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Evaluation of mobile phone and social usage among dental students as an educational and clinical adjunct in Davanagere City, South India – A cross-sectional study

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ABSTRACT

Objectives: Social media has significant potential to improve education. Social networks serve as invaluable yet often overlooked educational tools, benefiting trainees and experienced clinicians. In the health-care sector, social media makes it easier to share information where gaps in knowledge exist, giving a holistic picture. There is a deficit in information regarding social media usage and smartphones among dental undergraduates. Hence, this study aimed to assess and evaluate the social media usage of dental undergraduates and postgraduates in Davanagere City, Karnataka. **Materials and Methods:** A cross-sectional questionnaire study was conducted in College of Dental Sciences, Davanagere, Karnataka, India. The participants' responses were then computed into a Microsoft Excel worksheet, evaluated with the Statistical Package for the Social Sciences, IBM version 21.0, and interpreted. Descriptive statistics were performed. **Results:** A total of 268 participants participated. About 77.2% were female (n = 206) and 22.8% were male (n = 61). There was found to be a lack of awareness regarding dental health education apps which is indicative of the need to include more application-based academic curricula strengthened by recent advances in technology. **Conclusion:** The study found a great increase in smart phones as well as social media among dental students but there is a great need to raise awareness among students regarding subject related databases.

Keywords: Social media, Dental students, e-DantSeva, Mobile phone

INTRODUCTION

Over the centuries, there has been an advancement from Sumerian clay tablets to today's digital technology.[1] Rapid increases in dental knowledge and associated technologies, growing integration of evidence-based practice into the curriculum, and shifting faculty roles have profoundly altered dental education.[2] Millennials spend more time on social media than any other generation, according to a report from Experian Marketing Services. These adults, ages 18–34, are also the most diverse, informed, and digitally connected generation, with 77% owning a smartphone.[3]

Social media is one of the greatest tools of our time in that it is affordable, functional, and easily available. The term "social media" refers to a set of tools that people use in the digital age to share content and information through conversation and communication. Human development

occurs best in the interaction of others. It provides a unique opportunity to consult with field experts without a need for unity of place and time. "Reality in Virtuality" may be the more appropriate term for today's world. In a cyber-environment like ours, it is ignorance not to evolve an education system that does not fit in with it. Benson and Morgan stated that social media can help us in a great many ways, as a networking enabler, enhancing collaboration, teaching and learning as well as career management.[4]

In the health care sector, social media makes it easier to share information where gaps in knowledge exist, giving a holistic picture.[5]

A smartphone is a mobile device with a sophisticated operating software system.[6] Mobile and internet usage are found to be important parameters to measure digital literacy; this reflects the standard of knowledge regarding the field as we as the need for implementation of technology in the present dental education system.[7] Social media has proven to be beneficial for dental professionals, as it aids in expanding their knowledge about oral hygiene through education and enables effective marketing to attract more patients. In addition, it facilitates improved follow-up with patients. However, certain drawbacks come with its usage. One primary concern is the prevalence of misinformation on dentistry on social media, often disseminated by unqualified individuals (quacks). This misinformation can lead to harmful consequences for patients, including drug overdoses and unnecessary dental procedures. Dental professionals must be cautious about the potential risks associated with misinformation on social media despite its advantages.[8]

There is a deficit in information regarding social media usage and smartphones among dental undergraduates. Hence, this study aimed to assess and evaluate social media usage of dental undergraduates and postgraduates in Davanagere city, Karnataka.

MATERIALS AND METHODS

Study design

A cross-sectional questionnaire study was carried out in the College of Dental Sciences, Davanagere, and Bapuji College of Dental Sciences, private dental schools affiliated with the Rajiv Gandhi University of Health Sciences, Bangalore, India. The undergraduate course is four years long, with the third and fourth years consisting of clinical training and didactic classes. The study was conducted between January 2021 and August 2022.

Source of data

The data were collected through a primary, closed-ended, structured, and self-administered questionnaire.

Study subjects

Dental undergraduates and postgraduates from the 3rd year, final year, and internship were included in the study.

Inclusion criteria

Undergraduates and postgraduates from the chosen institution, who were present on the particular day of investigation and gave informed consent were included in the study.

Collection of data

Data were collected using a pretested and self-administered structured questionnaire in their respective institutions. Prior permission was obtained from the concerned authorities. The questionnaire was distributed to all the study participants present on the day of the investigation of selected institutions and collected back on the same day.

