International Journal of Anatomy and Research,
Int J Anat Res 2020, Vol 8(2.2):7513-18. ISSN 2321-4287
DOI: https://dx.doi.org/10.16965/ijar.2020.148

Original Research Article

STUDENT'S PERCEPTION ABOUT INCREASING PRODUCTIVITY DURING DISSECTION HALL TIME- A QUESTIONNAIRE BASED STUDY

Munawara R [1], Palak *[2], Kapoor K [3].

[1] Post graduate Junior Resident, Department of Anatomy, Government Medical College and Hospital, Chandigarh, India.

*[2] Demonstrator, Department of Anatomy, Government Medical College and Hospital, Chandigarh, India.

[3] Professor and Head, Department of Anatomy, Government Medical College and Hospital, Chandigarh, India.

ABSTRACT

Introduction: A first year medical student spends around 600 hours in anatomy. Time tested cadaveric dissection is considered as the heart of anatomy learning by young students as well as eminent medical professionals. The reason for the introduction of other sources being constrained time schedule with growing internet generation which forces the anatomy faculty to blend in to make the subject interesting.

Aims and Objectives: The aim of the study was to quantify student's perception on the cadaveric teaching and their view on integration of other tools in dissection hall, also assessing different ways to increase their productivity in dissection hall time.

Material and methods: A cross-sectional questionnaire-based survey was conducted in the Department Of Anatomy, Government Medical College, Chandigarh, India on 27 and 28th of May 2019. A predesigned 11 item questionnaire was circulated to 101 outgoing first-year MBBS students out of which 93 students participated.

Results and conclusion: Majority of the students(90%) feel that there cannot be any replacement for actual cadaveric dissection. the maximum students (84%) preferred you tube videos as compared to mobile applications (6%) thereby stating that these apps do not aid much in their learning.

KEYWORDS: Digital sources, Cadaveric teaching, Dissection Hall.

Corresponding Author: Palak, Demonstrator, Department of Anatomy, Government Medical College and Hospital, Chandigarh, India. Contact no: 9876233767
E-Mail: palakchhabra48 @gmail.com

Access this Article online	Journal Information
Quick Response code	International Journal of Anatomy and Research
	RG Journal Impact: 0.21*
	ISSN (E) 2321-4287 | ISSN (P) 2321-8967
	https://www.ijmhr.org/ijar.htm
	DOI-Prefix: https://dx.doi.org/10.16965/ijar
DOI: 10.16965/ijar.2020.148	Article Information
	Received: 19 Mar 2020 Accepted: 20 Apr 2020
	Peer Review: 19 Mar 2020 Published (O): 05 May 2020
	Revised: None Published (P): 05 May 2020

INTRODUCTION

Cadaveric dissection is the heart of Anatomy and it is held at such high esteems by both young students and eminent professors. A first-year MBBS student spends almost two-thirds of his/her academic year in the dissection hall. Hence it is important to make that time as productive and engaging as possible [1].

Modern teaching techniques such as YouTube videos, multimedia dissectors, 3 D model, computer-based atlas, etc have started taking over in the Western countries despite cadaveric dissection being important and indispensable. Increasing digitalization in the medical field and

an internet hungry generation forces the anatomy faculty to integrate such teaching methods with the conventional ones [2,3].

But these modern techniques are not without pitfalls. Costs, complexity, and maintenance are some. And despite the digital era's influence, the adventure of exploring and appreciation of structures in cadaveric dissection with all our senses is inestimably precious. Besides, studies on digital teaching in the dissection hall have proved it to be less productive.Other methods to increase productivity that have been proved effective include includes active engagements of students like small group discussion, questioning sessions, active recall, practice tests, etc. Also, a knowledge of applied aspects of the topic before the dissection will stimulate the curiosity of the student and enjoy the dissection [4,5].

