Prevalence of Nomophobia among Undergraduate Students from Sagaing University of Education

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Abstract

This study investigated the prevalence of nomophobia among undergraduate students in Sagaing University of Education. Moreover, it also investigated the differences in the nomophobia by gender and smartphone usage behaviors such as duration of daily smartphone checking time, most frequently used application type and duration of daily social media usage. The quantitative research design and stratified random sampling method were used. The sample comprised 1000 undergraduate students distributed as 496 females and 504 males from all undergraduate classes. The nomophobia questionnaire (NMP-Q) by Yildirim & Correia (2015) was used. The results revealed that majority of the students in Sagaing University of Education show moderate or severe level of nomophobia. Moreover, they suffered from the highest level of anxiety for not being able to communicate with important others and access information when they cannot reach mobile phones. Furthermore, there were significant differences in nomophobia by duration of daily smartphone checking time, most frequently used smartphone application type and duration of daily social media usage but no significant differences by gender. This study may help undergraduate students realize and understand their level of anxiety when they are unable to use their mobile phones and be aware of the factors causing nomophobia. Future research may explore factors which can control the prevalence of nomophobia for better mental health of the university students.

Keywords:

phobia, nomophobia, smartphone use, smartphone usage behaviours

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1. Introduction

Nowadays, technologies such as mobile smartphones and the internet are rapidly growing. The smartphones, as the latest evolution of information and communication technologies (ICTs), have signaled the start of the mobile age (Yildirim & Correia, 2015). Mobile smartphones constitute the greatest inventions in the modern world. Because of their convenience and ease of use, most people in developed and developing countries use smartphones. According to Global Digital 2019 report, there are 5.11 billion active mobile subscriptions in the world with an official population of 7.7 billion (Kemp, 2019). This informs that smartphone mobile technology has spread rapidly around the globe.

Smartphones facilitate the process of communication and provide a level of mobility that allows users to be contacted at any time. Moreover, Lucia (2014) as cited by Rahayuningrum and Sary (2018), affirmed that communication technology also makes changes in community interaction with the world, perceptions of real interactions and smartphone interaction. The psychological impact of the use of this technology on individuals, groups and society is generally associated with changes in behavior and habits before and after the existence of smartphones (King et al., 2013). Individuals cannot avoid relationships with smartphones, and this greatly affects their interpersonal behavior and social habits. Thus, this situation confirms that a person has become more dependent on mobile phones in their daily lives.

This dependency has also resulted in the emergence of new phobias and mental disorders. One of the disorders caused by the use of smartphones is nomophobia, which is defined as an intense and irrational fear of being unable to be in contact with mobile phone. Frequently checking phones, spending too much time with mobile phones, avoiding places where mobile phones are prohibited, carrying a charger at all times, having more than one mobile phone, keeping phones close during sleep, going into expense and debt via smartphone, using phones at late hours without sleeping and checking phone in the morning can be listed as the common behaviors among nomophobic individuals (Bragazzi & Puente, 2014). A typical nomophobic individual can be distinguished by these behaviors. These symptoms or nomophobic behaviors can be found in many persons in this present

technology-driven age. This signals that this modern age phobia threatens the normal population.

Prevalence of nomophobia increases dramatically so that it cannot be uncared for, especially among the young people (Kaur & Sharma, 2015; Pavithra & Madhukumar, 2015, as cited in Gezgin et al., 2018). According to Yildirim and Correia (2015), young people aged 18 - 24 were the most prone to nomophobia, indicating 77% of them are nomophobits. Moreover, the studies of Gezgin and Cakir (2016) and Adnan and Yildirim (2016) as cited in Gezgin et al. (2018) pointed out that the prevalence of nomophobia in university students was higher than in other populations. Therefore, this phenomenon has also been seen as a risk factor among university students.

