Original Article

Smartphone Use of Thai Medical Students in Clinical Years

Lalit Leelathipkul MD[1], Paskorn Sritipsukho MD[1,2], Chomkwan Decha-umphai MD[3], Thitaporn Vivattanasinchai MD[4], Patarawut Sritipsukho[5]

[1] Department of Pediatrics, Faculty of Medicine, Thammasat University, Pathum Thani, Thailand

[2] Research Group of Clinical Epidemiology, Faculty of Medicine, Thammasat University, Pathum Thani, Thailand

[3] Chulabhorn Royal Academy, Bangkok, Thailand

[4] Queen Savang Vadhana Memorial Hospital, Chonburi, Thailand

[5] Medical student, Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand

Background: Personal and educational use of smartphone is common.

Objective: To examine the smartphone use among medical students at Thammasat Medical School.

Materials and Methods: A cross-sectional study was performed by recruiting 200 medical students in clinical years at Thammasat Medical School. Respondents completed a self-administered questionnaire asking about their smartphone use for specific purposes in daily life. Their grade point averages (GPA) from the previous semester were collected.

Results: The authors found the medical students spent a mean time of 6.9 hours (SD 3.5 hours) per day using smartphones. They used smartphones mostly for social media, with a mean duration of 2.9 hours (SD 2.6 hours). The most popular medical application/website used for medical education was "Google", followed by "Medscape", "Up to date", and "Clinical key", respectively. A negative Spearman rank correlation (r=−0.19, p<0.012) was found between GPA and total hours spent using smartphones.

Conclusion: The present study demonstrated the importance of smartphone use in the daily lives of medical students. Smartphones had both positive and negative impacts on medical education.

Keywords: Smartphone; Behavior; Medical students; Grade point average

Communication technology has grown and developed rapidly over the past 40 years. Humans have developed communication channels, from print media to telephone communication. Mobile phones have evolved into smartphones, which are more efficient because they connect to the internet. Smartphones are mobile phones that have computer-like capabilities and can connect to the internet. In the age of digital communication, high speed internet makes communication and searching information easy[1].

Correspondence to:

Sritipsukho P.

Department of Pediatrics, Faculty of Medicine, Thammasat University, Khlong Luang, Khlong Nueng, Pathum Thani 10220, Thailand.

Phone: +66-89-1995337, **Fax**: +66-9269755

Email: paskorn100@yahoo.com

Personal and educational use of smartphones are increasingly common. Medical students use smartphones for study and for communications in daily life[1]. Using a smartphone can be a risk or an advantage for education[2,3]. It may be a research tool for studying inside and outside classrooms. However, it can be a gateway diverting students to social networks and online games. The present study aimed to examine the smartphone usage among medical students in clinical years at Thammasat Medical School.

Materials and Methods

A cross-sectional study was performed by recruiting a random sampling, stratified by academic year, of 200 medical students in clinical years at the Thammasat Medical School between August and December 2017. Respondents completed a self-administered questionnaire asking about smartphone use for specific purposes in daily life. The present study was approved by the Ethics Committee of Thammasat University No.1 (MTU-EC-PE-1-055/60).

A sealed envelope containing a letter of permission and a questionnaire was sent to each subject. The subjects were asked to sign the consent and complete the questionnaire and to return them to the research team within one week. The grade point average (GPA) from the previous semester was collected from each participant. A sample size of 200 was calculated based on Yamane's formula to account for an error of 0.05 from the population of 850 medical students.

Descriptive statistics were used to summarize continuous data with mean and standard deviation. Categorical data were presented with number and percentage. Independent t-test was used to compare duration of using smartphones in hours between students with GPA of 3.5 or more and those with GPA of less than 3.5. The Spearman rank correlation coefficient was used to measure correlation between hours spent using smartphones and GPA of the previous semester, with the statistical significance level of 0.05. All analyses were performed using Stata, version 14 (StataCorp LP, College Station, TX, USA).

Results

One hundred eighty-three medical students returned the questionnaires for analysis. This was a response rate of 91.5%. Characteristics of the medical students in the study are presented in Table 1.

The mean duration of using smartphones among the medical students was 6.9 hours (SD 3.5 hours) per day. They used smartphones mostly for social networking, with a mean duration of 2.9 hours (SD 2.6 hours), as presented in Table 2. Comparison between GPA found statistically significant differences in duration of using smartphones for any purposes. The lower GPA group used their smartphones an average of 8.3 hours while the higher GPA group used it an average of 5.6 hours. Furthermore, the lower GPA group used their smartphones to play games an average of 3.1 hours while the higher GPA group used it an average of 1.7 hours, as presented in Table 3. The most popular medical application/website was "Google", as seen in Table 4.

A negative Spearman rank correlation (r=–0.19, p<0.012) was found between GPA and total hours spent by using smartphones as presented by the scatter plots in Figure 1. The negative Spearman rank correlations were also found between GPA and hours spent by using smartphones for the purposes of social media (r=–0.32, p<0.001) and playing games (r=–0.24, p<0.001), respectively.