The average adult human attention span is just 10-20 minutes and it is important to deliver a lesson effectively with attempts to increase this time with stimulation of multiple senses. Thought the integration of digital sources might seem to be the need of the hour, it is important to implement change with strong evidence [5].

So this study aims to quantify student's perception of the cadaveric teaching and their view on the integration of other tools in dissection hall, also assessing different ways to increase their productivity in dissection hall time. This study will prove useful for future dissection hall design in medical institutions around the world.

MATERIALS AND METHODS

A cross-sectional questionnaire-based survey was conducted in the Department of Anatomy, Government Medical College, Chandigarh, India in May 2019. A predesigned 11 item questionnaire was circulated to 101 outgoing first-year MBBS students out of which 93 students participated (92% of the total). The freedom of being anonymous was given to obtain an unbiased response and they could choose more than one option in selected questions. The supplementary material is available in the appendix. The principles of ethical research according to the Declaration of Helsinki were followed.

The participants had a dissection hall routine of 15 hours of dissection hall per week on average commensurate with the MCI guidelines which had various activities like demonstration (2 hrs/week), dissection, group learning, and discussion with embryology and 3D plastic models, histology lab. The questionnaire was developed by the investigators considering the current routine in dissection hall and facilities available. The questionnaire addressed various aspects like digital vs. cadaveric teaching method, teaching methodology in dissection hall and factors affecting the productivity.

The authors declare that they have no external interest or any other remunerated engagements and/or other significant financial interests in the study.

RESULTS

The quantified analysis was done to analyse the response. There is an unequivocal preference for cadaveric dissection. Majority of the students(90%) feel that there cannot be any replacement for actual cadaveric dissection. However, there is a strong opinion(97% of students) that digital sources can be integrated as an effective teaching modality. There is an over whelming preference of students to teach them clinical importance of the subject before proceeding for anatomical and theoretical details and also the dissection(Table1).

Students advocate more regular oral examinations, structured or otherwise. In addition, assigning specific topics for the day increases their capacity to retain a specific topic(Table 2). Out of all associated teaching modalities,3D models in the museum, followed by you tube videos(42%) got higher response and the least preference was for E notebook (Figure 1).For self learning, the maximum students (84%) preferred you tube videos as compared to mobile applications (6%) thereby stating that these apps do not aid much in their learning (Figure 2).

Despite digital integration, students still prefer continuous interaction with teachers in the dissection hall. 55% of the students were in the favour of a compassionate teacher who takes in their opinion and adjust the complexity of teaching accordingly.A compassionate teacher who takes in the student's opinion and acts

accordingly was the major choice of the students(55%) followed by a thoughtful teacher who gives them freedom to explore themselves(30%) and then a meticulous teacher who gives them specific instruction and expects it to be done in stipulated time(15%).(Figure 4)

Fig. 1: Student's Preferred Choice Of Modality To Be Introduced in D hall.

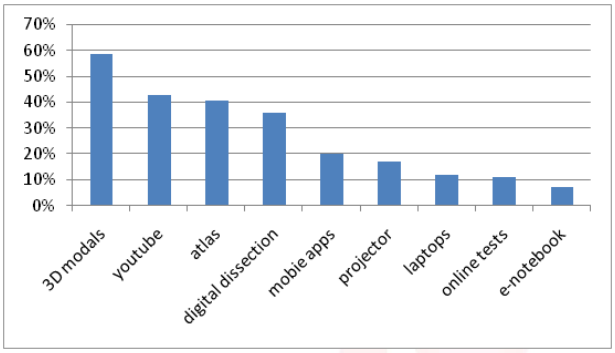

Fig. 2: Frequently Used Source to Learn Anatomy.

