

Smartphone usage among Bachelor of Medicine and Surgery students at the University of Papua New Guinea: A survey

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Abstract

Introduction: Smartphones and digital technology have been increasingly important in medical education in most countries, but have only recently become widely available in Papua New Guinea. Our study aimed to examine the views and experiences of medical students on smartphone use at the University of Papua New Guinea School of Medicine and Health Sciences.

Methodology: A pretested self-administered questionnaire was used to collect information on smartphone use in student learning. Data was entered into Microsoft Excel 2019 and analyzed using SPSS version 22.

Results: One hundred and sixty-one (78%) of 206 enrolled medical students responded. All participants owned a smartphone. Seventy-seven percent (124/161) used the available school Wi-fi for internet connectivity, and 98.8 % (n=159) purchased mobile data. Most (72.7%, n=117) of the students spent more than an hour daily on their phone. Smartphones were used to access learning applications and websites, Google, YouTube, online libraries, medical journals, note-taking during seminars and tutorials, and share learning material with colleagues. Seventy-seven (47.8%) spent more than an hour each day accessing reading and learning materials, and 56 (34.8%) spent more than one hour a day on social media activities. The most frequently accessed Medical Journals were the British Medical Journal (27.5%, n=45) and the Papua New Guinea Medical Journal (28.8%, n=47).

Conclusion: The study provides insight into smartphone use among medical students at the School of Medicine and Health Sciences. Most students use smartphones for learning, and the results of this study should inform the further integration of digital tools in medical education in Papua New Guinea.

Keywords: Smartphone usage, Medical students, Medical education, MBBS program, Papua New Guinea

Introduction

Smartphone use in educational settings has become essential for e-learning (Fu & Hwang, 2018).

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It has changed how students access information and improved communication and learning opportunities, providing a comprehensive view of their educational experiences (Jones, 2020). Smartphones allow users to learn and work in a way that is convenient for them. Smartphones are used to access information from medical textbooks, research articles from Google Scholar or PubMed, social media platforms such as Facebook and WhatsApp, websites like Google, and other educational resources



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anywhere and at any time during their training and clinical practice (Garcia, 2020; Chandran *et al.*, 2022). Students also report using medical application software such as Up-To-Date and Medscape to access the latest information, increasing interactive learning and supporting clinical skills development (Adams, 2015).

The University of Papua New Guinea (UPNG), School of Medicine and Health Sciences (SMHS), Bachelor of Medicine Bachelor of Surgery (MBBS) programme is problem-based and integrated over four years. MBBS years 2 and 3 focus on Basic Medical Sciences, Pathology, and Public Health, preparing students for their clinical years in MBBS years 4 and 5. A previous study from SMHS (Tomdia-Lokes *et al.*, 2020) on predictors of student performance found that students in the earlier years were more likely than those in later years to own a smartphone and that 40% of these students who took part in the survey used their phone to access educational information.

Since that study, there have been substantial improvements in internet accessibility at the school. All students are allocated a monthly quota of 5000MB of data free of charge.

The present study aimed to document the experiences and views of MBBS students on smartphone usage during their undergraduate training.

Methods and materials

A survey was conducted at the UPNG SMHS. Information from consenting MBBS students across all years of the programme was

collected through a self-administered, anonymous, and pre-tested paper-based questionnaire during the 2023 academic year. Demographic data and details of smartphone usage were entered into Microsoft Excel 2019 and analyzed using SPSS version 22. The study was approved by the School of Medicine and Health Sciences Research and Ethics Committee.

Results

One hundred and sixty-one (78%) of 206 enrolled MBBS students took part in the study, of whom 57/63 (35.4%) were in their second year, 32/46 (19.9%) in the third year, 38/49 (23.6%) in the fourth year and 34/48 (21.1%) in the fifth year. Second year students' response rate was significantly higher than in the other years (Fisher's Exact $p=0.006$). Ninety-five participants (59%) were males. The median (IQR) age was 22 (25–21) years. One hundred and six (65.8%) students lived on campus. More than two-thirds of their parents were formally employed ($n=109$, 67.7%) in private or government organizations, the remaining 32.3% ($n=152$) being self-employed and subsistence farmers.

All participants (161) owned a smartphone, one hundred and twenty-four (77%) used the school Wi-fi, and almost all ($n=159$, 98.8%) purchased additional data. Almost all (99.4%) students reported using their smartphones to access learning materials.

Details of smartphone usage for learning purposes are shown in Table 1.

