

PERCEPTION OF UNDERGRADUATE DENTAL STUDENTS ABOUT USE OF SMARTPHONES IN DENTISTRY: AN EFFICIENT TEACHING-LEARNING TOOL DURING COVID - 19 PANDEMIC

Written by *Dr. Jaishree Chahande** & *Dr. Saeesh Deshmukh***

* *Lecturer, VSPM's Dental College & Research Centre, Nagpur, India*

** *Associate Prof., VSPM's Dental College & Research Centre, Nagpur, India*

DOI: doi.org/10.55662/AJMRR.2022.3205

ABSTRACT

Health care has transformed intensely with the Digital Era. Smartphone is one of the digital tools which change the traditional way of teaching-learning nowadays. There is the widespread use of Smartphones as a part of the 'Learning Management System' in dental healthcare.

Amid the COVID-19 pandemic, regular classroom and clinical educational activities for dental students were almost disturbed globally. 'WHO Guidelines', appeal to everyone to stop the spread of pandemic by maintaining social distancing. As per the Government and University guidelines, colleges must continue education through an online platform so that students should not be deprived of education. As this current situation is unpredictable, Smartphones are routinely used by many students to continue digital education.

Therefore the perception of students on the usage of Smartphones as an easily available efficient teaching-learning tool in dentistry is the need of the hour.

So, the aim of the study was to assess the perception of undergraduate dental students about the use of Smartphones in dentistry as an efficient teaching-learning tool during COVID - 19 pandemic. A cross-sectional study was carried out at VSPM Dental College and Research Centre, Nagpur. Pre-validated questionnaires were provided to the dental undergraduate

[Asian Journal of Multidisciplinary Research & Review \(AJMRR\)](#)

ISSN 2582 8088

Volume 3 Issue 2 [March April 2022]

© 2021 All Rights Reserved by [The Law Brigade Publishers](#)

students containing 14 closed-ended questions and one open-ended question among approximately 500 students through Google Form.

99% of students used smartphones for e-learning. Smartphones are convenient and easily accessible devices during this pandemic situation to continue teaching and learning.

Smartphones in dentistry are really an efficient digital teaching-learning tool during COVID - 19 pandemic situations.

Keywords: COVID – 19; Dental, E-learning, Smartphones, Students

INTRODUCTION

Corona virus disease (COVID-19) caused by a Novel virus i.e. a newly discovered coronavirus. This is the highly transmissible disease. To protect and keep public safe and to stop the spread of Corona virus, WHO (World Health Organization) published important guidelines including maintaining social distancing along with using face mask in public places.¹ This pandemic affects everyone's life worldwide in a different way. Educational institutes are not untouched by this pandemic and also affected the most.

“MHRD (Ministry of Human Resource Development) and UGC (University Grant Commission) have issued certain guidelines and advisories regularly to continue teaching – learning process in educational institutions through easily accessible online mode like Google Classroom, zoom platform, Google meet, Cisco Webex meeting, You Tube live streaming etc. and making the use of e-resources available on UGC Website i.e. www.ugc.ac.in.”²

Due to pandemic almost every activities and transactions are done through an online mode and people are using Smartphones routinely for all such activities. By the estimated smartphone users numbers one can understand that its use is increased in this pandemic situation to maintain the social distancing and performing all the contactless activities.³

COVID-19 has critically hindered the education. Nearly every planned academic activity has been cancelled as the institutes have been closed due to lockdown. Teachers have conducted lectures and clinical classes on online mode. As smartphone is the best tool to attend the online

classes most of the students prefer to join the online class through their smartphone. Most of the students are attending the virtual classes through easily accessible and handy Smartphones.⁴

Since last few years usage of Smartphones by dental students has increased significantly even before this pandemic.⁵⁻⁶ This suggested that students are very well accustomed with the smartphone. In current scenario, there is substantial influence by various attractive features available in Smartphones for student's engagement.⁷

Smartphone is a mobile phone that offers '*new, advanced computing capability with internet than a basic feature phone.*'⁸ Digital learning is easily adapted by *digital native* students in present day situation.⁹

