Original Research Article

A study to determine smartphone addiction among nursing students at a private healthcare university college in Malaysia

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ABSTRACT

Background: In the era of advancement of digital technology, individuals are empowering to take control of their future. Despite smartphone usage's advantages and positive impact, the unlimited usage of smartphones for social needs and communications leads to smartphone addiction. Smart addiction is considered a form of technological addiction. This study aims to determine the level of smartphone addiction among nursing students at Private Healthcare University College.

Method: This study used a cross-sectional descriptive quantitative design using convenient sampling. A self-administered Smartphone Addiction Scale questionnaire with close-ended items of questions were distributed to 159 selected diploma nursing students.

Results: The study results show high smartphone addiction 126 (58.95%) among nursing students of Private Healthcare University College. Besides, the nursing students spent excessive time on a smartphone, particularly on social networks. However, there was no significant relationship found between smartphone addiction and selected sociodemographic characteristics.

Conclusion: This study has provided an initial insight into smartphone usage among nursing students at

Private Healthcare University College and suggest that they are more vulnerable to smartphone addiction. Therefore, university management, parents, and students themselves need to take the initiative to free them from smartphone addiction.

KEY WORDS: Smartphone Usage, Smartphone Addiction, Unlimited Usage, Nursing Students.

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INTRODUCTION

Smartphone has most essential features such as accessibility, usefulness, multitasking and portability [1]. In the era of upgrading technology, individuals are empowered to control their future [2]. These mobile devices

or smartphones allow individuals to easily access information, services, education, and communication for free or affordable. Individuals can improve communication skills and knowledge by learning from hand-handled devices. Ever since smartphones were introduced in 2002, the usage of the smartphone has tremendously increased. According to the Malaysian Communications and Multimedia Commission (MCMC), the percentage of smartphone users has continued to rise by 7.2%, from 68.7% in 2016 to 75.9% in 2017 [3]. As a result, it has been concluded that the hand phone is ideally used as a communication tool, and it has become a necessity in people's life.

An annual survey carried out by the Malaysian Communications and Multimedia Commission (MCMC) in 2018 has revealed that smartphone usage has increased due to greater Internet access. Thus, the internet has been accessed mainly by using smartphones (93.1%) than other devices such as laptops, computers, tablets, and other gadgets [4]. Internet access is an initial prerequisite for the multifunction of smartphones as there is a strong relationship between the Internet and smartphone usage [5].

This rapid technology development and smartphone use positively impact users who can utilise not just to make calls and messages but also to explore various fields that complemented people's lives via the available applications. According to Smartphone User Persona Report from Vserv [6], Malaysian smartphone users spend an average time of 187 minutes or 3 hours 7 minutes on their devices. Significantly, smartphones were used for social networking and chat applications. Despite smartphone usage's advantages and positive impact, the unlimited usage of smartphones for social needs and communications leads to smartphone addiction. Smart addiction is considered a form of technological addiction [6].

Smartphone addiction is defined as technological addiction and a behavioural addiction that involves human-machine interaction and is a non- chemical in nature [7,8]. As the addiction towards smartphones has globally increased, smartphone addiction is the only non-substance-related-disorder proposed to include in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM- 5) in the category of substance-related and addictive disorders [9].

A study was carried out to investigate the level of smartphone usage and addiction among medical college students. Using a self-administered smartphone addiction scale (SAS) showed 85.40%, 164 participants out of 192 participants who experienced high smart phone addiction. The researcher concluded that the obsession with smartphones occurred by taking selfies, posting them and various social media applications, chatting, gaming, and many other usages to make us more attractive and indispensable toward smartphones. This overuse of smartphone causes an effect on psychological well-being and make the users psychologically addicted [10].

Another quantitative study carried among 409 Malaysian adults showed that 70.4% of participants use smartphones longer than intended, and 66.5% of participants are engaged for a longer duration with the smartphone. Moreover, the study results also showed the behavioural changes of the participants such as uncomfortableness without a mobile phone (58.2%), anxious (41.1%) when not able to browse through smartphone and (50. 4%) declared that they would never quit using smartphone even though it distracts and affect their daily life [11]. This analysis on behavioural changes among adults in Malaysia shows mobile addiction and distraction caused by the fast growth of online social networking usage and extensive technology.