Table 1: Smartphone usage for learning purposes ($n=161$)

Usage	Number of students using a smartphone	Percentage (%)
Accessing learning materials		
Yes	160	99.4
No	1	0.6
Learning		
Excellent	44	27.3
Very good	65	40.4
Good	41	25.5
Satisfactory	11	6.8

Note-taking		
Yes	132	82
No	29	18
Discussion topics		
Yes	146	90.7
No	15	9.3
Online library		
Yes	107	66.5
No	54	33.5
Tutorial videos		
Yes	160	99.7
No	1	0.6
Accessing Moodle		
Never	67	41.6
Occasionally	15	9.3
Often	13	8.1
Rarely	66	41.0
Accessing learning applications and websites		
Google only	135	82.8
YouTube	124	76.1
WhatsApp	104	63.8
PubMed	85	52.1
Medscape	63	38.7
Journals	63	38.7
UpToDate	14	8.6
MSD	2	1.2
Accessing learning applications and websites		
One only	30	18.6
Two	14	8.7
Three or more	117	72.7
Accessing Medical Journals		
Papua New Guinea Medical Journal	47	28.8
British Medical Journal (BMJ)	45	27.5
Lancet	24	14.7
New England Journal	7	4.3
Pacific Journal of Medical Science (PJMS)	2	1.2
More than one Journal	40	24.5

Students used their phones to search websites such as Google and YouTube, to take notes, interact with others, and use other applications for learning purposes. Seventy-three percent of students used three or more applications for their learning. Of the 161 students, 44 (27.3%) rated the online learning sources excellent, 65 (40.4%) as very good, 41 (25.5%) as good and 11 (6.8%) as satisfactory. Only 8.1% used the Moodle e-learning platform for learning despite being introduced four years before the study.

The Papua New Guinea Medical Journal and the British Medical Journal were the most frequently accessed journals for academic and clinical knowledge and for skills purposes. Almost a quarter of the students accessed more

than one Journal. The majority (72.7%) of the students spent more than 60 minutes each day on the phone. Almost half (47.8%) spent over an hour daily on reading and learning materials, and just more than a third (34.8%) spent more than an hour daily on social networking.

Discussion

Smartphone ownership and Internet connectivity

Smartphones are a necessary commodity for students in many countries. Our study showed that all students who participated (78% of those enrolled) owned a smartphone. This is an increase in the proportion of students owning a

smartphone from 76% reported in 2020 to 92% of those enrolled, suggesting an increased awareness of the importance of the contribution to learning that mobile technology provides.

Smartphone utilization, learning materials

Many medical universities have implemented m-learning to provide flexibility in learning. In most countries, it is now the norm for students to use smartphones in their learning (Adams, 2015; Chandran et al., 2022). Eighty-two percent of the students in our study used their smartphones for note-taking, and almost all (99.4%) used them to access learning materials. Our study showed that the majority of the students used Google websites (82.8%), YouTube (76.1%), and WhatsApp (63.8%) to access learning materials, reflecting the evolving digital landscape in medical education in Papua New Guinea (PNG).

As in other studies, our students frequently used WhatsApp to share information and frequently accessed YouTube teaching videos. Our results illustrate how technology is changing teaching and learning in a low-middle-income country.

Moodle e-learning platform

Our study found that the Moodle e-learning platform was underutilized, and needs to be used to its full potential. Academic staff and students need instruction and support to maximize its benefits.

Accessing Medical Journals

The Papua New Guinea Medical Journal and British Medical Journal were the most frequently accessed Journals. Almost all studies published in the Papua New Guinea Medical Journal have been conducted in PNG, and students can engage with the research and have insights into clinical cases and epidemiology, health challenges, the health care system, and medical research initiatives specific to PNG.

Time spent on smartphone

Seventy-three percent of the participants spent over an hour each day on smartphones; 48% spent more than an hour accessing reading and learning material, and 35% spent more than an hour on social media. While the use of social media in educational settings provides opportunities for students to share knowledge and information and communicate socially, students need to be reminded of the problems inherent in spending time on social media to the detriment of their academic studies.

Limitations

There is probably response bias because students may have provided “expected” rather than accurate responses. The proportion of students participating in MBBS 2 was significantly greater than in the other years, and their responses may have influenced the overall findings.

Conclusion

In the UPNG SMHS, the large majority of medical students used smartphones for academic and professional purposes, including note-taking, accessing learning materials, and engaging with medical journals. Thirty-five percent of study participants spent more than an hour on social media daily. This study highlights the importance of mobile technology in medical education in the SMHS. It underscores the need to explore students' use of mobile phone technology further and its impact on academic performance and optimize the digital learning experiences.

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