According to Digital Myanmar 2019, the number of mobile active subscriptions exceed the total population with more than 56.57 million subscriptions compared to a total population of 54.10 million. There is a high penetration rate of smartphones (105 percent of all mobile owners) in Myanmar, indicating smartphone mobile devices are almost accessible to Myanmar young people. However, rooting research in nomophobia is rarely found in Myanmar. In previous years, studies conducted in Sagaing University of Education (SUOE) indicated that all samples of students have smartphones and are mostly addicted to Facebook (Ei, 2019), majority of the students are moderately addicted to video games on smartphones (Nay, 2019), and the students' internet addiction was the highest among all university students in Sagaing District (Theint, 2019). These studies pointed out that SUOE students may be at risk of nomophobia to some extent. Therefore, this study aims to investigate the prevalence of nomophobia among the undergraduate students of Sagaing University of Education.

According to social cognitive theory (Bandura, 1982), human behavior including phobia can be explained by mutual causality of personal factors, environmental factors and behavior. Jesse (2015) found that the applications college students used the most in smartphones were social media applications (e.g., Facebook, Instagram, Twitter, Pinterest). This social media usage level had a positive relationship with nomophobia (Ayar et al., 2018). The duration of daily smartphone checking time is positively correlated with nomophobia (Kara et al., 2019). Moreover, some studies proved that there is no gender

difference in the problematic use of smartphones (Walsh &White, 2007), but Gezgin et al. (2018) found that females tend to exhibit more nomophobic behaviors than males, indicating need of more researches for consistent findings in gender role. Therefore, this study also aims to investigate whether nomophobia levels of undergraduate students are different according to gender and some smartphone usage behaviors, including duration of daily smartphone checking time, most frequently used application type and duration of daily social media usage.

This study mainly focuses on examining the prevalence of nomophobia, and the impact of gender and some smartphone usage behaviors on nomophobia of undergraduate students in Sagaing University of Education. It is anticipated that the present study will provide some preliminary evidence for the prevalence of nomophobia and add the powerful evidences about factors causing nomophobia that contribute to other future research directions, and ways to reduce nomophobia for better mental health of university students.

2. Literature review

2.1. The concept of nomophobia

Increasing interactions between individuals with mobile phones have recently revealed a modern age phobia – nomophobia (Yildirim & Correia, 2015). The United Kingdom Post Office firstly used the term "Nomophobia" in 2008 to signify anxiety which mobile phone users suffer. The nomophobia term is abbreviated form of no-mobile-phone phobia (SecurEnvoy, 2012, as cited in Yogurtcu, 2018). Bragazzi and Puente (2014) proposed nomophobia to be included as a mental disorder in the Diagnostic and Statistical Manual of Mental Disorders-V (DSM-V), considering the extent of the associated stress, anxiety, tension and the speed at which it spreads.

According to Yildirim (2014), nomophobia is the fear experienced by smartphone users, a construct comprising four dimensions: "*fear of not being able to communicate, fear of losing connectedness, fear of not being able to access information, and fear of giving up convenience.*" Even when they are temporarily unable to use the smartphones for some reasons, they generally come to suffer these four kinds of irrational fear.

"**Not being able to communicate**" dimension reflects feelings of being cut off from contact with other people and being unable to utilize services required for immediate communication. Absence of communication induces anxiety or nervousness. Individuals feel unsafe in case of failing to communicate with their family members and/or friends, and also not knowing if someone tried to contact them.

"**Losing connectedness**" dimension refers to feelings of being disconnected from one's online identity. Individuals experience feelings such as nervousness, discomfort, and awkwardness in the situations of losing connection with their perceived online society, not being able to stay up to date with social media, and not checking for update notifications constantly.

"**Not being able to access information**" dimension refers to feeling helpless in a state of not being able to search for required information through one's smartphone. Individuals feel frustrated if they are unable to get information through their mobile phones or access their best capabilities.