This study was conducted among nursing students at Private Healthcare University College, where these students are known as the future of the healthcare profession in the upcoming years. The researcher observed a strong relation with heavy use of smartphones among nursing students at Private Healthcare University College. These students use their devices when they walk around, during class hours and even when they are sitting in the cafeteria. For many reasons, nursing students

of Private Healthcare University College can develop smartphone addiction.

First, the smartphone function enables students to avoid communicating with others face-to-face. Face-to-face interaction is the most severe problem between people when they tend to overuse smartphones or addicted to smartphone use [12].

This happens when students tend to use smartphone as it contains many functions, applications, and characteristics such as reading online books, surfing social networks and playing online games. Therefore, they tend to overindulge and focus on their smartphone until ignoring who they are with [12].

Furthermore, a previous study was carried out to investigate gender differences in smartphone application use and examine the gender differences in terms of social relation and social support among young adults. Females have a higher level of smartphone addiction than males [13].

It is stated that women tend to use the camera on the smartphone more often than men do. These findings show that men are more likely to use smartphones for task-focused activities like phone calls and smartphone applications. In contrast, women use smartphones more in a social exchange of their daily lives and entertainment. Therefore, the researcher chose nursing students as a study sample since nursing students majorly consist of females.

Moreover, student nurses' focus and cognition level are significant in nursing care, patient safety, and learning. This is because nurses are the only person involved in patient care for 24 hours per day, and they are known as the first health care providers who need to give full attention to their performance. By being addicted to smartphones may lead to distraction while nursing a patient. This may put the patient's life at risk and unable to act proficiently. Besides that, addiction to a smartphone does affect nursing students' academic performances as well.

In addition, there is no significant study carried out on smartphone addiction amongnursing students of Private Healthcare University College. Hence this study was aimed to determine smartphone addiction levels among nursing students.

METHODOLOGY

This research used quantitative cross-sectional descriptive design that has been distributed by using self-administered Google Questionnaire Format. The respondents included 214 nursing students from 480 of the total population at the Private Healthcare University College. The sample size was calculated using Krejcie & Morgan table to determine the accurate sample size of the study. The researcher used a convenience sampling method to create a sample based on participants' readiness to be part of the sample for this study and based on the sample's availability.

A validated tool was adapted in this study. This instrument was adapted from [14], a researcher who developed the instrument. The instrument is called Smartphone Addiction Scale (SAS), a self- diagnostic scale that distinguishes smartphone addiction. The SAS scale was developed based on the Korean self- diagnostic program for Internet addiction (K- scale). The adopted questionnaire consists of 33 items with subscales such as daily-life disturbance, positive anticipation, withdrawal, cyberspace-oriented relationship, overuse, and tolerance. Thus, a six-point Likert scale with scales like "strongly disagree, 2: Disagree, 3: Slightly Disagree, 4: Slightly Agree, 5: Agree, and 6: Strongly Agree" are used. The questionnaire in this study is divided into three sections. Part 1-sociodemographic (6 items); Part 2-practice of smartphone usage (5 items) and Part 3-items on Smartphone Addiction Scale (33 items).

Part 1, sociodemographic, has questions like age, gender, level of education, year and semester of study, family income, and stay area. Meanwhile, Part 2 consist of questions like "do you own a smartphone", "brand of smartphone use", "daily time spent using smartphone", "most used activities", and "time spend on the most commonly spend activity". Whereas, in Part 3, the Adapted questionnaire of Smartphone Addiction Sale consist of 33

items in total is categorised according to subscale factors. The first subscale factor is "life disturbance" (5 items), including missing planned work, having difficulty concentrating in class or working, suffering from light-headedness or blurred vision, pain on the wrist or at the back of the neck and sleeping disturbance. These questions proved that smartphones as becoming part of life as users cannot get off their minds.

