

Smartphone Usage Among Malaysian Undergraduate Nursing Students During Clinical Placement

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ABSTRACT

Introduction: Smartphone has become one of the basic needs in daily life, especially in health care settings. Besides acting as a medium of communication, this modern technology acts as a tool for healthcare providers to access medical and health information and manage their schedule. The adoption of smartphones has given positive impacts on nursing students in clinical learning experiences. However, as the number of smartphones utilisation increases, nursing students face the risk of violating a patient's privacy and confidentiality, which might affect their professionalism as well. **Objectives:** This study aimed to assess the smartphone usage among undergraduate nursing students during clinical placement. **Method:** A cross-sectional descriptive study was conducted at one of the universities in Malaysia. Convenience sampling method was used to select the sample, and 202 participants were involved in this study. The data was analysed using IBM SPSS Statistics 20. **Result:** The result showed that the majority of the nursing students in this study (82.7%) had used smartphones during their work hours in clinical practice. They mainly used the smartphone for work-related purposes, including searching for information on drugs, patients' medical or health condition, patient care and patient education materials, and communicating with their teammates. Nevertheless, some students used the smartphone for non-work-related activities, such as online shopping, checking or posting a status on social media and playing online games, as well as communicating with friends and family. Moreover, about half of the students reported asking for consent before taking pictures (51.5%) and never or rarely share clinical images (53.4%).

Keywords: Smartphone, Undergraduate, Nursing Students, Clinical Practice

INTRODUCTION

In recent years, smartphones have become an integral part of life globally. In healthcare settings, the mobile device facilitates communication between healthcare teams and enhances access to information and professional guidelines (1). Studies reported that smartphone usage during clinical practice has a positive impact on nursing students in their clinical learning experiences. It enhances their clinical competencies and efficacies, supports decision-making skills, and improves their self-confidence (2, 3). These benefits may provide tremendous support to them, as nursing students

are reported to face challenges throughout their clinical experience, including high uncertainty in decision-making, lack of support, and poor relationships with nurses and staff (4).

However, smartphones are also found to cause unintended adverse consequences. Studies found that the overuse of this technology distracts healthcare providers in clinical settings, especially when used for non-work-related purposes (5). It may affect the productivity and professionalism of healthcare providers if used without abiding by the guidelines provided by hospitals, especially nurses, as they are always with the patients (6). The advanced function of a smartphone, together with its unlimited usage by the healthcare providers, could pose a threat to patient's safety, as well as violate data privacy and confidentiality (7). This is due to the ease of image capture, as well as audio and video recording, which could be stored and easily shared. Similarly, excessive smartphone usage among healthcare providers may disrupt communication and social engagement with their patients (8, 9). Therefore, despite the benefits, the Ministry of Health (MOH), Malaysia restricts

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mobile phone usage among their staff and customers since 2006, and extended the prohibition to the recording and spreading of photos, videos, and sensitive information among healthcare providers in 2015 (10, 11).

In summary, smartphone usage among healthcare providers, including nursing students, have both positive and negative implications to them and also their patients. Therefore, this study aimed to investigate the pattern and purpose of usage among nursing students during their clinical practice. Additionally, their perception of the effects of smartphone usage on their work productivity was also examined.

MATERIAL AND METHOD

Study Setting and Design

A cross-sectional quantitative study was conducted at one of the universities in Malaysia. Convenience sampling method was used, and 202 participants were successfully recruited from 255 undergraduate nursing students with clinical experience.

Material

The questionnaire was prepared in English and consisted of four parts. Part A included sociodemographic questions, Part B consisted of four items related to the students' smartphone usage pattern during clinical placement, while Part C was meant to investigate the purpose of smartphone usage in clinical practice. This part consisted of 15 items adapted from previous study investigating personal communication device usage among nurses in clinical areas (5). Each item has a Likert-type scale from 1-5; 1 = never, 2 = rarely, 3 = sometimes, 4 = often, and 5 = always. The Cronbach's alpha result of a pilot study for this part was 0.833. The last part of the questionnaire, Part D, assessed the students' perception of their work productivity concerning smartphone usage in clinical practice. This part consisted of 10 items and was adapted from a previous study (6). The items were rated as follows: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree. The result of Cronbach's alpha for this part was acceptable (0.647).