"**Giving up convenience**" dimension means feeling upset as the comfort offered by smartphones has gone. Individuals experience resentment while they are having trouble to complete simple tasks, such as making an order for a restaurant or booking a hotel through their smartphones. They want to stay in their comfort zone where their perfectly working smartphone is in their presence (Yildrim, 2014).

2.2. Theoretical framework

The social cognitive theory (SCT) and emotional attachment theory were considered together in combination as theoretical frameworks for Nomophobia.

The SCT contends that a person's behavior is shaped and influenced by a person's cognition (e.g., expectations, beliefs) and social relations (e.g., social networks) (Bandura, 1986). This theory argues that human behavior is controlled by cognitive mechanism through expected outcomes. Along with cognitive incentives, social influence controls human behavior and thus, it provides a way to explain behavior within a social cognitive framework (Bandura, 1986).

Social influence can be characterized as an individual's belief that is impacted within a community by another person (Raven, 1964, cited in Youn, 2016). This concept of social influence can be applied in the field of mobile technology, such as smartphone. According to Bandura (1986), various social experiences can extensively adjust and control human behaviors, and also expected outcomes can guide human behaviors. From these points of view, he proposed different types of expected outcomes as incentive motivators of behaviors: novel sensory, social, enjoyable activity, and self-reactive incentives. In the field of smartphone use, different types of expected outcomes might be predicted, considering the cognitive benefits of using a smartphone. Important expected outcomes for using mobile phones are information seeking, social contact, entertainment activity and self-reactive functions.

Due to its regular interplay with internet access, seeking information can be an important motive for smartphone use (Wei, 2008). Broadband mobile network connectivity and strong software-enabled apps have supported the distribution of knowledge to smartphone users (White, 2010, cited in Youn, 2016). Undeniably, most of the people, especially students, in this mobile age have been using smartphones as the main source of information.

Social contact is also among the main reasons for using mobile phones. There are many popular social networking sites in smartphones through which young people can get social benefits such as relief from loneliness or social anxiety, fulfilment of social needs, positive social influence and so on. Likewise, Leung and Wei (2000) identified social interaction as an important motive for smartphone use.

Entertainment activity can also be a significant motivation for smartphone use. Digital media files can be accessed by users for listening to music, watching videos, playing games or taking images. Users can keep themselves amused by enjoying thousands of online or offline apps in smartphones.

Self-reactive functions contribute to the enhancement of one's inner state through behavioural rewards. In order to monitor dysphoric moods, individuals are more likely to surf

the internet; smartphone users will therefore rely on the mobile phones to alleviate boredom and loneliness (LaRose et al., 2003).

In this modern world, most of the people have been using mobile ICT devices with such kinds of expected outcomes as information seeking, social contact, entertainment activity and self-reactive functions in mind.

On the other hand, Bowlby as cited by Youn (2016) described an attachment as an emotion-laden and target-specific relationship between a person and a specific person or object. Attachments can be moulded with varying intensity and linked to different emotions, such as love, enthusiasm, anxiety, and concern (Aron & Westbay, 1996; Brennan et al., 1998; Feeney & Noller, 1996, as cited in Youn, 2016).

When a person develops an attachment bond with another person or a particular object, he will surely experience four attachment-related behaviours such as proximity maintenance, safe haven, emotional security and separation distress (Ainsworth et al., 1978; Hazan & Shaver, 1994; Segrin & Flora, 2005 as cited in Youn, 2016). Proximity maintenance means a desire to be near the object attached. People tend to maintain a relatively close proximity to an attachment object. Safe haven refers to a person's desire to return to the object attached for comfort and safety, particularly when he experiences feeling down or stressed. Emotional security refers to feelings of security from the surrounding environment when they can be near the object attached. Separation distress refers to feeling of anxiety or concerns that arise in the absence of the object of attachment.