Table 1. Characteristics of participants (n=183)

Students' characteristics	
Boys; n (%)	79 (43.2)
Age (years); mean±SD	22.7±2.1
Studying year; n (%)	
Fourth year	72 (39.3)
Fifth year	70 (39.3)
Sixth year	41 (22.4)
GPA; mean±SD	3.39±0.35

SD=standard deviation; GPA=grade point averages

Table 2. Hours spent using smartphones

Purposes of smartphone use	Duration of using smartphones (hours); mean±SD
Total: for any purposes	6.9±4.5
For social media	2.9±2.6
For playing games	2.5±1.9
For education purpose	1.9±2.3
For phone call	1.3±2.3

SD=standard deviation

Table 3. Hours spent using smartphones divided by GPA

Purposes of smartphone use	Duration of using smartphones (hours); mean±SD			p-value
	Total (n=183)	GPA <3.5 (n=88)	GPA ≥3.5 (n=95)	
Total: for any purposes	6.9±4.5	8.3±5.3	5.6±3.0	<0.001
For social media	2.9±2.6	3.3±3.1	2.5±1.9	0.047
For playing games	2.5±1.9	3.1±2.2	1.7±1.1	<0.001
For education purpose	1.9±2.3	2.1±2.9	1.6±1.1	0.094
For phone call	1.3±2.3	1.4±2.7	1.3±1.6	0.818

SD=standard deviation; GPA=grade point averages

Table 4. Popular medical application/website used for medical education by students' rating

Medical application/website	Mean Likert rating scale*
Google	3.49
Medscape	2.10
Up to date	1.70
Clinical key	0.77

* Likert rating scale 0-4, 0=not used, 4=most preferred

Discussion

Smartphones have become a part of students' lives, which can be observed both openly and secretly in the classroom. The present study found the medical students at Thammasat Medical School spent a mean duration of 6.9 hours (SD 3.5 hours)
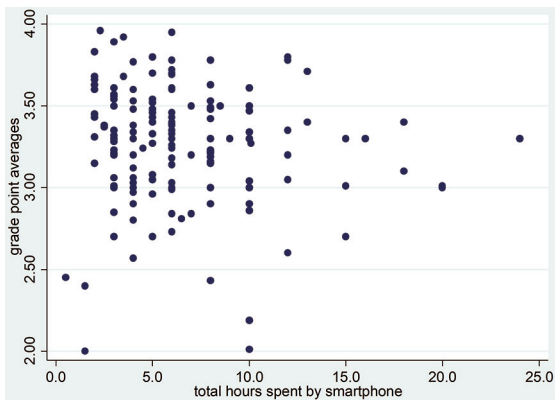
Figure 1. The scatter plot between total hours spent by using smartphones and the grade point averages (GPA) of the students (r=−0.19).

per day with smartphones. They used smartphones mostly for social media, with a mean duration of 2.9 hours per day, while they spent a mean of 1.9 hours per day using them for education. According to the report by Tindell and Bohlander[4], students often use smartphones in their classrooms as learning tools, for playing games, and for social media. Smartphones can be used for surfing information for education in classrooms[5,6].

Concerning the impact of smartphone usage on the GPA, the present study found a negative Spearman rank correlation between GPA and mean time spent using smartphones, especially when using smartphones for social media (r=−0.32) and for playing games (r=−0.24). The present study results are in line with the previous studies[7-9]. In a report from the United States, Ravizza[7] found that the negative consequence on academic performance was associated with the use of smartphones for purposes unrelated to learning. Lepp[8] collected data from public university students in the United States found that the use of mobile phones in classrooms resulted in lower grades. A report from Rosen et al[9] found that the use of social media such as "Facebook" had a negative relationship with the academic results.

The present study founded the medical students spent time using smartphones mostly for social networking, for playing games, for education, and for phone call, respectively. Viphatphumiprathes[10] studied the behavior of the students using smartphones in Dhurakij Pundit University. The result showed that the students used smartphones in the classroom to search information assigned by the teacher (50.5%), to search content not understood in the classroom (46.8%), to take pictures instead of taking notes

(47.7%), and to contact friends in social media (56.7%). Thanuwas et al[11] found that most students secretly used their smartphones in their classrooms every day in the afternoon. They used smartphone for internet surfing, calling in, playing games, taking photos, and social media. These uses caused them to be unable to understand the contents of the lesson.

The strength of the present study is the high response rate of the participants to minimize selection bias. There are limitations in the present study. Generalizability was limited because the study was conducted in only one medical school. Data collection by self-reported measure may suffer from underreporting of the sensitive and memorized questions. The purpose and duration of smartphone use might be different depending on weekday and weekend.

Conclusion

In conclusion, smartphone use among medical students at Thammasat Medical School was common. They used smartphones for various purposes, which had both positive and negative impacts on their medical education.

What is known on this topic?

Medical students use smartphones for study and communications in daily life.

What this study adds?

Use of smartphone among medical students at Thammasat Medical School was common. The mean total hours spent by using smartphones among medical students at Thammasat University Hospital was 6.9 hours (SD 3.5 hours) per day.

Conflicts of interest

The authors declare no conflict of interest.

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