Ethical consideration

The approval for this study was granted by the Kulliyyah of Nursing Postgraduate Research Committee (KNPGRC) and IIUM Research Ethics Committee (IREC). The informed consent was also obtained from the participants involved in this

study.

Data collection

The data collection was conducted from mid of June 2020 to July 2020. Students who met the inclusion criteria were approached by the researcher and invited voluntarily to answer the questionnaire. A consent form was attached to the questionnaire, and the contents consisted the explanation on the purpose of the study, procedure, confidentiality, and the right to withdraw, as well as the contact information of the researcher. An incomplete questionnaire was excluded from the data analysis. All the information given by the participants is kept confidential throughout the study process. The analysis was done using IBM SPSS Statistic 20.

RESULTS

Table 1 presents the data regarding the year of study of the participants. Out of 202 students involved in this study, 59 (29.2%) were second-year students, 63 (31.2%) third-year students, and the rest 80 students (39.6%) were final year students.

Table 1: Frequency and percentage of participants based on the year of study (N = 202)

Year of study	Frequency <i>n</i> (%)
Year 2	59 (29.2)
Year 3	63 (31.2)
Year 4	80 (39.6)

Smartphone Usage Pattern During Clinical Placement

As shown in Table 2, most of the nursing students involved in this study (82.7%) used smartphones during clinical placement. Approximately 35.6% the participants used their smartphones during the break session, 27% during ward rounds, 23.3% used it in the procedure room, 15.8% used it in the clinic, and 1% during medication preparation. The primary purpose of students using the smartphone is for communication (40.3%, *n* = 144). A total of 84 (23.5%) students searched information using their smartphone during clinical placement, 21.6% used it to capture photos, and 9% to record video. From 35 students who reported that they do not use smartphones during clinical placement, the main reason for them to do so was due to their concern about professionalism (*n* = 29, 83%), followed by privacy concern (*n* = 24, 69%), and lack of time (*n* = 20, 57%).

Table 2: Smartphone Usage Pattern During Clinical Placement (N = 202)

Variable		Frequency <i>n</i> (%)
Using smartphone during clinical placement	Yes	167 (82.7)
	No	35 (17.3)
Timing or area of smartphone usage	Rest	72 (35.6)
	Ward round	27 (13.4)
	Preparing medication	2 (1.0)
	Procedure	47 (23.3)
General reason of smartphone usage	Clinics	32 (15.8)
	All	19 (9.4)
	Communication	144 (40.3)
	Search information	84 (23.5)
	Capture photo	77 (21.6)
Reason of not using smartphone	Recording video	32 (9.0)
	Playing music	20 (5.6)
	Professionalism concern	29 (37.2)
	Privacy concern	24 (30.8)
	Lack of time	20 (25.6)
	Prefer to talk	3 (3.8)

Frequency of smartphone usage during clinical placement

Based on Table 3, most of the students (78.8%) commonly use smartphones during clinical placement to access drug references, followed by accessing nursing or medical information (76.8%). The students also often (33.7%) and always (12.4%) contact their colleagues on work-related matters. More than half of the students (55.4%) indicated that they often/always searched for information regarding patients using the smartphone.

More than half of the students reported that they never or rarely used a smartphone during clinical placement to chat with colleagues for non-work-related matters (61.4%), taking a call from friends or family for personal matters (61.9%), or shopping online (81.4%). On the other hand, some students indicated that they always or often use a smartphone to call or send messages to family and friends (21.8%), read online news (18.3%), as well

as check or post updates on social networking sites (17.8%).

In terms of clinical images, more than half of the students reported that they commonly asked consent from the patients or family members to take photos (51.5%). Meanwhile, 53.4% of the students also mentioned that they never or rarely share clinical images with their colleagues.

