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PERCEPTION & UTILIZATION OF INTERNET & MEDICAL APPLICATIONS BY STUDENTS AT COMBINED MILITARY HOSPITAL LAHORE MEDICAL COLLEGE

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ABSTRACT

Objective: To determine the pattern of internet and medical application usage among medical students, their perceptions towards these resources, and the subsequent challenges that emerge.

Study Design: Cross-sectional study.

Place and Duration of Study: Combined Military Hospital Lahore Medical College, from May to Nov 2018.

Methodology: After taking consent, data was collected from 260 students through self-administrated questionnaire by convenience sampling. The data was analysed using SPSS version 20.0.

Results: All participants had access to the internet, and 98% had access to a smartphone. Daily internet usage was observed in 92.9% participants, with 29% of them using it for more than 5 hours per day and an equal number of students utilizing it for 3-4 hours per day. Textbooks were the favoured resource for looking up medical information (85.5%). Medical applications were used by 43.1% of the study subjects. Out of all the apps and websites assessed in the study Google was the most used 215 (84.3%) followed by Wikipedia 187 (73.3%), Web MD 153 (60%), Meds cape 121 (47.5%), Pub Med 61 (23.9%), and Google scholar 42 (16.5%). Most participants (42.2%) were either uncomfortable or very uncomfortable with using medical applications in front of patients. Most students believed discouragement from teachers led to decrease application usage.

Conclusion: Internet and smartphone usage was found widespread among medical students. While students view medical applications favourably, there was hesitance in using them in classroom and clinical settings.

Keywords: Education, Internet, Medical application, Medical student.

INTRODUCTION

With the increasing popularity of smart phones in the professional and clinical settings[1], a transformation has been observed in the realm of medical education[2,3]. Many studies suggest almost universal ownership of smartphones[4-6], and a trend of increasing smartphone use has been seen in students in clinical years and medical practitioners in the earlier stages of their training[7,8].

Over the past several years numerous studies published on the use of internet and smartphone applications by medical practitioners have suggested that these sources have a positive impact onself-perceptions of work efficacy, clinical decision making capacity, diagnostic accuracy, and patient management and care[9].

The popularity of internet and smartphone use has shown an increase among college students, both for entertainment purposes and to augment their education[10]. The goal of medical education is to encourage students to become lifelong learners and become intrinsically motivated to constantly update and maintain their knowledge. Smartphone applications can play a pivotal role in imparting medical education by providing easy access to online databases and to the latest evidence-based research articles without the barriers of time and place, as well as access to reliable, up-to-dateand relevant information at the point of care. In Pakistan, however, it has been observed that smartphone sare used mostly for recreational purposes instead of educational[5,6]. Thus, it is important to determine the reason behind medical students in Pakistan not utilizing this resource.

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Although studies have been conducted pertaining to the use of applications by students in Pakistan, few have dealt with the perceptions medical students have about application usage. Our study aimed to report the pattern of internet and medical application usage among medical students, the perceptions they have towards using these resources in clinical and professional settings, and the problems they face as a result of application use.

METHODOLOGY

A cross-sectional study was conducted on the students of CMH Lahore Medical College from May to November 2018. IERB approval certificate reference number is 68/ERC/CMH LMC. All students studying in MBBS 1st through 5th year were included in the study, whereas students from all other disciplines (e.g., allied sciences and BDS) were excluded from the study. The purpose of the study was explained to the students and data was collected through a questionnaire after taking informed consent.

A sample size of 260 students was taken through convenience sampling. The sample size was calculated by using the Australian Bureau of Statistics sample size calculator with values population=700, Confidence Level=95%, and confidence interval=5% Students from First Year MBBS till Fifth Year MBBS were involved in the study. The data was analysed using SPSS version 20.0. Descriptive statistics were calculated as frequencies and percentages.

RESULTS

A total of 255 responses were collected over a 6 month period, equalling a response rate of 98% (255/260). Out of these, a majority 135 (51%) were male and 125 (49%) were female. The mean age of students was 21.4 ± 1.08 years.

Text books were the favoured resource for looking up medical information 218 (85.5%), while only 55 (21.6%) of students used Journal Articles. Medical applicationswere used by 110 (43.1%) of the study subjects. Out of all female students questioned, 55 (44%) admitted to using medical applications to study, while 57 (42.3%) of themale students said the same. Out of all the applicationsand websites assessed in the study Google was the most used 215 (84.3%) followed by Wikipedia 187 (73.3%), Web MD 153 (60%), Medscape 121 (47.5%), PubMed 61 (23.9%), and Google scholar 42 (16.5%).

Among the participants 229 (89.8%) either agreed or strongly agreed that medical applications facilitate learning and enhance knowledge.

Table-I: Pattern of internet usage among study of partcipants.

Variable	n (%)
Frequency of Internet Use	
Daily	237 (92.9)
1-2 times per week	10 (3.9)
Three or more times a week	7 (2.7)
1-2 times a month	1 (0.4)
Devices Used	
Smart phone	250 (98)
Tablet	117 (45.9)
Laptop	216 (84.9)
Desktop PC	68 (26.7)
Time Spent on Internet	
<1 hour	11 (4.3)
1-2 hours	44 (17.3)
3-4 hours	74 (29)
4-5 hours	52 (20.4)
> 5 hours	74 (29)
Places with Internet Access	
Home	235 (92.2)
University	127 (49.8)
Hostel	98 (38.4)
Internet Café	24 (9.4)
Purpose of Internet Usage	
Academic	223 (87.5)
Social sites	230 (90.2)
Entertainment	235 (92.2)
News/General information	174 (68.2)
Email	175 (68.6)
Difficulties with Internet Use	
Cost	76 (29.8)
Lack of time	89 (34.9)
Lack of skills	27 (10.6)
Slow internet speed	163 (63.6)
Mobile Device use to Access Information	
Not at all	9 (3.5)
1-2 times per week	40 (15.7)
Daily	138 (54.1)
Multiple times a day	68 (26.7)

A majority 119 (46.7%) of students believed that medical applications were as reliable as text-books, while 36 (14.1%) considered them more reliable than textbooks.