Statistical analysis

The response from the participants was then computed into a Microsoft Excel worksheet and evaluated with the Statistical Package for the Social Sciences, IBM version 21.0 and interpreted. Descriptive statistics were performed.

RESULTS

A total of 268 participants participated. About 77.2% were female (n = 206) and 22.8% were male (n = 61). About 81.3% admitted preferring using WhatsApp over all the other instant messaging apps among WhatsApp, Facebook messenger, telegram, and Snapchat [Table 1]. On being asked, 'Which feature of WhatsApp do you find helpful in education?', a majority, 71.9% answered all of the above. When posed with the question, 'How often do you feel you open your phone for education-related updates and end up scrolling on social media for hours?', a question aimed at assessing the level of distraction posed by social media, larger proportion answered, often, 23.6%, almost always was 22.5% and sometimes 21.7%. A question regarding dental-related hashtags was asked to assess the presence of dental related information in their social media feed, 'How often do you feel you come across hashtags (for example #dentalpublichealth) regarding dentistry or medicine in your social media feed?', to which, 33.7% answered, often. When posed a question on usage of YouTube videos for educational purposes, 30.3% answered, often. About 50.2% admitted never referring PubMed, Scopus, Cochrane Library, or Google Scholar. About 52.8% preferred reading conventional books over other types of media. About 74.2% reported being aware of Google scholar. About 45.3% reported the preferred use of a mobile phone camera over other modes of photography in

Table 1: Overall responses to questions.

Questions	Options	Frequency	Percentage
How many hours a day do you spend on your mobile phone?	1–3 h	141	52.80
	4–8 h	91	34.1
	9–12 h	31	11.6
	13–16 h	4	1.49
What is your most commonly preferred social media platform?	Instagram	185	69.3
	Facebook	62	23.2
	Twitter	12	4.5
	Pinterest	8	3.0
In that how many hours do you spend on social media platforms such as Instagram, WhatsApp, Twitter, Facebook, and the like?	1–3 h	178	66.7
	4–8 h	65	24.3
	9–12 h	21	7.8
	13–16 h	3	1.12
What is your most commonly preferred IM platform?	WhatsApp	217	81.3
	Facebook messenger	14	5.2
	Telegram	28	10.5
	Snapchat	8	3.0
Which feature of WhatsApp do you find helpful in education immediate access?	Immediate access	7	2.6
	a. Communication with large group is possible	8	3
	b. Media including audio, images, and video can be conveyed	18	6.7
	c. All of the above	192	71.9
	Just b and c	42	15.7
How often do you feel you open your phone for education related updates and end up scrolling on social media for hours?	Almost always	60	22.5
	Often	63	23.6
	Sometimes	58	21.7
	Seldom	44	16.5
	Never	42	15.7
How often do you feel you come across hashtags (for example #dentalpublichealth) regarding dentistry or medicine in your social media feed?	Almost always	40	15.0
	Often	90	33.7
	Sometimes	73	27.3
	Seldom	36	13.5
	Never	28	10.5
How often do you use YouTube for educational videos?	Almost always	66	24.7
	Often	81	30.3
	Sometimes	78	29.2
	Seldom	22	8.2
	Never	20	7.5
Do you use feel platforms like YouTube help understand information better?	Yes	249	93.3
	No	18	6.7
How often do you refer PubMed, Scopus, Cochrane Library, and Google Scholar in a year?	Never	134	50.2
	<5 times	78	29.2
	Between 5 and 20 times	37	13.9
	More than 20 times	18	6.7
For reading, which among the following do you find more convenient?	Conventional books	141	52.8
	Laptop	26	9.7
	Mobile phones	88	33.0
	Tablet	12	4.5
Are you aware of Google classrooms?	Yes	198	74.2
	No	69	25.8
Which among the following do you prefer for recording clinical photographs?	Mobile phone camera	121	45.3
	DSLR	102	38.2
	Point and shoot camera	8	3.0
	None of the above	36	13.5
Are you aware of any of the following apps? (one or more options may apply)	eDantSeva	10	3.7
	Brush DJ	2	0.7
	Disney Magic Timer	5	1.9
	Virtual Dentist by ModiFace	27	10.1
	Unaware	223	83.5

IM: Instant messaging, DSLR: Digital single-lens reflex

the clinical setting. About 83.5% reported being unaware of dental health education apps such as Brush DJ, e-DantSeva Disney Magic timer, and Virtual Dentist by ModiFace.