Dentistry is a vibrant field which deserves continuing education, updated information and awareness on current trends.¹⁰

Healthcare sector has transformed intensely with the Digital Era. Smartphones has change the traditional way of teaching – learning nowadays. There is the widespread use of Smartphones as a part of 'Learning Tool' in dental healthcare during COVID -19 pandemic. "*Technology Enhanced Learning (TEL) or e-Learning is innovative use of technologies/ digital tools during teaching and learning process.*"¹¹ Therefore, the perception of dental students on usage of Smartphones, as an -Easily Available & Efficient Teaching – Learning Tool in Dentistry is need of the hour.

AIM

To analyse undergraduate dental students' perceptions of the usage of smartphones in dentistry as an effective teaching-learning instrument during the COVID - 19 pandemic.

OBJECTIVES

1. To investigate undergraduate dental students' perceptions of the usage of Smartphones in dentistry during the COVID-19 epidemic.

2. To assess the usage of Smartphones among undergraduate dental students as an efficient teaching-learning tool during COVID - 19 pandemic.

MATERIAL & METHODS

At Vidya Shikshan Prasarak Mandal's Dental College and Research Centre in Nagpur, Maharashtra, India, a cross-sectional study was undertaken. Following Institutional Ethical Committee permission, a prevalidated questionnaire was distributed via Google Form to approximately 500 dental undergraduate students. All dental undergraduate students, from first-year BDS to final-year BDS, as well as interns, were included in the study. This survey was conducted in September 2020 to analyse undergraduate dental students' perceptions of the usage of Smartphones in dentistry as an effective teaching-learning tool during the COVID - 19 pandemic.

The questionnaires consisted of two sections: a) Demographic Information and b) Students perceptions about Smartphones as efficient tool to continue education during pandemic. The demographic information was collected which included the gender and the year of study. Students were asked to respond to total 15 questions including 14-closed ended multiple choice questions on five point Likert- scale ranging from 'Strongly Disagree (1) to Strongly Agree (5)' (Question number 2,6,9,10,14); 'Always, Very Often, Sometimes, Rarely and Never' (Question Number 4 and 13) & few questions of 'Yes, No and May be' type (Question Number 1,3,5,7,8,11,12). One open ended question to know students opinion about using Smartphones for learning different aspects of dentistry.

The pilot study was carried out for validation of questionnaires by sending link of survey to total 25 students i.e. 5 students each from all the years. After this Google form link of survey questionnaires was forwarded to all the students in what's app group as well as email. The students voluntarily participated in this study and their responses were anonymous.

Inclusion Criteria:

- 1) Those students regularly attended online classes during the Covid-19 Pandemic and are willing to contribute in the study.

Exclusion Criteria:

- 1) Students who did not attend online classes regularly during Covid-19 Pandemic period.
- 2) Participants who did not respond to online questionnaire form and not willing to participate in this study.

The data collected were then tabulated using Microsoft Excel 2010 and percentages were obtained for all the multiple choice questions.

RESULTS

The result of the study is divided into Demographic Information and Students perceptions about Smartphones as efficient tool to continue education during pandemic as follows:-

a) Demographic Information

Total 493 students participated in this study through online platform. The response and completion rates were 98.6%. More students participated from the interns (22.10%) and other participation from all the years was almost equal (19%). The participation of female students (86.60%) was more than that of males (13.40%). The details of demographic characteristic of respondent were shown in Table 1.