Moreover, the factor life disturbance includes questions on physical health effects such as pain at the wrist or back of the neck, head, and blurred vision due to too much smartphone use. The second-factor subscale is "positive anticipation", which describes the feeling towards smartphone use. The third is on "withdrawal", where smartphone users evaluate their feelings without smartphones and feelings of not using smartphones. The fourth subscale factor is on "cyberspace-oriented relationship", where the questions describe one's feelings on a relationship with smartphone friends. The fifth subscale is on "overuse", which refers to uncontrollable use of one's smartphone. The sixth subscale factor is "tolerance", which means the user always trying to control their smartphone use by always fail to do so.

These six factors were modified and adapted from the K- scale of Internet addiction instruments [14]. The scoring guide for Smartphone Addiction Scale was based on the mean score obtained from the respondents. Means score more than 3.52 categorised as high smartphone addiction and mean score less than 3.52 considered common smartphone addiction.

Data was collected and has been approved by the coordinator of nursing students. Data collection has been held through an online survey questionnaire due to the Movement Control Order (MCO) was implemented by the Government due to the Covid-19 pandemic. An explanation was given before the distribution of the online survey. Respondents were given two days to answer the online questionnaires. The responses rate was 100% (n = 130 respondents). Data were analysed using SPSSsoftware version 2.0. The analysis included descriptive statistics such as frequency, percentage, means and standard deviation.

Ethical consideration: The approval of ethics was obtained from the Research Management Committee held on 28th November 2019 and approved by university affiliation. Written permission was obtained from Kwon through email, who develop the questionnaire for the study. The purpose of the study was given with a brief introduction. Besides, informed consent was obtained from the respondents. All these were included in the Goggle Questionnaire that has been distributed to the respondents.

Validation: The adapted Smartphone Addiction Scale (SAS) is a validated and reliable instrument with a Cronbach's Alpha value of 0.924 overall. The researcher has modified the questionnaire according to the expert's advice.

RESULTS

Table 1: Data Analysis on socio-demographics characteristics of the respondents. [N = 214].

Characteristics of nursing students	Variable	Frequency[n]	Percentage[%]
Age	18-20	149	69.6
	21-23	57	26.6
	24-26	8	3.7
	26 and above	0	0
Gender	Male	20	9.3
	Female	194	90.7
Level of education	Diploma	203	94.9
	Bachelor	11	5.1
Year & semester of study	Year 1/Semester 1	3	1.4
	Year 1/Semester 2	85	39.7
	Year 2/ Semester 2	81	37.9
	Year 3/ Semester 1	20	9.3
	Year 3/ Semester 2	25	11.7
Family income	Below RM 1000	26	12.1
	RM1000- RM2000	73	34.1
	RM2000- RM3000	40	18.7
	RM3000 and more	75	35
Area of stay	Rural	75	33.6
	Urban	142	66.4

This study showed that 149 (69.6%) respondents were aged between 18 to 20 years old (Table 1). In this study, 194 (90.7%) of the respondents were female, 20 (9.3%) were male, and 203 representing 94.9% of the respondents were diploma holders, while 11 representing 5.1% of respondents were bachelor's degree holders. Besides, 85 (39.7%) of the participants were in Year 1/ semester 2, 81 (37.9%)

of the participants were in Year 2/ semester 2, followed by 25 (11.7%) participants in Year 3/ semester 2. While 20 (9.3%) of participants were in Year 1/ semester 1 and 3 respondents, 1.4% were in Year 1/ semester 1. Most of the respondents' family income (*n* = 75, 35.0%) was RM 3000 and more, while 73 (34.1%) were RM1000 to RM 2000, followed by 40 (18.7%) of respondents' family income were RM 2000 to RM 3000 and 26 (12.1%) were below one thousand ringgits. The area of stay is high in urban areas with 142(66.4%) while 72 (33.6%) of respondents stayed in rural areas.

Table 2 shows the daily hand phone usage among nursing students. The finding shows that 46.7% of nursing students using a smartphone for more than five hours (> 5 hours) in a day (mean= 4.31hrs).

Table 2: Data Analysis on daily time spent using a smartphone by respondents. [N = 214].