Table 3: Frequency of smartphone usage during clinical placement (N = 202)

Item	Frequency <i>n</i> (%)				
	Never	Rarely	Some-times	Often	Al-ways
1. I access drug references.	2 (1.0)	7 (3.5)	34 (16.8)	89 (44.1)	70 (34.7)
2. I access work-related nursing/ medical information.	0 (0)	7 (3.5)	40 (19.8)	87 (43.1)	68 (33.7)
3. I am chatting with my colleagues for non-work matter via smartphone.	37 (18.3)	87 (43.1)	52 (25.7)	12 (5.9)	14 (6.9)
4. I access work-related apps that assist my patient care.	10 (5)	28 (13.9)	61 (30.2)	65 (32.2)	38 (18.8)
5. I take call with my friends/ family for personal matters.	35 (17.3)	90 (44.6)	46 (22.8)	16 (7.9)	15 (7.4)
6. I access sites for patient handouts and teaching.	7 (3.5)	18 (8.9)	65 (32.2)	78 (38.6)	34 (16.8)
7. I call or send work-related text messages or emails to other members of the healthcare team.	13 (6.4)	30 (14.9)	66 (32.7)	68 (33.7)	25 (12.4)
8. I read online news.	59 (29.2)	58 (28.7)	48 (23.8)	23 (11.4)	14 (6.9)
9. I call or check/send text messages or emails to family or friends.	32 (15.8)	76 (37.6)	50 (24.8)	28 (13.9)	16 (7.9)
10. I shop on Internet.	130 (64.4)	34 (16.8)	18 (8.9)	11 (5.4)	9 (4.5)
11. I check/post on social networking.	57 (28.2)	72 (35.6)	37 (18.3)	23 (11.5)	13 (6.4)
12. I play online games.	129 (63.9)	44 (21.8)	19 (9.4)	5 (2.5)	5 (2.5)
13. I access Internet to release my stress during working hours	55 (27.2)	53 (26.2)	57 (28.2)	24 (11.9)	13 (6.4)
14. I asked patient's or family members' consents before taking clinical images.	40 (19.8)	20 (9.9)	38 (18.8)	49 (24.3)	55 (27.2)
15. I shared/posted work-related images among colleagues.	55 (27.2)	53 (26.2)	46 (22.8)	31 (15.3)	17 (8.4)

Table 4: Perceived work productivity related to smartphone usage during clinical placement (N = 202)

Item	Frequency <i>n</i> (%)				
	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
1. The use of my smartphone for non-work-related activities has never distracted me while working.	17 (8.4)	40 (19.8)	74 (36.6)	53 (26.2)	18 (8.9)
2. The use of my smartphone for non-work-related activities has helped me improve my working performance.	21 (10.4)	56 (27.7)	57 (38.6)	33 (16.3)	14 (6.9)
3. The use of my smartphone has enabled better coordination of patient care among the healthcare team.	3 (1.5)	20 (9.9)	70 (34.7)	83 (41.1)	26 (12.9)
4. Smartphone use has improved unit cohesion and teamwork.	1 (0.5)	17 (8.4)	72 (35.6)	86 (42.6)	26 (12.9)
5. Smartphone use has improved patient safety.	16 (7.9)	46 (22.8)	82 (40.6)	39 (19.3)	19 (9.4)
6. Smartphone use at work for non-work-related activities improves my ability to focus on my work.	41 (20.3)	81 (40.1)	55 (27.2)	17 (8.4)	8 (4.0)
7. Use of smartphone at work for non-work-related activities reduces work-related stress	10 (5.0)	19 (9.4)	77 (38.1)	70 (34.7)	26 (16.8)
8. Use of smartphone at work had cause medical error.	17 (8.4)	34 (16.8)	71 (35.1)	65 (32.2)	15 (7.4)
9. Smartphone helps to improve the quality care of patient.	4 (2.0)	20 (9.9)	80 (39.6)	71 (35.1)	27 (13.4)
10. Smartphone usage for non-work-related purpose would cause harm to patient's privacy and health (e.g. breach and infection)	9 (4.5)	14 (6.9)	57 (28.2)	86 (42.6)	36 (17.8)

Perceived work productivity related to smartphone usage during clinical placement

Table 4 describes the students' perception of the productivity of work related to the use of smartphone in clinical settings. More than half of them (55.5%) perceived that the use of smartphone enhances unit cohesion and teamwork and enables better coordination of patient care among the healthcare team (54%). About 48.5% of the students also strongly agreed or agreed that smartphone usage in clinical placement improves the quality of patient care.

Over half of the students (60.4%) strongly disagreed or disagreed that the use of smartphones during clinical improved their ability to focus on their work. Similarly, 60.5% of them agreed or strongly agreed that smartphone usage for the non-work-related purpose might jeopardise their patients' privacy and health condition.

However, 47.6% of the students strongly agreed and agreed that they could reduce work pressure by using their smartphones for non-work-related activities during clinical placement.

