾.

“Addiction” is defined in the dictionary as: i). a functional abnormality of the body caused by food or pharmaceutical toxins; ii) a pathologic condition that one cannot tolerate without the continuous administration of alcohol or drugs; and iii) the status of not being able to rationally judge or distinguish due to certain ideas or objects. “Addiction,” is a phenomenon that manifests tolerance, withdrawal symptoms, and dependence, accompanied by social problems⁽⁹⁾. The term was once limited to drugs or substances, but it is now also applied to gambling, Internet, gaming, mobile-phone usage, and other behavioural addictions⁽⁹⁾.

The Research described the feeling of anxiety when the smartphone user is not holding their smartphone, spend too much time using their smartphone, and have repeatedly attempted to reduce their smartphone use but have always failed as smartphones addiction⁽⁵⁾. A study found that smartphone addiction risk is positively related to perceiving stress, however, the latter is negatively related to life satisfaction⁽¹⁰⁾. Additionally, excessive use of smartphone also affects the academic performance of students. These technological devices divert their attention and communication with their instructors, interferes with their performance, learning tasks, and completing assignments⁽¹⁾.

The use of smartphone and smartphone addiction may be closely related. Therefore, this study focuses on smartphone use, smartphone addiction and to investigate the associations between these two factors and socio-demographic parameters.

MATERIAL AND METHODS

Study design and setting

This is a descriptive, cross-sectional study carried out among secondary school student in one of the schools in peninsular Malaysia between January and March 2020.

Study instruments

A set of questionnaire comprises of two parts; ⁽¹⁾ Part A Sociodemographic background and ⁽²⁾ Part B Smartphone Addiction Scale in Malay version (SAS-M) was used ⁽¹⁵⁾. Part A comprises of four closed-ended questions namely age, gender, race, hometown, years of study in secondary school, average monthly family income (RM), frequency of smartphone use, and the main use of a smartphone. Part B consists of 33 items on Smartphone Addiction Scale in Malay version (SAS-M) in which it has been translated by the local authors ⁽³⁾. This scale consists of 6 dimensions including space-oriented relationship, daily life disturbance, primacy, overuse, positive anticipation, and withdrawal. Each item on SAS-M was rated using a 6 Likert scale ranging from 1 point (strongly disagree) to 6 point (strongly agree). The score will be summed and divided by the number of items to attain the mean in which a higher score indicates a higher degree of addiction. Possible scores ranged from 33 to 198 were categorised into two groups which are normal and at risk. To identify the smartphone addiction, the score of the Smartphone Addiction Scale (SAS-M) was divided into two levels: (i) normal (33-99) and (ii) at risk (100-198).

Data collection

Data were collected using a random sampling method. The inclusion criteria of this study were an active status as a student from form 1, 2, and 4. Level 3 and 5 were not included because the students will be having examination and are not allowed to participate in any research activities. Those who were not willing to participate were excluded. The researcher gathered the list name of the students from the officer of the school. Based on the name list, a personal meet up was carried out to assent the students for the study and to pass the consent form in which the students were asked to return on the next day. The purpose of the research was explained to the participants and the consent form was provided to the guardian via students. The participants that assent to participate in this study were recruited and the consent form signed by the guardian was collected. Students will only be included in the study upon consent by their guardian or parents. Participants are provided with set of self-administered questionnaires and required to answer within 15-20min. The responses obtained was 100%

Data analysis

Data analysis was performed using Statistical analysis program, SPSS version 20. Descriptive analysis was conducted to describe the sociodemographic background, frequency of using the smartphone, and the main use of a smartphone. Inferential analysis such as independent t-test, analysis of variance (ANOVA), and Pearson's Correlation were used to analyse the association between sociodemographic data, smartphones use, and smartphone addiction. P-value <0.05 is categorised as statistically significant.

RESULTS

Sociodemographic characteristics

Table 1 illustrates the sociodemographic backgrounds of the participants. The mean age of the participants was 14.16 years old (SD \pm 1.26). The participants were predominantly female (71.4%), Malay (96.9%), and form one students (43.3%).

Table 1: Sociodemographic profile

Variable		Frequency (N=203)	Percentage (%)	Mean (SD)
Age	13	88	43.3	14.16 (1.26)
	14	55	27.1	
	16	60	29.6	
Gender	Male	58	28.6	
	Female	145	71.4	
Race	Malay	196	96.9	
	Chinese	2	1.0	
	Indian	4	2.0	
	Others	1	0.5	
Years of study	Form 1	88	43.3	
	Form 2	54	26.6	
	Form 4	61	30.0	

Note: SD: Standard deviation

Smartphone use

Table 2 demonstrates the frequency of using the smartphone. The frequency of smartphone use was divided into during weekdays and weekend. The scores for the smartphones use during weekdays and weekend were divided into three including more than three hours per day, one to

three hours per day, and less than one hour per day. The result revealed that majority (62.1%) of the participants used their smartphone more than three hours per day during the weekend and nearly half (45.8%) of the participants reported to use their smartphone for one to three hours per day during weekdays.

Table 2: Smartphones used during the weekdays and weekend.

Variables		Frequency (n)	Percentage (%)
Smartphone use (weekdays)	> 3 hours per day	53	26.1
	1 - 3 hours per day	93	45.8
	< 1 hour per day	57	28.1
Smartphone use (weekend)	> 3 hours per day	126	62.1
	1 - 3 hours per day	65	32.0
	< 1 hour per day	12	5.8

Main usage of smartphone

Table 3 demonstrates the main usage of smartphones among secondary school students. The usage of smartphones was divided into four including for Internet surfing, media social, basic services, and games. The result reported that the majority (81.8%) of the participants used their smartphone for social media, followed by Internet surfing (30.0%), games (26.1%), and basic services (6.4%).

