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Study Of Electronic Devices Usage In Learning Anatomy Among First MBBS Medical Students In A Tertiary Care Center In Western Maharashtra, India.

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ABSTRACT

The use of electronic devices such as laptop computers, smartphones, and tablets at work places is increasingly frequent especially more among the young university students. These devices have been extensively adopted by the medical students and professionals. With rapid advancement of technology and e-learning, it is important to explore the potential of technology in delivering tailored anatomical course content. Online form containing Questionnaire regarding Electronic devices usage was forwarded to Medical students. Their responses were received & analyzed. Total 196 student's response was received. 190 (97.94%) students reported usage of electronic devices to learn anatomy. In 134 (69.07 %) students Mobiles/ Smartphones were most commonly used devices. 169 students (88.48%) recommend the usage of electronic devices in regular teaching learning methods. The knowledge acquired in medical school influences performance as a doctor. Both clinicians and students acknowledge anatomy knowledge to be vital for good clinical practice. This study suggests that students prefer these resources for anatomy learning purposes. Electronic devices have become the need of the hour and our study suggest that students are getting more accustomed to these kind of newer techniques. The electronic devices usage should be considered in medical curriculum performance reviews and ways to incorporate these novel methods of learning into the traditional curriculum should be explored.

Keywords: Electronic devices, learning, anatomy

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INTRODUCTION

The use of electronic devices such as laptop computers, smartphones, and tablets at work places is increasingly frequent in any society of developing and developed countries, especially more among the young university students even during teaching class hours [1,2,3]. These devices have been extensively adopted by the medical students and professionals [3-7]. Smartphones nowadays are actually transformed as mobile computers as its capable of providing instant, handy access to numerous of the identical education enhancing competencies as an internet-connected computer [8,9]. Use of these devices have become essential for any society's daily life and business. Similar to smartphones and tablets, new-generation laptop, have played a great role in making life easier. These devices help to resolve many issues of our professional life and eliminates the need of carrying bundles of files [3]. Probably, these are the reasons that enabled medical community to embrace technology in daily life. Therefore, these devices are rapidly becoming one of the leading equipment for reading and retrieving all kind of relevant information required by the medical and health professionals, including medical students [10-15].

One Malaysian study reported that over 94% of consultant physicians and surgeons possessed smartphones & they used it in "remote and daily medicine" practice [16]. Many medical faculties and universities are little slow in understanding the potentials of electronic devices, [17] but there are exceptions such as University of Leeds, UK, [18] and Stanford University, USA [19]. The University of Leeds [19] lends iPhones to all year-III and -IV medical students while Stanford University [19] provides iPads to all the medical students. Use of the smartphone in the field of internal medicine, which includes patient care, medical reference, and continuing education, and in medical education, communication and research by both students and professionals is well documented in past [19]. The use of smartphones has been rising among medical professionals from India and the United States including students, especially for retrieving articles and books and for clinical evidence useful in research as well as academic purposes [20,21].

Comprehensive knowledge about human anatomy is necessary in the understanding and practice of medicine. Anatomy teaching is an established part of the undergraduate curriculums. However, with a variety of tools and techniques employed to teach anatomy, there is uncertainty regarding methods to deliver optimal teaching. With rapid advancement of technology and e-learning, it is important to explore the potential of technology in delivering tailored anatomical teaching [22].

Aims and Objectives

- To study the Prevalence of Electronic device usage to learn anatomy amongst the First year MBBS students
- To know the Types of Electronic devices used to learn anatomy amongst the First year MBBS students
- To know the average duration of Electronic device usage to learn anatomy amongst the First year MBBS students

MATERIAL AND METHODS

Online form containing Questionnaire regarding research objectives was forwarded to Medical students. Google forms software was used to make forms and get responses from participants. Responses were received online. Total 196 student's response was received.