Daily time spent on smartphone [hours]	*n*	%
Less than one hour (< 1 hour)	12	5.6
One to Three hours (1 – 3 hours)	45	21
Three to Five hours([3 – 5 hours)	57	26.6
More than Five hours(>5 hours)	100	46.7

Mean: 4.31 hours

The commonly used smartphones were browsing the social network with 109 (50.9%) of respondents, followed by 34 (15.9%) of respondents performing activities like listening to music and watching movies via smartphone.

Table 3: Data Analysis on most common smartphone activities [N = 214].

Most common smartphone activities	*n*	%
Calls (e.g., Phone calls, WhatsApp calls, Facebook Messenger calls)	17	7.9
Video calls (eg: FaceTime, WhatsApp video calls etc)	5	2.3
Social Networks (e.g., Instagram, Facebook, Twitter, Tiktoketc)	109	50.9
Internet browsing (e.g., Google Chrome, Internet Explorer)	7	3.3
Texting (eg: WhatsApp, SMS, Facebook Messenger etc)	27	12.6
Listening to music and watching movies (e.g., Spotify, Netflix, YouTube etc.)	34	15.9
Playing Games (e.g., Pubg, Mobile Legends, Candy Crush etc.)	15	7

As shown in Table 4, the daily time spent on a particular activity that has been answered in the previous question showed 92 (43.0%) of the respondents spent about one to three hours (1- 3 hours) on that particular activity (mean = 2.55 hours).

Table 4: Data Analysis on time [hours] spent on a particular activity.

Based on your answer on B9, how many hours do you spend on that particular activity each day?	*N*	%
Less than one hour (< 1 hour)	22	10.3
One to Three hours(1 – 3 hours)	92	43
Three to Five hours(3 – 5 hours)	61	28.5
More than Five hours (>5 hours)	39	18.2

Most importantly, as shown in Table 5, this study showed that 126 (58.9%) respondents out of 214 respondents have high smartphone addiction levels compared to the remaining 88 (41.1%) of respondents with low smartphone addiction. This concluded that the majority of the respondents are addicted to the smartphone.

Table 5: Data Analysis on Smartphone Addiction Level.

	Frequency(n)	Percentage(%)
Low Smartphone Addiction	88	41.1
High Smartphone Addiction	126	58.9

Table 6 shows the relationship between smartphone addiction and selected sociodemographic characteristics. The result revealed no significant relationship between ages, gender, and family income.

Table 6: Association between age and smartphone addiction level.

Demographic characteristics	Smartphone Addiction Level						
	Low		High		Total		
Age	*n*	%	*n*	%	*N*	%	χ^2 = 4.252, df = 2, p = 0.119 (p<0.05)
18-20	55	25.7	94	43.9	149	69.6	
21-23	30	14	27	12.6	57	26.6	
24-26	3	1.4	5	2.3	8	3.7	
>26	0	0	0	0	0	0	
Gender							
Male	9	4.2	11	5.1	20	9.3	χ^2= 0.137, df =1, p=0.711 (p<0.05)
Female	79	36.9	115	53.7	194	90.7	
Family income							
Below RM1000	11	5.1	15	7	26	12.1	
RM 1000- RM 2000	27	12.6	46	21.5	73	34.1	
RM 2000- RM 3000	16	7.5	24	11.2	40	18.7	χ^2=1.101, df =3, p=0.777 (p<0.05)
RM 3000 and more	34	15.9	41	19.2	75	35	

DISCUSSION

Daily time spent on smartphone usage: In this study, the researcher found that majority of the nursing students of 100 (46.7%) were spending more than five hours (> 5 hours) on their smartphones. According to the statement found in e-Marketer (2019), US adults spend

an average time of 3 hours and 43 minutes on mobile devices, which has exceeded the time spent on watching television. Relating the above statement with the result of this study, it is proven that nursing students at the private Healthcare College spent excessive time on a smartphone daily. On the other hand, this finding is similar to the study carried out by Haug et al.(2015), where the result of the study showed the majority of the respondents spent three to four hours on a smartphone with a frequency of 472 (31.1%) out of 1,519 respondents. This study also revealed that the duration of smartphone usage as an indicator for smartphone addiction among the respondents [15].