Table 1: Demographic Information

Variables	n (%)
Gender	
Male	13.40%
Female	86.60%
Year of Study/Academic Years	
First BDS	97 (19.67%)
Second BDS	96 (19.47%)
Third BDS	95 (19.26%)
Fourth BDS	96 (19.47%)

Interns	109 (22.10%)
---------	--------------

b) Students perceptions about Smartphones as efficient tool to continue education during pandemic

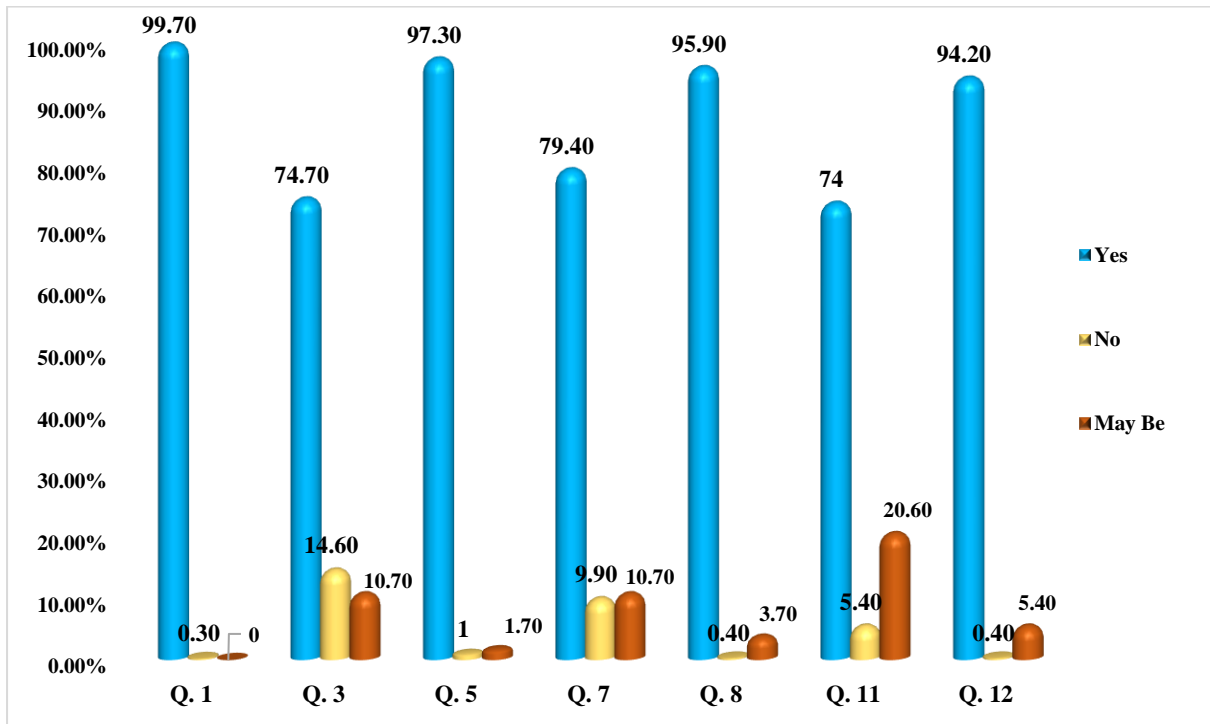
All the following tables and graphs show the response percentage of details assessing knowledge and attitude of students about use of smartphone as effective teaching-learning tool during Covid-19 pandemic.

Table 2 and Graph 1 shows the response percentage of Yes, No and May be type questions of question number 1, 3, 5, 7, 8, 11 &12. 99.70% students have Smartphones. 74.70% students created their class schedule in Google calendar. 97.30% students used Smartphones to search study material on internet. 79.40% students used Smartphones to prepare and present power point presentations. 95.90% students feel comfortable to use Smartphone for Group discussions and sharing Study material. 74% students used their Smartphone to create Google form for online survey to conduct research activities. 94.20% students used Smartphone to attend Webinars.