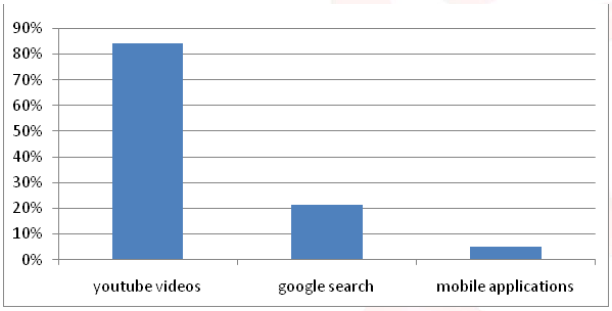

Fig. 3: Factors decreasing D-hall productivity.

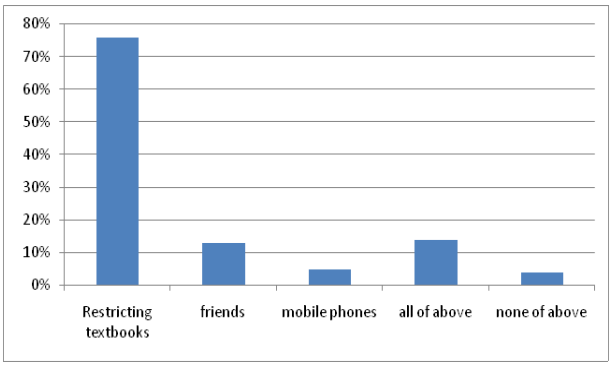

Fig. 4: Desired personality in a teacher.

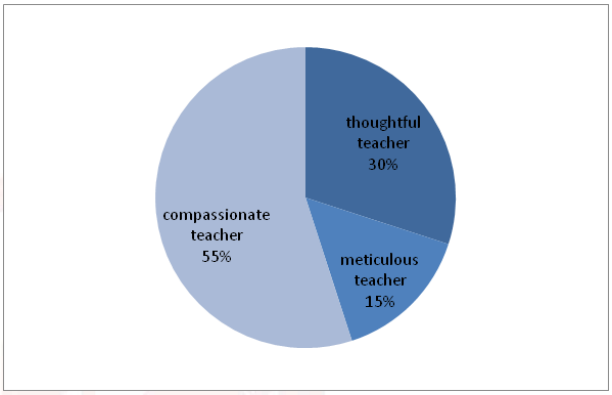

Table1: Showing students opinion on conventional v/s digital teaching.

Questions	Yes	No
1) Integrative teaching is vital for multidimensional learning habit?	98%	2%
2) Introduce Integrated teaching modality with cadaver?	97%	3%
3) Digital source playing a major role in learning anatomy?	88%	12%
4) Can digital dissection replace cadaveric dissection in future?	10%	90%

Table2:Showing students perception on dissection hall teaching methodology.

Questions	Yes	No	Can't say
1) Short and precise teaching	53%	36%	11%
2) Surface marking on daily basis	36%	49%	15%
3) Teaching clinical anatomy before dissection	81%	9%	10%
4) Oral examination increases confidence	83%	7%	10%
5)Oral examination makes longer retention	92%	2%	6%
6) Assigning topics increases productivity	84%	16%	-

DISCUSSION

Dissection of the human body is an inauguration ritual for a first-year medical student and the dissection hall serves as the chapel for that ritual. So, utilizing this time effectively is a fundamental step in building a great doctor.

Integration is a necessity: Time tested cadaveric dissection is the imperative method to learn gross anatomy due to its realistic exposure to human tissues. An experimental study proves the superiority of cadaveric dissection where the students exposed to cadaveric teaching performed better than those exposed to PowerPoint-based small group sessions [1,5].

In this era of artificial intelligence, integrating digital modalities in the dissection hall has

become a primitive must. In the present study, 98% of the students believed that integrative teaching is indispensable for multidimensional learning habit. Teaching from multiple sources will encourage and habituate students to think in different dimensions. Studies have proved that the stimulation of multiple senses improves learning and the persons were more creative in problem-solving. A study [6] on "Cross-modal perception of actively explored objects" concluded that learning with two modalities gave better performance than with a single modality [7,8].