OBSERVATION AND RESULTS

Total 194 responses were recorded from the Medical undergraduate students of Dr. BVP RMC, Loni who studied Anatomy. 190 (97.94%) students reported usage of electronic devices to learn anatomy. In 134 (69.07 %) students Mobiles/ Smartphones were most commonly used devices followed by Tablet in 45 (23.20 %), Laptop in 13 (6.70%) students. 94 students (48.96%) reported average duration of usage between 1-2 hours per day whereas 71 students (36.98%) reported average duration of usage between above 3 hours per day, 25 students (13.02 %) less than 1 hour and 2 students (1.04%) never used any electronic devices for learning devices. 178 students (93.19%) were satisfied with the learning through electronic devices, 13 students (6.81%) did not fulfil their expectations from learning

through electronic devices. 169 students (88.48%) recommend the usage of electronic devices in regular teaching learning methods. 159 students (83 %) believe ban of electronic devices in regular classes may not improve the regular class learning experience.

Table 1: Type of Electronic devices used by students

Electronic devices used	User Count	Percentage %
Mobile/Smartphone	134	69.07
Tablets	45	23.20
Laptop	13	6.7
PC	1	0.52
Others	1	0.52

Table 2: Average Duration of Usage of electronic device in a day

Duration	Count	Percentage %
Less than 1 hour	25	13.02
1-2 hours	94	48.96
More than 3 hours	71	36.98
Never used it at All	2	1.04

DISCUSSION

Anatomical educational resources vary in design and content across the globe. Students have identified various methods of learning anatomy. Many past studies have suggested; traditional cadaveric teaching is most favored learning method in anatomy [23] Technological assistance amongst medical students combined with evolving resources to reinforce and revise the content in the student's own time, provides good opportunity for educational providers and innovators to develop innovative teaching methods to improve the delivery of the medical curriculum to undergraduate students. This in turn can help develop an interest in anatomy in medical students and better equip them to apply anatomical knowledge in their clinical practice.

51 % students used online resources and 35.3 % used Applications as learning material as reported in a study by Zargarán et al [24]. The knowledge acquired in medical school influences performance as a doctor [25]. Both clinicians and students acknowledge anatomy knowledge to be vital for good clinical practice [26]. The decline of time dedicated to anatomy within the medical curriculum is concerning issue [27]. It is imperative that resources tailored to student preferences are available to address this issue. 93.19% of participants being satisfied with the learning through electronic devices in our study suggests that students prefer these resources for anatomy learning purposes. Use of electronic devices for Learning anatomy is higher (97.94%) and their demand to make it a customary resource with conventional teaching learning methods was remarkably high (88.48%) among participants. Certain universities have already started their work plans to augment the learning with electronic device usage and many more need to follow the suite of adaptability.

CONCLUSIONS

Electronic devices have become the need of the hour and our study suggest that students are getting more accustomed to these kind of newer techniques. The electronic devices usage should be considered in medical curriculum performance reviews and ways to incorporate these novel methods of learning into the traditional curriculum should be explored.

Limitations And Scope

Gender wise comparison, Subject wise comparison can be added in the study. Comparison between traditional methods and newer teaching learning methods can also be done. Author plans to do the same in coming future.