Smartphone users generally view their mobile devices as the extension of themselves (Vincent et al., 2005). The smartphones provide opportunities and comfort for users: as suggested by social cognitive theory, getting novel information, social benefits, entertainment activities and self-enhancement. Consequently, people have the desire to maintain close attachment with the mobile phones. Moreover, smartphones can assist people in accomplishment of tasks and acquirement of continuous connection with distant significant others. In the presence of mobile smartphones, these smartphone users, thus, become to have a sense of comfort and safety in daily livings. Besides, they become emotionally secure with the presence of smartphones because they can alleviate loneliness and boredom by spending time in online messaging tools such as Viber, Whatsapp,

Telegram, etc and can even get popularity in web-based social networks such as Facebook, Instagram, Twitter, YouTube, Google websites. Thus, these mobile devices gradually become an integral part of human modern life.

Unfortunately, one can experience excessive fear of being without access to mobile phones because without these devices, they cannot utilize affordances they provide. Some users, even if the disconnection was temporary due to battery exhaustion or failed internet connection, felt anxious when they were not connected to conversations on their mobile devices (Vincent & Harper, 2003, as cited in Youn, 2016). The proximity of the attachment figure gives a sense of security to the person in all types of attachment, and the separation from the attachment figure results in separation stress (Bowlby, 1969; Hazan & Shaver, 1994, as cited in Konok et al., 2016).

In summary, the social cognitive theory and the emotional attachment theory underline that when a person develops a strong emotional bond with a mobile phone which can create concerns about absence of mobile devices and being separated from them, he will surely encounter separation distress for not being able to get novel information, communicate with family and friends, complete tasks comfortably and connect to an identity in online environment. For that reason, nomophobia is known as the popular modern age phobia among smartphone users in the technology-driven age.

2.3. Gender difference in nomophobia

Relating with gender difference in nomophobia, there has been many studies reporting no significant gender differences (Walsh & White, 2007; Dixit, et al., 2010; Adnan & Gezgin, 2016; Sezer & Atilgan, 2019). However, Lee et al. (2014), Yildirim et al. (2016) and Gezgin, et al. (2018) found that female participants had higher nomophobia scores than males. Though, there are also studies indicating that the risk of nomophobia was higher in males as compared to females (Mallya et al., 2018; Odzemir, et al., 2018).

Females use their mobile phones to stay in touch with the persons they value and males use mobile phones for functional purposes (Lemish & Cohen, 2005). Both use mobile devices for different functions, showing no consistent differences. Therefore, men and

women have different intentions for using ICT devices, the smartphones, in various ways. Therefore, this study aimed to clarify gender difference in nomophobia.

2.4. Smartphone usage behaviors and nomophobia

According to social cognitive theory, human behavior including phobia can be explained by mutual causality of personal factors, environmental factors and behavior (Bandura, 1982). It informs that in a virtual environment like social media, individuals who fear from missing update information, social activities and immediate rewards may show anxious or problematic smartphone usage behaviors like nomophobia. According to Uses and Gratifications theory and Compensatory Internet Use theory, higher levels of smartphone-related processes and use of social media should be correlated with more problematic smartphone behaviors (Elhai et al., 2017; Kim & Haridakis, 2009). Normal phone checking habits for social messages provide an important road to problematic mobile phone use (Lee et al., 2014; Oulasvirta et al., 2012). Social messages result in instant gratification which drives for more phone use including even problematic usage (Oulasvirta et al., 2012).

Previous researches have studied the impact of phone usage behaviors on nomophobia such as adolescents' daily smartphone usage and nomophobic behaviours (Kara et al., 2019; Gezgin et al., 2018; Gonçalves et al., 2020), nomophobia and the most used applications (Gonçalves et al., 2020), and social media usage and nomophobia (Ayar et al., 2018). Therefore, this study also aimed to investigate the effect of duration of daily smartphone checking time, type of most frequently used application and duration of daily social media usage on nomophobia.