97 % of the students supported the integration of digital sources with cadaveric dissection. Out of all the digital modalities, 3 D models were most preferred followed by YouTube videos, atlases, and digital dissection. The least preferred were mobile applications, projectors, online tests, laptops, and e-books.

Though 3D models attained maximum votes, studies show that it has no solid evidence of superiority over traditional teaching and in turn, the impact of it depends on the topic presentation and student learning styles. So,it is inconclusive on this aspect which needs more exploration [9].

Another study "Anatomy Education for the YouTube Generation" conducted by Barry et all found that 78% of the students opted YouTube as the main source of learning anatomy which is in concordance with the present study where 43% chose it for integration. It is also the most frequently used self-learning tool according to this study. The access of the content anywhere anytime at the fingertips with the possibly infinite number of revisions makes it popular [3].

Atlas was the third preferred modality to be introduced. Park et al [10] compared the impact of 2D and 3D atlas and concluded that 3D atlas helped in faster identification of the structures but not in acquiring the knowledge or memorizing it. But since students prefer 3D atlas, a mindful combination of 2D and 3D atlases will be beneficial [10,11].

The digital dissection was opted by 36% of students. In a similar study by Houser and Kondrashov,91% of students considered multimedia dissector beneficial [1].

Mobile phones were surprisingly least desired by students as a learning tool despite its advantages like real-time interaction and personalized learning. The reason might be higher distractibility, lack of standardization and inconvenience with a smaller screen [10,11].

Ways to increase productivity: The selective sustained attention span of an average human adult is about 10 to 20 minutes and this is further declining according to recent studies. Fortunately, this attention span can be increased by involving the students in an inherently motivating task. A neuroscience studies also prove that pleasurable classroom activities stimulate dopamine release which enhances the memory center and the release of acetylcholine which can increase focused attention. So shorter teaching sessions (as suggested by 53% of the students) within their attention span employing multiple modalities to stimulate senses can improve the efficacy of learning [12,13].

The other way to improve productivity involves the active engagement of students in the learning process in addition to traditional dissection alone.

Vale et al [14] emphasized the importance of posing questions and their role in improving critical thinking. Encouraging students to pose questions is crucial and this curiosity can be watered by teaching clinical anatomy before dissection which can make dissection more interesting.

The students unanimously were positive towards active oral examinations and revision enhanced their confidence in the exam and better retention of the topic. This statement is supported by evidence from studies done by Benware C and Deci E "Quality of Learning With an Active Versus Passive Motivational Set" and another study also had results supporting active learning more productive than passive learning [15,16].

Another finding of the study is to have a specific topic for the day assigned by the teacher. This assigning tasks and topics and its productivity benefits have been earlier proved by a study from Harvard by Robert c Pozen and Kevin Downey from 19957 participants from different

continents showed that completing assigned tasks were a habit of productive people [17].

The factors decreasing their productivity have also been addressed in this study. A few are the book of interest not being allowed, mobile phones and friends. Only a very few think that none of these affect their productivity in contrast to the majority.

Above all, an eminent teacher is an inspiration and has a great influence on the student's perception of the subject. The students chose for compassionate teachers who take in their opinions and act accordingly followed by a thoughtful teacher who gives freedom to explore themselves. A meticulous teacher giving specific instruction to finish within frame time is least preferred. This shows that a teacher must be versatile to help students without compromising the discipline in the dissection hall.

In conclusion, it has been proven that the combination of the teacher, the student, and the content is highly interrelated and plays a major role in a classroom. This feedback survey reflects the requirement of the students and enlightens us with the student's perception of the benefits and drawbacks of various activities in the dissection hall. It has also provided enough information to enhance productivity to a higher level in the same [18].

CONCLUSION

Cadaveric Dissection should be the central pillar of D-hall teaching as it is an imperative method to learn gross anatomy due to its realistic exposure to human tissues. And there is no substitute for cadaveric dissection.