Table 2: Response percentage of Yes, No and May be type questions

Q. No.	Question	Yes	No	May Be
1	Do you have a smartphone?	99.70%	0.30%	0%
3	Do you use your Smartphone to create your class schedule in Google calendar?	74.70%	14.60%	10.70%
5	Have you use your Smartphone to search for study material on the internet?	97.30%	1%	1.70%
7	Do you use Smartphone to prepare and present power point presentations?	79.40%	9.90%	10.70%
8	Have you feel comfortable to use Smartphone for Group discussions and sharing Study material?	95.90%	0.40%	3.70%
11	Have you use your Smartphone to create Google form/Online survey to conduct research activities?	74%	5.40%	20.60%

12	Do you use Smartphone to attend Webinars?	94.20%	0.40%	5.40%
----	---	--------	-------	-------



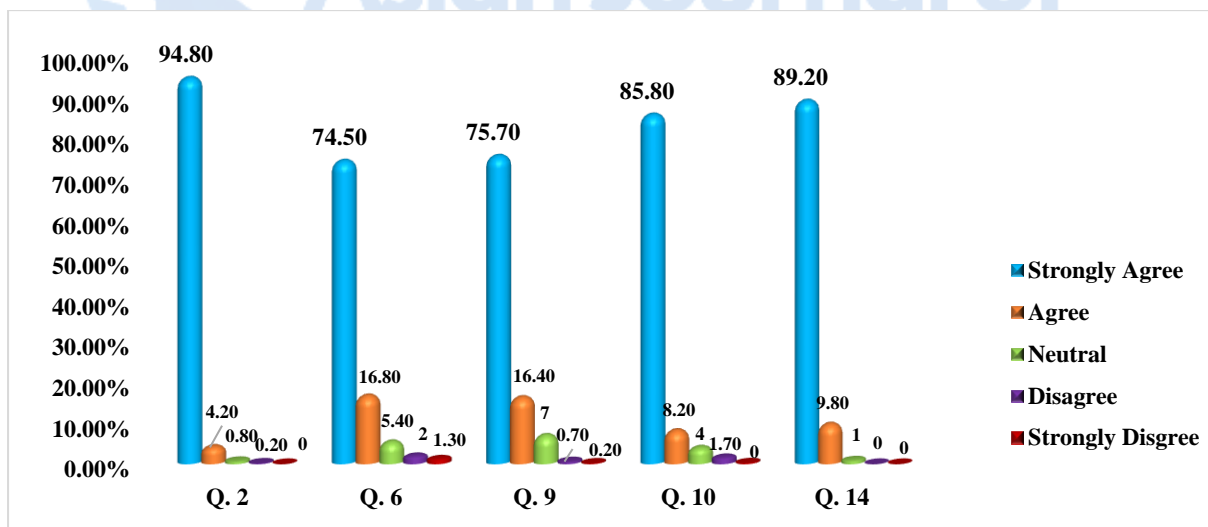
Graph 1: Response percentage of Yes, No and May be type questions

Table 3 & Graph 2 show responses of students on five point Likert scale. Combined strongly agree and agree average percentage shows the following findings. 99% students responded that, it is easy for them to attend online classes on Smartphone. 91.30% students find it easy to use Dentistry related apps on Smartphones. 92.10 % students feel that, it is easy for them to complete online assignments on Smartphone. 94% students responded that it is easy for them give online examinations by using Smartphone. 99% students said that it is easy to use smartphone than other gadgets like Desktop, laptop, i-pad, etc. to continue teaching and learning during COVID- 19 pandemic.

Table 3: Responses of students on five point Likert scale

Q. No.	Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
2	It is easy for you to attend online classes on Smartphone.	94.80%	4.20%	0.80%	0.20%	0%

6	It is easy to use Dentistry related apps on Smartphones.	74.50%	16.80%	5.40%	2%	1.30%
9	It is easy for you to complete online assignments on your Smartphone.	75.70%	16.40%	7%	0.70%	0.20%
10	It is easy for you to give online examinations by using Smartphone.	85.80%	8.20%	4.00%	1.70%	0%
14	It is easy to use smartphone than other gadgets like Desktop, laptop, i-pad, etc. to continue teaching and learning during COVID- 19 pandemic.	89.20%	9.80%	1.00%	0.00%	0%