3. Methodology

2.1. Research design

In order to execute the research objectives quantitatively, this study focuses mainly on quantitative research approach by means of survey design. This survey study was conducted by cross-sectional design which is effective for providing a snap-shot of the current behaviors, attitudes, and beliefs in a population.

2.2. Population and sample

The target population for this study was undergraduate students from Sagaing University of Education. There were 354 first year students, 425 second year students, 698 third year students, 630 fourth year students and 546 fifth year students during the 2019 - 2020 academic year at SUOE. For guaranteeing equal representation of each study level group, this study used the equal stratified random sampling method to make accurate generalizations about the whole population. Thus, the stratified variable is the participants' study level. In order to get about 200 students in each study level group, the sample of about 1000 undergraduate students was randomly selected from five strata of first year to fifth year level students enrolled in SUOE during the 2019 – 2020 academic year. The obtained sample includes 504 male and 496 female undergraduate students, as shown in the following table.

Table 1

Demographic information of the participants

No.	Year	Number of Selected Students		Total
		Male	**Female**	
1	First Year	101	100	201
2	Second Year	100	100	200
3	Third Year	100	100	200
4	Fourth Year	100	96	196
5	Fifth Year	103	100	203
	Total	**504**	**496**	**1000**

2.3. Instrumentation

The data were collected through the use of Nomophobia Questionnaire (NMP-Q) developed by Yildirim & Correia (2015). Nomophobia Questionnaire is originally a 20-item scale, which is comprised of four factors that include not being able to access information (NRI), giving up convenience (GUC), not being able to communicate (NC) and losing connectedness (LC)). This instrument uses a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). The interpretation of the NMP-Q score suggests the level of nomophobia such as score 20 corresponding to the absence; 21–59 corresponding to a mild level; 60–99 corresponding to a moderate level; and ≥100 corresponding to severe level.

Since this NMP-Q instrument is not available in Myanmar version, it was firstly translated to Myanmar language, reported to the experts in the field of Educational

Psychology from SUOE to examine its face validity and checked via Confirmatory Factor Analysis to confirm the constructs. In order to test the consistency between the predicted and observed data matrixes, many fit indexes were calculated and the results were shown below.

Table 2

Summary of all fit indexes for construct validity of NMP-Q

Fit Indexes	Ideal Standards	First Model
RMSEA	< 0.1	.068
TLI	> 0.9	.898
CFI	> 0.9	.913
SRMR	<0.05	.049

The ideal standards for fit indexes were adapted from Hooper, Coughlan and Mullen's guidelines for Determining Model Fit for Structural Equation Modelling. The result showed that all of the fit index values are in the acceptable range, thus confirming the construct validity of the Myanmar version of the NMP-Q.

Table 3

Summary for internal reliability, construct reliability and convergent validity of constructs in NMP-Q

Construct	Item	Factor Loading	Cronbach's Alpha	CR	AVE
Not being able to access information (NRI)	Q 1	.69	.79	.79	.49
	Q 2	.72			
	Q 3	.73			
	Q 4	.65			
Losing Connectedness (LC)	Q 5	.56	.76	.74	.37
	Q 6	.54			
	Q 7	.57			
	Q 8	.76			
	Q 9	.59			
Not being able to Communicate (NC)	Q 10	.62	.85	.85	.49
	Q 11	.64			
	Q 12	.64			
	Q 13	.80			
	Q 14	.72			
	Q 15	.77			
Giving up Convenience (GUC)	Q 16	.62	.82	.82	.49
	Q 17	.82			
	Q 18	.81			
	Q 19	.66			
	Q 20	.55			

Note: CR=Construct Reliability, AVE=Average Variance Explained

According to the result, the internal and construct reliabilities of all sub-constructs were greater than .7, showing acceptable reliabilities of an instrument in social science field. Some researchers express that AVE values should be greater than .5. However, some accept AVE values greater than .35 as acceptable validity, when all other reliabilities and validity values were in acceptable ranges. For the Myanmar version of NMP-Q, this study shows that the AVE values of all the sub-scales were greater than .35. Therefore, all the constructs of NMP-Q are reliable and valid for measuring nomophobia. Moreover, the internal consistency reliability coefficient, Cronbach's alpha, of the whole NMP-Q is 0.911. Therefore, this Myanmar version of NMP-Q is a highly reliable and valid instrument for measuring nomophobia of university students.