Other teaching sources should be introduced considering the availability of resources as per institution, which may include 3D models, You Tube Videos, atlas, etc. The fusion of traditional cadaveric laboratory and innovative methodologies elicits better educational outcomes in anatomy.Specific instructional objectives with schedule assignment ought to be implemented with regular oral examinations.

Framing regulations to diminish distractions and deviances.Teaching by a compassionate teacher who can adjust according to the students without compromising the discipline in D hall.So, it has been proven that the combination of the teacher, the student, and the content are highly interrelated and plays a major role in Dissection hall.

This feedback survey reflects the requirement of the students and enlighten us with the student's perception of the benefits and drawbacks of various activities in the dissection hall. It has also provided enough information to enhance productivity to the higher level in the dissection hall.

Conflicts of Interests: None

REFERENCES

[1]. Haider G, Rashid S, Hussain A, Ghazanfar M, Ghazanfar A, Javaid A. Cadaveric Dissection a Thing of Past? The insight of Consultants, Fellows, and Residents. Cureus.2018; 10(4): e2418.

[2]. Houser JJ ,Kondrashov P. Gross Anatomy Education Today: The Integration of traditional and Innovative Methologies. J Mo Med.2018;115(1).

[3]. Barry DS, Marzouk F, Chulak-Oglu K, Bennett D, O'Keeffe GW. Anatomy Education for the Youtube Generation. Anat Sci Edu.2016; 9(1):90-6.

[4]. Niccoli A. Paper or Tablet? Reading Recall and Comprehension. Creative Commons.2015.

[5]. Singh V, Kharb P.A Paradigm shift from teaching to learning gross anatomy: meta- analysis of implications for instructional methods. J Anat Soc India.2013;62:84-9.

[6]. Newell F, Bulthoff HH, Ernst MO, Oakley I. Cross-modal perception of actively explored objects. In H. S. Oakley S. O'Modhrain,editor(s). Proceedings EuroHaptics 2003. Dublin, Ireland: Trinity College Dublin. P 291-299.

[7]. Vertematil M, Rizzetto F, Vezzulli F, Sampogna G, Cassin S, Cenzato F, et al Teaching Anatomy in a modern medical course: an integrated approach at Vialba Medical School in Milan. MedEd Publish.2018; 7(1):15.

[8]. Kolachalama VB, Garg PS. Machine learning and medical education. Npj Digital Medicine.2018;1:54.

[9]. Azer SA, Azer S. 3D Anatomy Models and impact on Learning: A review of the Quality of the Literature. HealProf Edu.2016; 2(2):80-98.

[10]. Park S, Kim Y, Park S, Shin J.A. The Impacts of three-dimensional anatomical atlas on learning anatomy. Anat Cell Biol. 2019;52(1): 76-81.

[11]. Weyhe D, Verena U, Weyhe F, Kaluschke M, Zachmann G. Immersive Anatomy Atlas- Empirical Study investigating the Usability of a Virtual Reality Environment as a learning tool for Anatomy. Front Surg.2018; 5: 73.

[12]. Willis J. The Neuroscience of Joyful Education. J Dep Sup Curr Dev.2007;64

[13]. Shaffer K. Teaching Anatomy in the digital world. N Engl J Med.2004; 351(13):1279-81.