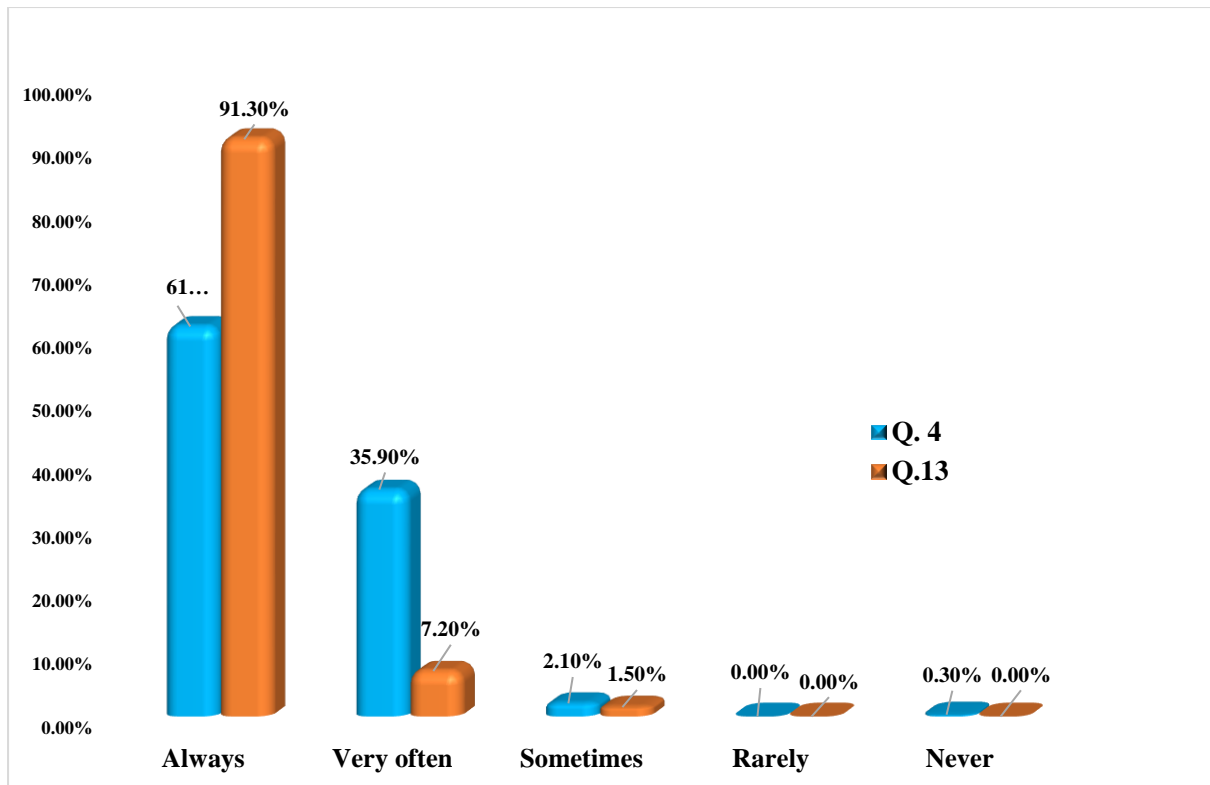


Graph 2: Responses of students on five point Likert scale

Table 4 & Graph 3 show responses of students on five point Likert scale. Always and often responses are combined to describe the responses of students to question number 4 and 13. 97.60% students used smartphones to download pictures/videos/e-books related to study topics. 98.50% students find that, it is easy to communicate with the faculties by using Smartphone through online platforms like what’s app, e-mail, Google classroom, etc.

Table 4

Q. No.	Question	Always	Very often	Sometimes	Rarely	Never
4	Do you use your Smartphone to download pictures/videos/e-books related to study topics?	61.70%	35.90%	2.10%	0.00%	0.30%
13	It is easy to communicate with the faculties by using Smartphone through online platforms like what's app, e-mail, Google classroom, etc.	91.30%	7.20%	1.50%	0.00%	0.00%



Q.15-What Is Your Opinion About Using Smartphones For Learning Different Aspects Of Dentistry?