4. Findings and Discussion

4.1. Prevalence of Nomophobia (NOMO) among Undergraduate Students

Table 4

Descriptive statistics for nomophobia of SUOE undergraduate students

Variables	No. of items	Minimum	Maximum	Mean	Mean/k	SD
NRI	4	4	28	18.41	4.603	4.914
GUC	5	5	35	22.74	4.548	6.189
NC	6	6	42	29.02	4.837	7.210
LC	5	5	35	20.18	4.036	6.393
Overall Nomophobia	**20**	**20**	**138**	**90.35**	**4.518**	**20.055**

Note: k= number of items

The nomophobia level of undergraduate students is found to be higher than average (Mean/k=4.518). Among the subscales, the average mean for "Not being able to communicate" was the highest, followed by "Not being able to access information" and "Giving up convenience" subsequently. Among the indicators, losing connectedness was the lowest level. Therefore, students suffer from the highest risk of nomophobia especially because of the subscales "Not being able to communicate" and "Not being able to access information."

As shown in Table 4, the mean score for nomophobia was 90.35 and it is in the range of moderate level (60 - 99), as identified by Yildirim and Correia (2015). This finding is in line with the previous studies (Gezgin et al., 2017; Yildiz-Durak, 2018; Sezer & Atilgan, 2019), showing moderate level of nomophobia in the participants.

Table 5

Distribution of undergraduate students in different nomophobia groups

Nomophobia	Range	Frequency	Percentage
Severe level	$100 \leq NOMO \leq 140$	352	35.2%
Moderate level	$60 \leq NOMO \leq 99$	565	56.5%
Mild level	$21 \leq NOMO \leq 59$	82	8.20%
Absence level	$NOMO = 20$	1	.010%
Total	$20 \leq NOMO \leq 140$	1000	100.0%

Table 5 shows that, 1 student (.010%) was in the absence level of NOMO group, 82 students (8.20%) was in the mild level of NOMO group, majority of the students, 565 students (56.5%), were in the moderate level of NOMO group and unfortunately founded that 352 students (35.2%) were in the severe level of NOMO group. Therefore, it can be interpreted that generally majority of the students (91.7 %) in the current study showed moderate level or severe level of nomophobia.

When examining the responses of students to individual items, respondents have the highest mean scores (5.43) in item 10 (communication with family and friends), item 7 with mean of 5.29 (connect Wi-Fi or Internet access), item 4 with mean of 5.13 (use smartphone and/ or capabilities), item 2 with mean of 5.06 (get novel information), and item 15 with mean of 5.06 (constant connection with family and friends). Students excessively use smartphones, and feel incomplete and anxious without smartphones because of their desires to communicate with family and friends, use capabilities of smartphone and get novel information through smartphones.

A review of nineteen studies conducted in eleven countries reported that percentages of students with severe level of nomophobia ranged from 8.5 % to 22.1% (Arora & Chakraborty, 2020). Unfortunately, this study indicated that 35.2% of students suffer from severe level of nomophobia, arising from greatest fear of not being able to communicate with

others and not being able to access information. This result notifies a state of urgent need for searching factors causing this situation and developing ways for preventing nomophobia.

4.2. Comparison of SUOE undergraduate students' nomophobia by gender

Table 6

Comparison of SUOE undergraduate students' nomophobia by gender

Factor	Group	Mean	Test	Significance
Gender	Male	89.58	$t=-1.231$	$p=.218$
	Female	91.14		

Table 6 shows that there was no significant difference in nomophobia by gender, although female students' mean NMP-Q score was a little higher than male students. Therefore, it can be concluded that gender is not a factor which can affect nomophobia. This finding is consistent with the results of studies by Dixit et al. (2010), Adnan and Gezgin (2016), and Sezer and Atilgan (2019).