DISCUSSION

The present study was a preliminary investigation into smartphone usage among dental students. Even with the social media boom and the advent of the digital age, we need to exert a great deal of caution. We must tread carefully. Social media may not help you reach the entire student cohort in all instances, especially in certain sections of society where a smart phone or even an internet connection appears to be a distant dream.

Upon being asked which feature of WhatsApp do you find helpful in education? The majority, 71.9 %, answered all of the above. This was in agreement with the study by Rajeh *et al.*[9]

It was found that most students spent an average of 1-4 hours using their smartphones. In the present study, Instagram was the most preferred social media platform as opposed to Orkut in a study by Haneefa KM *et al*.,[10] Facebook in a study by Adithya Kumari H *et al.*,[11] and YouTube in a study by Nirmal Kurian et al.[12] The change in trend may be explained by the changes and updates in social media over the years.

Very few students accessed databases like Pubmed, Scopus, Cochrane Library, and Google Scholar in agreement with a study by Priya SR *et al.*,[13] which is alarming and also suggests a need for better exposure to them. Published academic literature should be the key driver of clinical decisions of modern evidence-based practice.

52.8% preferred Conventional textbooks, while 33% preferred mobile phones. This was in contrast to the study by Jali *et al*.[14] in Rajasthan, where 56.5% preferred the Internet over textbooks because of the latest updates.

The lack of awareness regarding dental health education apps is indicative of the need to include more application-based academic curricula, which have been strengthened by recent technological advances.

The use of mobile applications in the field of dentistry is constantly evolving at a rapid pace, whether it is the use of social media platforms such as YouTube, Instagram, X (formerly Twitter) or Facebook to show and discuss clinical cases, their treatment plan and prognosis which helps young dental students as well as clinicians to gain a good perspective regarding various variables in clinical practice that they may not already be exposed to. Twitter is beneficial in the dental school environment, and that its capacity to conduct interactive learning activities, such as quizzes, has positively impacted the teaching process. Recently, the use of AI (Artificial Intelligence) such as ChatGPT or Gemini AI have also rapidly changed how education and learning is done. Several other AI tools are available online that make learning and research easier than they once used to be.[15] To ensure high-quality course materials are shared, faculty must manage site content and remove outdated or low-quality materials. Students should also be aware of copyright restrictions, which apply equally to works in print, library databases, blogs, discussion boards, and social media. When uncertain, students should seek permission from the copyright owner before using any materials, including their professors' intellectual property.[16]

Students in this study identified several key benefits of using social media for learning, including access to a broader range of information, increased engagement, new resources, enhanced creativity, and improved research skills. Dental students, in particular, felt motivated by social media as it made the educational process more flexible. Social media also facilitates group discussions that promote active learning and a deeper understanding of materials. However, essential concerns regarding its use in dental education include patient confidentiality, the accuracy of shared information, impacts on self-image, and procrastination in discussing clinical cases.[17]

Another aspect is the rapid rise of M-Health, which uses various mobile applications to engage and involve patients in their health promotion. Several tools available in the market for oral health include the likes of Brush DJ, which uses a timer and graphics to educate patients on correct brushing and flossing techniques. A platform named e DantSeva was launched in India by the national oral health program which was designed to disseminate several IEC materials. It included a unique feature called a symptom checker. It was aimed to reach more than one billion people on one click.

Similar to Brush DJ, several other M-Health apps included Disney Magic timer and Virtual Dentist by ModiFace. It was proposed that dental colleges subscribe to more e-resources and qualified IT staff should be appointed to provide students guidance.[18,19]

The present study was a cross-sectional one conducted during a pandemic where there was a great need for the use of social media as well as e-learning tools. Cross-sectional studies assess exposure and disease status at a single point but cannot establish causality.

Alternative longitudinal approaches, which collect data from the same participants over time, can improve research quality; however, it wasn't preferred as a mode of choice due to the high dropout rate faced usually.

This study was a preliminary analysis. Larger studies need to be conducted on various populations all over the country to harness this knowledge effectively, assess the long-term risk analysis, and establish regulatory guidelines.

CONCLUSION

In addition to creating new modes of advancing dental education, there is a need to make students more aware regarding the existing modes of technology. The study found a great increase in smart phones as well as social media among dental students but there is a great need to raise awareness among students regarding subject related databases.

Ethical approval

The Institutional Review Board approval is not required since it was a cross-sectional questionnaire study.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Nil.

Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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