Table 3: The main usage of smartphones

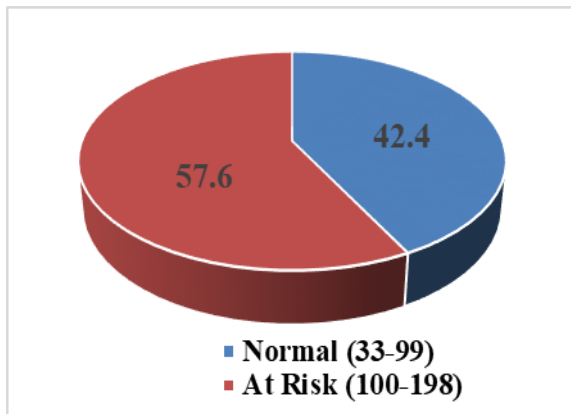
Variable		Frequency (n)	Percentage (%)
Internet surfing	Yes	61	30.0
	No	142	70.0
Media social	Yes	166	81.8
	No	37	18.2
Basic	Yes	13	6.4
	No	190	93.6
Games	Yes	53	26.1
	No	150	73.9

Smartphone addiction

The finding showed that the mean score of smartphone addiction was 104.04 (SD \pm 19.72).

Figure 1 depicts more than half (57.65) of the participants were at risk of smartphone addiction.

Figure 1: Smartphone Addiction



The association between smartphone addiction and socio-demographic profiles

Table 4 shows that there was a significant association between age and year of study and smartphone addiction ($p < 0.001$). However, there was no significant association between other sociodemographic variables (gender, race) and smartphone addiction ($p > 0.05$).

	Mean (SD)	r ² value, t value or F value	P-value
Age	14.16 (1.26)	0.233	0.001*
Gender			
Male	105.98 (18.51)	0.907	0.36
Female	13.26 (20.18)		
Year of study			
Form 1	98.76 (11.26)		
Form 2	106.01 (20.23)	6.452	0.002*
Form 3	109.90 (20.86)		
Race			
Malay	104.27 (19.65)		
Chinese	86.50 (17.67)	0.12	0.121
Indian	110.75 (14.88)		

* p -value < 0.05

The association between smartphone use and addiction

Independent Pearson’s Correlation was performed to explore the association between smartphone use and addiction. Table 5 shows that there was a weak negative significant association between smartphone use during weekdays and weekend and smartphone addiction with the p -value of ($p <$

0.001) and r -value of (-0.354) and (-0.360), respectively.

Table 5: Association between the smartphone use during weekdays and weekend and smartphone addiction.

	r ² value	P-value
Frequency of smartphone use (weekdays)	- 0.354	0.001*
Frequency of smartphone use (weekend)	- 0.360	0.001*

* p -value < 0.05

DISCUSSION

Majority of the students (62.1%) reported using their smartphone for more than three hours per day during the weekend and nearly half (45.8%) of the participants reported using their smartphone for one to three hours per day during weekdays. Most of the time was spent on media social (81.8%), followed by Internet surfing (30.0%), games (26.1%), and basic services (6.4%), such as making call. A higher prevalence of smartphone addiction in persons indicating social media as the most personally relevant function. This is in line with previous studies that showed the use of social media sites were the predictors of mobile phone or smartphone addiction (6, 14).

The result also found that there was a significant association between age and year of study and smartphone addiction ($p < 0.001$). This suggests that an increase in age and year of study increases the risk of smartphone addiction. However, this might not reflect the true population since the students were recruited after national examination, a few months before data collection. Therefore, this might influence time spent on a smartphone. Nevertheless, a study revealed that smartphone addiction was more prevalent in the younger group compared to a slightly older group (6). However, there was no significant association between other sociodemographic variables (gender, race) and smartphone addiction ($p > 0.05$). The race showed no significant difference with smartphone addiction, which could be due to the of the students who participated in this study was Malay. There was no significant association between gender and race and smartphone addiction (2).

The result showed that there was a significant association between smartphone use during weekdays and weekend and smartphone

addiction with the p-value of ($p < 0.001$) and r-value of (-0.354) and (-0.360), respectively. This is consistent with a previous study showing that smartphone addiction to be more strongly associated with the use of a smartphone (2). This result also suggests a significant negative relationship between smartphone use and smartphone addiction in which the higher the use of a smartphone, the lesser the addiction whereas the lesser the use of a smartphone, the higher the addiction. This could be explained by the addiction behaviour experiencing by the participants such as keep checking up or thinking of their phone although they are not using the smartphone (15). Thus, it can be concluded that even though the use of smartphone increases, it may not lead to smartphone addiction. Nevertheless, less use of smartphone is not the answer to not get addicted to smartphones as it depends on the frequency or the duration of the participant as well as the behaviour presented by the user.

CONCLUSION

In conclusion, this study provides insight into smartphone use and smartphone addiction in secondary school student from Malaysia. Future studies are needed to extend this knowledge in order to draw clearer conclusions regarding the reason for this increasing behaviour. Consequently, future studies should

ETHICAL MATTERS

This study was conducted with ethical approval from the Kulliyah of Nursing Postgraduate Research Committee (KNPGRC) and International Islamic University Malaysia (IIUM) Research Ethics Committee (IIUM/504/14/11/2/IREC 2020).

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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