Previous literature stated that females use their mobile phones to stay in touch with the persons they value and males use mobile phones for functional purposes (Lemish & Cohen, 2005). Additionally, females use mobile phones for social reasons and internet services and males use for phone calls (Bianchi & Phillips, 2005; Toda et al., 2006). Moreover, females use mobile phones for communication purposes and males use that device for exploration and games (Sanchez-Martinez & Oetro, 2009). Therefore, both females and males use different functions of smartphones and they equally depend on smartphones on every part of their lives. For that reason, there is no gender difference in nomophobia of undergraduate students in SUOE.

4.3. Comparison of SUOE undergraduate students' nomophobia by smartphone usage behaviours

Smartphone usage behaviors of undergraduate students were divided into duration of daily smartphone checking time, type of most frequently used application in smartphone and duration of daily social media usage.

Table 7

Comparison of SUOE undergraduate students' nomophobia by smartphone usage behaviours

Factor	Group	Mean	Test	Significance
Duration of Daily Smartphone Checking Time	Below 2 hours	86.74	F=4.039	p=.003
	Between 2 and 3 hours	89.07		
	Between 3 and 4 hours	89.74		
	Between 4 and 5 hours	94.29		
	Over 5 hours	93.39		
Most frequently used application	Facebook	91.71	F=5.616	p=.004
	Games	90.03		
	Others	86.39		
Duration of Daily Social Media Usage	Below 2 hours	87.99	F=5.143	p=.000
	Between 2 and 3 hours	92.10		
	Between 3 and 4 hours	94.37		
	Between 4 and 5 hours	97.33		
	Over 5 hours	91.83		

ANOVA results in Table 7 shows that there were significant differences in nomophobia by duration of daily smartphone checking time ($p<0.01$), type of most frequently used application in smartphone ($p<0.01$), and duration of daily social media use ($p<0.001$). Therefore, these smartphone usage behaviors significantly affect nomophobia of undergraduate students in SUOE.

To obtain more detailed information, Post-Hoc tests were executed through Tukey HSD method for each of smartphone usage behaviors.

Table 8

Result of Tukey HSD for SUOE undergraduate students' nomophobia by duration of daily smartphone checking time

(I) Group	(J) Group	Mean Difference (I-J)	Sig.
Below 2 hours	Between 4 and 5 hours	-7.545	.008
	Over 5 hours	-6.646	.022

As shown in Table 8, there were significant differences between users with below 2 hours and users between 4 and 5 hours (p<.01). Therefore, students who use smartphone between 4 and 5 hours are assumed to have higher level of nomophobia. There was also significant difference between the users under the below 2 hours and the over 5 hours (p<.05). Therefore, students who use smartphone over 5 hours are assumed to have higher level of nomophobia. For this result, it can be interpreted that students who use smartphones over 4 hours in a day have higher level of nomophobia.

Capabilities of smartphones such as getting information, ease of mobility, convenience and safety, facilitating in the process of communicating and passing time and alleviation make people more dependent on smartphones (LaRose & Eastine, 2004). Those benefits offered by smartphone may also cause students to depend on smartphones for most of daily affairs. Thus, it may increase the dependency on mobile phones and can lead to nomophobia.

Table 9

Result of Tukey HSD for SUOE undergraduate students' nomophobia by most frequently used application type in smartphone

(I) Group	(J) Group	Mean Difference (I-J)	Sig.
Facebook	Others	5.316	.002

As shown in Table 9, there were significant differences between Facebook users and others (p<.01). Therefore, it can be interpreted that students who use Facebook application most are supposed to have higher level of nomophobia than others.