Most Common Smartphone Activities: This study was also conducted to identify the most common smartphone activities per day among nursing students at Private Healthcare University College. Findings revealed that most nursing students used smartphones to access social networks such as Instagram, Facebook, Twitter, Tiktok, etc., on an everyday basis compared to other activities. A similar study conducted by researchers in India has identified that 158 (52.67%) respondents most commonly use smartphones for social networks compared to gaming, surfing the internet, and watching videos. [16].

Penetration of mobile phones has increased in societies where there is a trend of enormous growth in online social networking services (SNS), especially among youth [17]. On the other hand, another similar study showed 1022 (67.3%) of their respondents were using social networks as the most personally relevant smartphone function. In the researcher's opinion, the social network is proved the most common smartphone activity because the students are obsessed with the features of social networks. It might happen because as young adults they preferred to socialise and make friends. Thus, they use social networks as a platform to expand their friend circles and stay connected with them almost all the time. Besides that, primarily young adults easily get attracted towards technology and most importantly young adults could adapt changes according to the current trend, culture and sometimes situation.

Smartphone addiction level: Based on this research, we have observed that nursing students at Private Healthcare University College have high smartphone addiction levels. A study conducted among 189 dental students at Saudi Arabia has obtained similar results as this study, where 136 (71.9%) were categorised under high smartphone addiction [18]. On the other hand, another similar study that investigated the level of smartphone addiction and determined related factors among university students found that 813 (54.5%) of the students declared that they were addicted to a smartphone. In comparison, 629 (42.2%) of the students denied themselves from smartphone addiction and the remain 50 (3.5%) students were clueless and told as do not know when they were asked to assess themselves for smartphone addiction by using Short Version of Smartphone Addiction Scale (SAS- SV) [19].

Association between selected sociodemographic data and smartphone addiction level: Finding on the association between age and smartphone addiction level among nursing students at Private Healthcare University College revealed that nursing students from the age of 18 to 20 has high smartphone addiction (n = 94, 43.9%) compare to nursing students age from 24 to 26 years old (n = 8, 2.3%). However, the analysis of this study showed no significant between age and smartphone addiction level. A similar study result showed higher addiction scores among the younger age group than the older age group. In contrast, analysis of the association between age group and smartphone addiction showed that younger age group factors were significantly associated with higher smartphone addiction than older age group smartphone users [20]. This study showed that respondents with family incomes of RM 1000 to RM 2000 have a high addiction level of 46 (21.5%). However, from the analysis result, no significant relationship was found between family income and smartphone addiction level. Unfortunately, there was a lack of research studies regarding smartphone addiction level and family income.

Limitation and recommendation: There were a few limitations that can be mentioned for this study. The first limitation of this study is the respondents. The respondents for this study are limited to those nursing students who are available during data collection. Additionally, the gender ratio is inappropriate where there are many female participants compared to male students. Therefore, the results of this study cannot be generalised and could also potentially be biased because it lacked male respondents. This is because most of the nursing students are females than males at Private Healthcare University College.

In addition, limitations of the study are possibly found in the information collected in the study based on self-reporting. It is possible that questions on the practice of smartphone use or the smartphone addiction scale were under-reported or over-reported by the respondents. Finally, there was a lack of literature or research study were found on this title. The recommendation of this study could be further studies should research the correlation between smartphone addiction and anxiety, depression, loneliness, low self-esteem, impulse, and social maladjustment to verify the structural model of the diagnostic system of smartphone addiction.

CONCLUSION

Based on the findings of this study, nursing students at Private Healthcare University College has a high smartphone addiction level and needed immediate attention and consideration to taken care of the students' well-being. This study had also shown some underlying factors that lead to smartphone addiction among nursing students. Daily time [hours] spent per day on a smartphone has shown excessive hours of smartphone use. Moreover, social network access is the most common smartphone activity performed by nursing students at Private Healthcare University College. These two are more likely to be the underlying factors of smartphone addiction, but no significant relationship was found between daily time [hours] spent on smartphones and addiction. Besides that, it is also noted that smartphone addiction is not influenced by socio- demographic data like age, gender, and family income. Each variable showed no association significant with smartphone addiction level.

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