REFERECNES

- [1] Haque ATME, Sugathan S, Ali O, Islam MZ, Haque M. Use of electronic devices by the medical students of UniKL-RCMP, Malaysia, and its influence on academic performances. *Natl J Physiol Pharm Pharmacol* 2016;6 (Online First). DOI:10.5455/njppp.2015.5.2709201577
- [2] Kjos AL, Miesner A, Chesnut R. Use of laptops and other technology in the classroom [second letter] *Am J Pharm Educ.* 2010;74(8). Article 152.
- [3] Jamal A, Sedie R, Haleem KA, Hafiz N. Patterns of use of 'smartphones' among female medical students and self-reported effects. *J Taibah Univ Med Sci.* 2012;7(1):45-9.
- [4] Burnette P. Mobile technology and medical libraries: worlds collide. *Ref Lib.* 2011;52(1-2):98-105.
- [5] Garritty C, El Emam K. Who's using PDAs? Estimates of PDA use by health care providers: a systematic review of surveys. *J Med Internet Res.* 2006;8(2):e7.
- [6] Jackson and Coker Research Associates. Apps, Doctors, and Digital Devices Jackson & Coker Industry Report. 2011;4(7). Available at <http://industryreport.jacksoncoker.com//physician-career-resources/newsletters/monthlymain/des/Apps.aspx>. Accessed on September 1,2015.
- [7] Lepp A, Barkley JE, Karpinski AC. The relationship between cell phone use and academic performance in a sample of US College students *Sage Open.* 2015:1-9.
- [8] Bull P, McCormick C. Mobile learning: integrating text messaging into a community college pre-algebra course. *Int J E-Learning.* 2012;11(n3):233-45.
- [9] Tao YH, Yeh CR. Transforming the personal response system to a cloud voting service In: Uesugi S (Ed). *IT Enabled Services*, Chapter 9. Vienna, Austria: Springer-Verlag, 2013. pp. 139-56.
- [10] Ducut E, Fontelo P. Mobile devices in health education: current use and practice. *J Comput High Educ.* 2009;20(2):59-68.
- [11] Leon SA, Fontelo P, Green L, Ackerman M, Liu F. Evidence-based medicine among internal medicine residents in a community hospital program using smart phones. *BMC Med Inform Decis Mak.* 2007;7:5.
- [12] Chatterley T, Chojcecki D. Personal digital assistant usage among undergraduate medical students: exploring trends, barriers, and the advent of smartphones. *J Med Libr Assoc.* 2010;98(2):157-60.
- [13] Canadian Medical Association. Ahead of the curve: Canadian doctors leap on the mobile bandwagon *Future Pract [Internet].* 2012:1-4. Available at https://www.cma.ca/Assets/assets-library/document/en/about-us/FP_nov2012-e.pdf. Accessed on September 1, 2015.
- [14] Franko OI, Tirrell TF. Smartphone app use among medical providers in ACGME training programs. *J Med Syst.* 2012;36(5):3135-9.
- [15] Ventola CL. Mobile devices and apps for health care professionals: uses and benefits. *P T.* 2014;39(5):356-64.
- [16] Perumall VV, Sellamuthu P, Harun R, Zenian MS. Smartphones in remote medicine and daily neurosurgery: the Sabah update. *Asian J Neurosurg.* 2015;10(1):1-4.
- [17] Robinson T, Cronin T, Ibrahim H, Jinks M, Molitor T, Newman J, et al. Smartphone use and acceptability among clinical medical students: a questionnaire-based study. *J Med Syst.* 2013;37:9936.
- [18] Boyce N. The Lancet technology: January 2012. *Lancet.* 2012; 379:209.
- [19] Ozdalga E, Ozdalga A, Ahuja N. The smartphone in medicine: a review of current and potential use among physicians and students. *J Med Internet Res.* 2012;14(5):e128
- [20] Bala A, Gupta BM. Perceptions of health professionals regarding use and provision of LIS through mobile technologies. *DESIDOC J Lib Inf Technol.* 2010;30(3):7-12.
- [21] Bushhousen E, Norton HF, Butson LC, Auten B, Jesano R, David D, et al. Smartphone use at a university health science center. *Med Ref Serv Q.* 2013;32(1):52-72.
- [22] Motilal C Tayade, Nandkumar B Kulkarni , The Interface of Technology and Medical Education in India: Current Trends and Scope , *Indian Journal of Basic & Applied Medical Research* , 1(1) , December 2011 , 8 - 12
- [23] Davis CR, Bates AS, Ellis H, Roberts AM. Human anatomy: let the students tell us how to teach. *Anat Sci Educ.* 2014;7(4):262-272.doi:10.1002/ase.v7.4
- [24] Swamy M, Searle RF. Anatomy teaching with portable ultrasound to medical students. *BMC Med Educ.* 2012;12(1):99. doi:10.1186/1472-6920-12-99
- [25] Carr S, Celenza A, Puddey I, Lake F. Relationships between academic performance of medical students and their workplace performance as junior doctors. *BMC Med Educ.* 2014;14(1). doi:10.1186/1472-6920-14-157



- [26] Sbayeh A, Qaedi Choo M, Quane K, et al. Relevance of anatomy to medical education and clinical practice: perspectives of medical students, clinicians, and educators. *Perspect Med Educ*. 2016;5(6):338–346. doi:10.1007/s40037-016-0310-4
- [27] Turney B. Anatomy in a modern medical curriculum. *Ann R Coll Surg Engl*. 2007;89(2):104–107. doi:10.1308/003588407X168244