By using Facebook application, students can update their profile, posting, chatting, sharing photos, new identities, gaming, watching, videos, and online shopping. In this way, students are gratified using Facebook in smartphone and become excessive smartphone users. According to Ei (2019), students in Sagaing University of Education have high level of Facebook addiction. In this manner, students excessively use smartphone and this may lead to nomophobia.

Table 10

Result of Tukey HSD for SUOE undergraduate students' nomophobia by duration of daily social media usage

(I) Group	(J) Group	Mean Difference (I-J)	Sig.
Below 2 hours	Between 3 and 4 hours	-6.378	.020
	Between 4 and 5 hours	-9.341	.012

As shown in Table 10, there were significant differences between "below 2 hours" users and "between 3 and 4 hours" users (p<.05). There were also significant differences between "below 2 hours" users and "between 4 and 5 hours" users (p<.05). Therefore, it can be interpreted that students who use social media between 3 hours and 5 hours in a day are supposed to have higher level of nomophobia.

Excessive social media usage can also lead to excessive smartphone usage. Social network enables users to escape from feelings of loneliness (Byun et al., 2009; Esen, 2009, as cited in Gezgin et al. 2018). Students in Sagaing University of Education have high level of loneliness (Ei Ei Shorn Aung, 2019). Therefore, excessive social media usage help students escape from lonely feelings as it offer a variety of rewards, such as self-efficacy and satisfaction, resulting to continued and increased use and addictions, which lead to nomophobia.

5. Conclusion

This study examined the nomophobia of the undergraduate students at Sagaing University of Education. It also compared the nomphobia of the students by gender and smartphone usage behaviors such as duration of daily smartphone checking time, type of most frequently used application in smartphone, and duration of daily smartphone checking time).

According to the result of the descriptive analysis, majority of the students in Sagaing University of Education suffer from moderate to severe level of nomophobia. Their greatest risk of nomophobia is due to their fear of not being able to communicate and not being able to access information. The independent samples *t*-test result showed that gender was not a factor that can predict nomophobia. Furthermore, the results of one-way ANOVA found that

the duration of daily smartphone checking time, type of most frequently used application in smartphone and duration of daily social media usage significantly affect nomophobia of the students. These results indicated that the excessive smartphone use for social networks such as Facebook increase the level of nomophobia.

Nomophobia is becoming a problem among the SUOE population. Such a great development of information and communication technology also poses a big threat to the students. Thus the use of mobile phones in teaching and learning adds both advantages and disadvantages. These mobile devices can facilitate or distract learning. Since it was pointed out that mobile learning and nomophobia are positively correlated, every online education developers in the context of higher education, especially SUOE, should be aware of this possible problem of nomophobia. Therefore, administrators and practitioners in SUOE consider to control this problem through intervention programs like mindfulness-based intervention and cognitive behavior therapy. Relative to this, the teacher also play vital role in reducing nomophobia among the students. As they have direct contact with their students, they can encourage them to control their smartphone use, entice them to access novel information via TV, magazines, books, journals, etc. rather than smartphones, inform them to value face-to-face communication with family and friends than virtual communication, inform them ways to limit the amount of social media usage time (e.g, facebook and games), encourage them to have new hobbies, participates in sports, social and cultural activities to reduce loneliness, and hold many different academic and athletic competitions to gain rewards, self-efficacy and satisfaction.

This research was conducted by cross-sectional survey design. Therefore, it cannot provide strong evidence of cause and effect relation between smartphone usage behaviors and nomophobia. Moreover, using a single questionnaire with close-ended questions cannot provide participants' accurate honest answers and reasons for each response, thus lowering the validity of results. To give more accurate results, this quantitative study should be combined with qualitative tools such as observation checklists and open-ended interviews which can examine the problems experienced by students displaying nomophobic behaviors. To theoretically confirm the relation between smartphone usage behaviors and nomophobia, other populations than SUOE should also be examined.

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