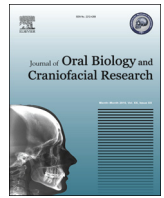




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Original article

Assessment of digital literacy and use of smart phones among Central Indian dental students

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ABSTRACT

Objectives: Education has largely been digitalized. More so, for professional education, keeping updated in this fast paced world has become a necessary requisite and dentistry has not been left untouched. This cross sectional questionnaire based study aimed to assess the digital literacy and smartphone usage amongst the 260 Central Indian dental students including their perspicacity about smartphone/internet usage for learning purposes. The students' attitude for implementation of digital technology in study programs/education system was also evaluated.

Methods: The questionnaire was distributed among total 260 dental students from different dental institutes of Central India. The data was collected and analyzed using SPSS software.

Results: Out of 260 students, 250 were internet users, out of which 56% had internet access all time. 94.23% students owned a smartphone. 46.53% (114/245) students had some app related to the dentistry in their smartphone device. The commonest site for surfing related to knowledge seeking was google scholar (72%) followed by Pubmed and others. Nearly 80% dental students believed that social media helps them in their professional course studies. Post graduate students showed statistically significant difference from undergraduates and interns in terms of knowledge of keywords, dental apps and reading research journals. 89.23% students were keen for implementation of e-learning in their curriculum.

Conclusion: This study reflects willingness of dental students to adopt digital revolution in dental education which in turn may present an opportunity for educators and policy makers to modify educational methods and thereby advance student's current learning approaches.

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1. Introduction

Education system plays a critical role in development of any society. It should be continuously adaptive and dynamic to keep pace with growing trends.¹ In recent times, information/digital and communication technology has become an integrated part of every educational and professional field including dentistry. Most of the improvements and breakthroughs are compiled and presented in digital medium much before their hard copy is available and inclusion of such advancements take months or even years to get incorporated into standard text books. Undoubtedly mobile and

internet use can be considered as one of the significant parameter to evaluate digital literacy. Thus appraisal of digital literacy among dental students can reflect the standard of their knowledge related to the field as well as the need of implementation of technology in the present dental education system.

Very scanty literature is available on incorporation of digital technologies in dental educational systems. Usage of smartphone and technology has been investigated among medical students of Canada² and United Kingdom,³ both studies have expected the usage of smartphones to be beneficial for educational purposes and likely to increase in the future. A recent study among Kenyan⁴ medical students concluded that mobile learning is increasingly popular among medical students and should be leveraged in promoting access and quality of medical education. Little is known about perspicacity of dental students about their smartphones as a

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learning tool or device of specific applications. Principal findings of a study among Australians dental students⁵ has revealed that most students owned smartphones, were able users, and perceived them as learning tools that allow students to access to learning resources.

The aim of the present study was to assess the digital literacy of central Indian dental students including their perceptiveness about smartphone/internet usage for learning purposes. The objective was extended to evaluate students' attitude for implementation of digital technology in study programs/education system. To best of our knowledge, no such study has been conducted among Indian dental students.

2. Subject and method

2.1. Questionnaire

For this cross sectional study, a descriptive questionnaire was developed to assess digital literacy including students' perceptiveness about smartphone/internet usage for learning purposes as well as their outlook for implementation of digital technology in study programs/education system. not only students' subjective attitudes, but also to provide an objective understanding of the extent and complexity in which students have used smartphones. The validity of the questionnaire was tested within a group of undergraduate students. The questionnaire was divided in to four heads: (A) demographic details of students, (B) smartphone/internet usage, and (C) assessment of digital literacy, and (D) students' attitudes towards implementation of e technology in dental curriculum. The first component, part A, included demographic details and socioeconomic status of the students. Part B incorporated questions revealing internet use, its accessibility, type of device and database program used, commonest use of internet service including most often visited websites, and their social network. Commonest use of internet was assessed on basis of grading (1–7). Part C included digital literacy of students investigating their knowledge about keywords, educational apps and their management, searching/reading research journals and the limitations faced by them. Use of smartphone for educational purpose and its limitations were assessed using grading systems. For part D, students' attitude for implementation of digital technology in study programs/education system was evaluated by stating the degree of agreement/disagreement with four statements on a visual analogue scale (VAS). Rest three questions including distraction with mobile phones, their tendency to switch it off and students' perception of being connected to the teaching staff through smartphone were evaluated on simple agree/disagree stems.