[14]. Vale RD. The Value of asking Questions. J Mol Bio Cell.2013; 24(6): 680-2.
[15]. Benware CA, Deci EL. Quality of Learning With an Active Versus Passive Motivational Set. Am Educ Res J. 1984; 21(4): 755-65.
[16]. Nestojko JF, Bui DC, Kornell N, Bjork EL. Expecting to teach enhances learning and organization of knowledge in free recall of text passages. Mem Cognit. 2014 Oct;42(7):1038-48.
[17]. Pozen RC, Downey K. What makes some people more productive than others. Harv. Bus. Rev.2019.
[18]. Shin MH, Kim KH. Teacher, student, content connections that influence student subject interest. Green and smart technology with sensor applications/ CCIS.2012;338: 209-17.
[19]. Estai M, Bunt S. Best teaching practices in anatomy education: A critical review. Ann. Anat; 208:151-7.
[20]. Mitrousias V, Karachalios TS, Varitimidis SE, Natsis K, Arvanitis DL, Zibis AH.Anatomy learning from ProsectedCdaveric Specimens Versus Plastic Models: A comparative study of Upper Limb Anatomy. Ana Sci Educ.2019;
[21]. Shaffer K. Teaching Anatomy in the digital world. N Engl J Med.2004; 351(13):1279-81.
[22]. Johnson EO, Charchanti AV, Troupis TG. Modernization of an anatomy class: From conceptualization to implementation. A case for integrated multimodal-multidisciplinary teaching. Anat Sci Edu; 5: 354-66.
[23]. Kucuk S, Kapakin S, Goktas Y. Learning Anatomy via mobile augmented reality:Effects on achievement and cognitive load. Anat Sci Edu.2016;9: 411-21.
[24]. Zehry K, Halder N, Theodosiou. E- Learning in medical education in the united kingdom. Procedia socBehav Sci.2011; 15:3163-7.
[25]. Dhir S.K, Verma D, Batta M, Mishra D. E-Learning in medical education in India. J Ind Ped.2017; 54: 871-7.
[26]. Pillay S. Your brain can only take so much focus. Harv. Bus. Rev..2017.
[27]. Papa V, Vaccarezza M. Teaching Anatomy in the XXI Century: New Aspects and pitfalls. Sci World J.2013;2013.
[28]. Cornish, David, Dianne. The Essential 20:Twenty Components of an Excellent Health Care Team. Pittsburgh, PA; RoseDog Books.2009:72-73.
[29]. Mangen A, Walgermo BR, Bronnick K. Reading linear texts on paper versus computer screen: Effects on reading comprehension. Int J Edu Res.2013;58: 61-8.
[30]. Ackerman R, Goldsmith M. Metacognitive Regulation of text learning: on screen versus paper. J Exp Psychol Appl.2011; 17(1):18-32.
[31]. McPheat S. The Advantages And Disadvantages of mobile learning. Skillshub.https://www.skillshub.com/advantages-disadvantages-mobile-learning/
[32]. Holland JC, Pawlikowska T. Undergraduate Medical Students' Usage and Perceptions of Anatomical Case-Based Learning: Comparison of Facilitated Small Group Discussions and eLearning Resources. Anat Sci Edu.2019; 12: 245-56.
[33]. Harrison CH, Elmansouri A, Parton W, Myers MA, Hall S, Jonny R, et al. The Efficacy of Frontline Near-Peer Teaching in a Modern Medical Curriculum.Anat Sci Edu.2018; 12: 236-44.
[34]. Schaefer AH, Wilson AB, Barger JB, Azim HM, Brokaw JJ, Brooks WS. What does a Modern Anatomist Look Like? Current Trends in the Training of Anatomy Educators. Anat Sci Edu. 2019; 12: 225-35.
[35]. Oakes DJ, Hegedus EM, Ollerenshaw SL, Drury H, Ritchie HE. Using the jigsaw Method to teach Abdominal Anatomy. Anat Sci Edu. 2019;12: 272-83.
[36]. Pickering JD, Swinnerton BJ. Exploring the Dimensions of Medical student engagement with Technology- Enhanced Learning Resources and Assessing the Impact on Assessment Outcomes. Anat Sci Edu. 2019;12: 117-28.

How to cite this article:

Munawara R, Palak, Kapoor K. STUDENT'S PERCEPTION ABOUT INCREASING PRODUCTIVITY DURING DISSECTION HALL TIME- A QUESTIONNAIRE BASED STUDY. Int J Anat Res 2020;8(2.2):7513-7518. **DOI:** 10.16965/ijar.2020.148