The open ended question regarding opinion of students about using Smartphones for learning different aspects of dentistry shows various responses. Students find that smartphones are easily accessible, easy for communication, available 24/7, feasible, flexible, convenient, and time saving tool which makes learning more efficient and save paper which ultimately saves environment. Smartphone is a portable handy gadget that serves the purpose of the books, laptop, classroom, etc. in the quarantine times. Smartphone is a good alternative to classroom teaching as currently classroom studies are not possible. Better opportunity to learn in the pandemic made easy by smartphones. Smartphone keeps students updated to recent advances and gives them access to knowledgeable stuff anytime, anywhere so it helps in smart learning. Students suggested that this type of e-learning through smartphones must be including in curriculum officially. Students think that, Smartphone is a great tool if used wisely.

Students experienced that, the usage of smartphones in today's world of learning is surely a boon for all the students.

DISCUSSION

During the COVID - 19 epidemics, a cross-sectional survey was done to analyse undergraduate dental students' perceptions of the usage of Smartphones in dentistry as an effective teaching and learning tool. Many academics and educators have investigated the acceptance of e-learning among healthcare students all over the world.

91.30% students find it easy to use Dentistry related apps on Smartphones compared to 53% in study conducted in 2017.⁶

In this study, 99.70% of students have smartphones, which is similar to the other study (99.5%) where the majority of respondents have a positive impression and acceptance of the usage of smartphone as a learning aid.⁷

In this study, more than 98% students attended online classes similar to European academic survey where 90% of dentistry schools reported using online resources for classes in a COVID-19 crisis.¹²

In another study, the majority of student's attitudes towards mobile-learning were great in dentistry.¹³

Medical students in the United Kingdom were unanimous in their belief that having access to the internet on their smartphones aided their dentistry education (55%).¹⁴

In this study, almost 90% students found it easy to use mobile apps as compared to other study where the majority of the participants thought that mobile apps are really valuable since they allow students to learn at any time and from any location.¹⁵

Students suggested that this type of e-learning through smartphones must be included in curriculum officially similar to the other study reported 89.23% students responded similarly.¹⁶

Australian students perceive smartphones as learning tools for educational activities.¹⁷ The medical student's showed positive attitude toward the concept of smartphones as future

educational tools.¹⁸ In a present study, 90% students use smartphones for communication similar to Indian study.¹⁹ This study also showed that more than 74% students used Smartphone to create Google form/Online survey to conduct research activities.²⁰

LIMITATIONS

This investigation is limited to one institution only. Other institutes can be included for more samples.

CONCLUSION

Digital education is a “Happy Learning” for all students. The INFO-TAINMENT combination involved in digital learning makes it more practically applicable & enjoyable. Students opined that it is a flexible option allowing them to study as per their convenience, anywhere anytime. An online method of teaching and learning is highly recommended in today’s Digital Era.

About 99% students used Smartphones for e-learning. Smartphones are convenient and easily accessible device. Digital-education through Smartphones is need of the hour and Smartphones in dentistry is really an efficient tool during COVID - 19 pandemic situations to continue teaching and learning.

REFERENCES

1. <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public>
2. [http://www.ugc.ac.in/UGC Guidelines on Examinations and Academic Calendar for the Universities in View of COVID-19 Pandemic and Subsequent Lockdown](http://www.ugc.ac.in/UGC%20Guidelines%20on%20Examinations%20and%20Academic%20Calendar%20for%20the%20Universities%20in%20View%20of%20COVID-19%20Pandemic%20and%20Subsequent%20Lockdown)
3. <https://www.statista.com/statistics/330695/number-of-smartphone-users-worldwide/> Smartphone users in India 2015-2025 Published by Vaibhav Asher, Oct 16, 2020