All individuals involved in the study had access to the internet, and 250 (98%) had access to a smartphone. Of these, 239 (95.7%) used it for internet access. The home was the main place where students chose to access the internet about 235 (92.2%). Daily internet usage was observed in 237 (92.9%) participants, with 74 (29%) of them using it for >5 hours per day and an equal number of students using it for 3-4 hours per day. The purpose of internet usage was mostly for entertainment 235 (92.2%) while 223 (87.5%) admitted to using it for academic endeavors, as indicated in table-I. Slow internet speed was the main issue faced in regards to internet accessibility by 163 (63.9%) of people.

Table-II: Patient's attitude towards mobile device use in patient encounter, as perceived by students.

Answers	n (%)
Student is disinterested	90 (35.3)
Student is preoccupied with other things	75 (29.4)
Student does not know what he/she is doing	66 (25.9)
Student is double checking their work	19 (7.5)
Student is tech savvy and modern	5 (2)
Total	255

Table-III: Factors discouraging applications use.

Answer	n (%)
Discouraged from using during class	106 (41.6)
Mobile devices serve as distractions	84 (32.9)
Inadequate knowledge of relevant applications	65 (25.5)
Patients/ teachers view it as unprofessional	104 (40.8)
Lack of skills to effectively use applications	21 (8.2)

In regards to the confidence in the accuracy of information gathered through the internet, 113 (44.3%) stated that they were unsure of whether to trust the information obtained. Furthermore, 89 (34.9%) felt confident with the information obtained.

A majority of participants 108 (42.4%) were either uncomfortable or very uncomfortable with using medical applicationsin front of patients; with 78 (30.6%) reporting they were neither comfortable nor uncomfortable. Out of all the participants, 231 (90.6%) believed patients would have negative views of the student ifthe students used apps in front of them, as indicated in table-II.

Most participants 233 (91.4%) either agreed or strongly agreed that young doctors are more comfortable when it comes to using mobile technology to access information. A majority 185 (72.5%) also agreed or strongly agreed that using medical applications in front of teachers makes them appear less interested. Students are mainly of the opinion that decreased use of medical apps is due to discouragement from teachers, as shown in table-III.

DISCUSSION

Internet use has already been effectively integrated into their daily communication habits. Since smartphonesare regularly used and readily available to students, faculty, and other health care providers[11, 12]. E-learning applications can provide an ideal platform for learning and the distribution of medical information.

Students have commented that the use of smartphonesin learning generally has a positive impact. Aside from this, studies have shown students view mobile learning tools favourably in both clinical settings and traditional classrooms[12-14].

The findings of our study demonstrate smartphone ownership among medical students to be 98%, with universal internet access. It has been revealed that a majority of students have >3 hours per day of internet access, but this is mainly spent on entertainment activities. Difficulties with internet access were the most common problem faced with mobile device use.

These findings are consistent with previous research. A study from India showed that 99% students had smartphones[15], similar to Saudi Arabia (99%)[16], and in Pakistan the usage was 5

(95.8%). Slow internet speed and limited Wi-Fi availability are the most common deterrents[15,9].

Text books were still the preferred medium of information acquisition, despite the fact that students mostly viewed medical apps to have similar reliability. This trend is in accordance with previous research[7,15,17]. Surprisingly Google and Wikipedia were revealed to be the resources most frequently used to look up medical information, instead of accredited sources such as Medscape[18]. Lack of skills necessary to use these sources may have contributed to this.

It has been shown that medical students believe using applications in a clinical setting has a significant impact on efficient time utilization, improving diagnostic accuracy, and the quality of patient management and care[7,9]. A majority of students 89.9% have been shown to believe that medical applications facilitate learning and augment knowledge. However, they are still hesitant in utilizing them in professional settings for fear of appearing incompetent and uninterested. This is consistent with previous studies which show that students are not using medical applications despite being of the opinion that they augment learning[7,15]. In regards to this, patients may be amenable to the device if its solely academic purpose is clearly explained[19,20]. The use of university branded cases by students may help reduce any negative patient reactions[9].

Thus far, the propensity of smartphone to be used for entertainment purposes indicate their tendency to serve as a distraction[10,12]. This may also be the reason why discouragement of their use by teachers was seen as a deterrent by 41.6% of participants. The development and introduction of policies which encourage intelligent and responsible use of smartphones during clinical and professional settings may help alleviate this issue.

As this is a cross-sectional study the results generated cannot be generalized and we cannot make conjectures about causation due to reverse causality bias. Furthermore, the study subjects were selected through convenience sampling and, therefore, the conclusions drawn cannot be generalized to a broader population. It is necessary to integrate the use of medical applications into their study strategy to supplement textbooks and traditional learning. Information should be provided within the curriculum about accredited sources and applications that can be used to obtain medical information.

CONCLUSION

The use of internet and smartphone is widespread among medical students. While students view medical applications favourably, there is hesitance in using them in classroom and clinical settings.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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