2.2. Subjects and data collection

For the present cross sectional study, the questionnaire was distributed among total 260 (130 undergraduate from third and final year, 75 interns and 55 post graduate students) dental students from different dental institutes of Central India. The self-administered questionnaires were distributed among the students at their respective institutes in their lecture/seminar rooms before or after lectures after obtaining informed consent. All students present in the lecture/seminar rooms were given the opportunity to contribute. All the forms were filled completely and were returned back.

2.3. Data analysis

Data were analyzed with descriptive statistics. Chi-square tests were used to calculate the correlations between demographics,

assessment of smartphone usage and attitudes of different group of students. The analysis was done with SPSS version 21. Correlations were tested at 95% significance level ($p < 0.05$).

3. Results

3.1. Demographic details

Demographic characteristics of the dental students are given in Table 1. All 260 students returned the filled forms. Out of these 260 dental students, all were of Indian origin. There were 127 male and 133 female participants with mean age of 23.58 years. Amongst them, 130 were undergraduate (third and final year), 75 interns and 55 post graduate students. Approximately average gross annual income of parents was 6.26 lacs.

3.2. Assessment of smartphone/internet usage

Results regarding assessment of smartphone usage are summarized in Table 2. Out of 260 students, 250 (96.15%) were internet users. On intra-group comparison, use of internet increased chronologically with advancement of study stages as 94.62% of undergraduates, 96% of interns and 100% of the postgraduates answered positively although the difference was statistically insignificant ($p > 0.05$; Table 3) Out of total internet users, 56% (140/250) had internet access all time, rest 44% (110/250) used it at home/hostel. Most common device used for internet access was smartphone (88%, 222/250) followed by laptop, desktop and other devices. Strikingly, 94.23% (245/260) students owned a smartphone. Again smartphone ownership increased with study stages although insignificantly ($p > 0.05$; all post graduates, 96% interns and 90.77% of the students owned it). Most common operating system for smartphone was Android based (86.12%; 211/245) followed by I Phone (11.84%; 29/245) and Windows (2.04%; 5/245). Among the smart phone users, 18.37% (45/245) had unlimited internet package while 63.67% (156/245) had limited package, 16.73% (41/245) used internet with wifi only and rest 1.2% (3/245) did not use internet on their phone. The most common use of internet service was mailing and chatting with friends (42.8%; 107/250) followed by social networking (23.2%; 58/250). Most frequent utilization of internet service for professional studies was done by 20.8% (52/250) students while 8.0% (20/250) preferred its usage in general knowledge seeking. 5.2% (13/250) admitted that their commonest application of internet was banking and shopping (Table 2).

The commonest site for surfing related to knowledge seeking was google scholar (72%; 180/250) followed by Pubmed (11.6%; 29/250), Wikipedia (14/250; 5.6%) and Researchgate (13/250; 5.2%). Other common sites used for educational purpose were Ebscohost (2%; 5/250), wedMD (1.2%; 3/250), and youtube (1.2%; 3/250). 3 students did not mention any specific site stating it depends on the topic to be searched (Table 2).

In a question about accounts on social media website, all internet users (100%) were having their account on one or other

Table 1
Demographic details.

| Sample size | Total = 260 |
|-------------------------------|------------------------------------------------------------|
| Gender | Male = 127 Female = 133 |
| Professional standing | Under graduate = 130 Interns = 75 Post graduate = 55 |
| Age (in years) | Average 23.58 (20–35) |
| Average income (Indian rupee) | 6.26 lacs |

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