4. Sandars J, Correia R, Dankbaar M, de Jong P, et al. Twelve tips for rapidly migrating to online learning during the COVID-19 pandemic. *MedEdPublish* 2020;9:82. <https://doi.org/10.15694/mep.2020.000082.1> [1].)
5. Karthikeyan Iyengar, Gaurav K. Upadhyaya, Raju Vaishya, Vijay Jain, COVID-19 and applications of smartphone technology in the current pandemic *Diabetes & Metabolic Syndrome: Clinical Research & Reviews* 14 (2020) 733e737 K. Iyengar 734 et al. / *Diabetes & Metabolic Syndrome: Clinical Research & Reviews* 14 (2020) 733e737)
6. Bikumalla P, Pratap K, Padma TM, Kalyan VS, Vineela P, Chandra Varma LS. Is smartphone a tool for learning purpose? - A survey among students of a dental college in telangana state. *J Indian Assoc Public Health Dent* 2017;15:373-7
7. *Nor Faharina Abdul Hamid*¹, *Nur Saiyidah Hanisah Ali*², and *Nadia Syahirah Mohd Nazri*², Investigating the Perception and Acceptance Towards Smartphone and Its Application as Learning Tool among Universiti Teknologi MARA Dental Students, *PROCEEDING BOOK OF 9TH DENTAL STUDENTS' SCIENTIFIC SYMPOSIUM*, Volume 1 | 2019
8. Talapady V, Shekhawat KS, Dinatius P, Thasneem CB, Ali S, Prasanna S, et al. Smartphone usage among female students of a private dental institution in North Kerala: A cross-sectional study. *J Dent Res Rev* 2019;6:83-7
9. Singh RP, Gopalakrishnapillai AC, Bhat N, Pawar A. Perception of dental and medical teaching faculty regarding mobile dental application. *J Pharm BioallSci* 2019;11:S530-9.
10. Priya SR, Padminee K, Deboral R, Sujatha G, Ramasamy M, Kumar PY. Knowledge and attitude toward use of internet in smartphones for dental education. *Indian J Dent Res* 2019;30:798-802.
11. <https://www.ed.ac.uk/institute-academic-development/learning-teaching/staff/digital-ed/what-is-digital-education>
12. Quinn B, Field J, Gorter R, et al. COVID-19: The immediate response of European academic dental institutions and future implications for dental education *Eur J Dent Educ.* 2020; 24:811–814.

13. Suner A, Yilmaz Y, Pi_skin B. 2019. Mobile learning in dentistry: usage habits, attitudes and perceptions of undergraduate students. PeerJ 7:e7391 <http://doi.org/10.7717/peerj.7391>.
14. Bullock A, Dimond R, Webb K, Lovatt J, Hardyman W, Stacey M. How a mobile app supports the learning and practice of newly qualified doctors in the UK: an intervention study. BMC medical education. 2015 Apr 8;15(1):1
15. Saeed Deshpande, Ashita Kalaskar, Jaishree Chahande (2016)'perception of faculty and students regarding use of mobile apps for learning in dentistry: A questionnaire based study' Journal of Education Technology in Health Sciences, September-December, 2016;3(3): 128-130.
16. P. Saxena et al. Assessment of digital literacy and use of smart phones among Central Indian dental students Journal of Oral Biology and Craniofacial Research 8 (2018) 40–43.
17. Rung A, Warnke F, Mattheos N. Investigating the use of smartphones for learning purposes by Australian dental students. JMIR mHealth and uHealth. 2014 Apr 30;2(2):e20.
18. Robinson, T., et al., Smartphone use and acceptability among clinical medical students: a questionnaire-based study. Journal of medical systems, 2013. 37(3): p. 9936.
19. Thakre SS, Thakre SB. Perception of medical students for utility of mobile technology use in medical education. International Journal of Medicine and Public Health. 2015 Oct 1;5 (4):305.
20. Boruff JT, Storie D. Mobile devices in medicine: A survey of how medical students, residents, and faculty use smartphones and other mobile devices to find information. J Med Libr Assoc 2014; 102:22-30.



Asian Journal of Multidisciplinary Research & Review

Asian Journal of Multidisciplinary Research & Review (AJMRR)

ISSN 2582 8088

Volume 3 Issue 2 [March April 2022]

© 2021 All Rights Reserved by [The Law Brigade Publishers](#)