DISCUSSION

In this study, the majority of nursing students (82.7%) used smartphones during clinical placement. Most of them used the smartphone to search for educational materials about drugs and medical or health conditions, as well as for communication with their teammates. The high use of smartphones could be explained by the current growth in Internet access, as well as increased availability of medical and health websites and apps (12). This is contrary to a similar study in the United Kingdom, where less than half of the participants used a smartphone to access mobile apps when they were in clinical practice (13). The participants of the study by O'Connor and Andrews reported that they do not use the technologies as they faced issues of poor Internet connectivity at the clinical sites, nursing staff attitude, and the quality of online information (13). Whereas, the reasons for non-usage of the smartphone in this current study are more related to students' concern on their professionalism and patients' privacy.

Although smartphones are mostly used for work-related purposes, this study also found that nursing students also used it for non-work-related purposes. Similarly, the study by McBride and LeVasseur in the United States (5) reported that the majority of nursing students in their study used

smartphones to communicate about personal matters, social networking sites, and reading news. Some of the students also reported that they used their smartphones for shopping online (35.6%) and play games (36.1%) during clinical placement. This could be their way to cope with work pressure, as a majority of the students (72.8%) reported that they used smartphones to ease stress during working hours, and almost half of them (47.6%) also perceived that it would work. Similarly, another study also found that using smartphones for non-work-related purposes may provide nursing students with emotional support and productive break, as it distracts them from work pressure (14). However, Gill and colleagues reported that smartphone usage for these purposes in clinical practice might cause an adverse cognitive distraction to the healthcare providers (15). Smartphone usage in clinical practice not only lead to the increased reaction time of healthcare providers but also reduced focus, cognitive performance and decision-making skills, which ultimately compromise the quality of care. Thus, precautions are recommended in the usage of smartphones in clinical practice, including storing the personal smartphones and using the facility's devices during working hours, creating no smartphones restricted and friendly zones, and regulating access to social networking sites, and promoting intra-facility communicating network to facilitate communication between healthcare providers (15).

When it comes to issues of confidentiality and privacy, a majority of the participants (80.2%) obtained consents from patients or family members before taking clinical pictures. The rest may not do so, as the pictures taken may not be directly connected to individual patients or contain any personally identifiable information, such as pictures of medical devices, drugs or physical facilities. Most of them (60.4%) also perceived that smartphone usage for non-work-related activities might affect patients' privacy and overall condition. These findings indicate nursing students' understanding of the ethical issues surrounding the use of smartphone and patients' privacy and confidentiality. Nevertheless, to ensure the best practices on this issue, regulations on obtaining permission before taking any digital material should be reinforced besides ensuring high-security digital network and appropriate encryption of digital data (15).

Overall, despite the restriction of the personal smartphone or mobile phones at the government health institution, nursing students in this study used their smartphones during the clinical placement, especially for work-related purposes.

The high usage could be due to their perception that it helps in coordinating and improving patient care, as well as enhancing teamwork. Due to the same reasons and other benefits, despite its drawbacks on the quality of care, revision on the restriction policies of the smartphone usage in the health facilities is recommended (16, 17). The revision should include the appropriate manner of smartphone usage, mechanisms to protect data confidentiality and privacy, as well as consequences of misuse (17). These improvements are vital to ensure that nursing students and healthcare providers could benefit from smartphone usage without interfering their professionalism, as well as patient care, safety, and confidentiality. Besides, a Malaysian study by Hassan and Minato (2018) showed that the adoption of smartphone-based healthcare technology might reduce the proportion of basic medical expenses and increase inpatient discharge rate (18).

CONCLUSION

In summary, most nursing students used a smartphone during clinical practice for both work-related and personal purposes. Most of the students used the smartphone for work-related purposes, as a tool of work-related communication and to access the educational resources in providing nursing care to patients. However, some students also reported that they used a smartphone for non-work-related activities such as online shopping, playing games, and communicating with friends and family members. Nevertheless, a majority of the students are aware of the professionalism and data privacy and confidentiality issues related to smartphone usage during clinical placement.

The findings of this study highlighted the need for issues related to smartphone usage to be further emphasized in nursing teaching and learning. Besides, guidelines and policies need to be established and improved as guidance for nursing students and other healthcare providers in using smartphone during working hours.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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