

# Student's Perception of Dissecting a Human Cadaver Compared to Usage of 3D Anatomy Virtual Dissection Table to Learn Gross Anatomy

ALI AKMAL NAEEM, SAFWAN TARIQ CHAUDHRY, HIRA YASEEN

Lahore Medical & Dental College, Lahore

Correspondence to Dr. Ali Akmal Naeem, Email: [aliakmalnaeem@gmail.com](mailto:aliakmalnaeem@gmail.com) Cell: 0332-8439564

## ABSTRACT

**Background:** Limited availability of cadaver and modern discoveries has led to alternate channels to gain anatomy knowledge.

**Aim:** To know the perception of these new sources compared to conventional human dissection.

**Method:** Questionnaire was circulated to for the purpose and results were obtained according to the response. This research is explained in detail according to the result.

**Result:** Majority students were of the view that cadaver dissection is by far the best approach to get the most information of gross anatomy rather than relying on the programmed virtual dissection table.

**Conclusion:** The study strengthen the believe that for gross anatomy human dissection should be performed at the dissection hall meanwhile, the knowledge can be supplemented by the usage of Virtual dissection anatomy table and other modes of information like social media platform.

**Keywords:** Cadaver, Learning, Dissection, Human Anatomy

## INTRODUCTION

Dissection of human cadaver is considered the pillar of learning the human anatomy. This is widely accepted from centuries. Dissecting a human body gives the medical students the opportunity to feel the texture of human viscera doing along with the exact site of these organs according to physiological function. As the time has passed, advancements in the technology has trained the brains of new generation to see the world in completely different way. Meanwhile, the majority anatomists and medical students do rely on the previous procedure, new methods to learn human anatomy is revolutionizing the knowledge seeking techniques.

This study aims to get the perception of medical students about the 3D dissection table and dissection on a cadaver for learning anatomy.

## MATERIAL AND METHOD

This research is done by using a questionnaire given to the medical students from second year DPT, first year MBBS and second year MBBS students, total of 93 students responded. Relatable questions were included in the questionnaire for the research and the results were obtained using the computer program. Cross sectional analysis was done through the questionnaire regarding the understanding of their approach to enhance their knowledge of gross anatomy.

Questionnaire included the statements regarding the benefits of human dissection like the enhancement of the understanding of anatomy related to relations of viscera, respect of the dead ones also to get the better understanding of sensitivity of human life. In contrast, questions regarding the benefits to use of Virtual dissection table for example, perception of enhanced learning through split screen option with gross anatomy section on one screen and CT scan and MRI scan on another.

On the other hand draw backs of both were also added for better understanding of perception. For this purpose questions regarding the use of social mediawere also included.

## RESULTS

Ninety three students responded to the questionnaire, with the majority was of the opinion that to have the best knowledge of gross anatomy the primary source of learning is dissecting a human body, while other sources has an add up effect on knowledge.

## DISCUSSION

Approximately 45% students agreed that dissecting a cadaver enhances the respect for dead ones means sense of importance of human life. Shockingly, a sparking 95% of student responded that dissecting a human body helps to makeup the mind and solidify the commitment to pursue surgery as a profession. About 93% gave the impression that dissecting a cadaver enhance the interest to learn gross anatomy. 36% students were of the opinion that human dissection is a time consuming process and the rest of them were not sure or had the opinion that it is not a time consuming process.

A majority of students had the opinion it the best approach to teach and learn human anatomy though the availability of dead bodies was greatly influenced by the Covid pandemic. Dissection was the preferred choice by the students in spite of alternate sources like human dissection table, anatomy channels on YouTube or Facebook videos. Around 66 percent students agreed that 3D human dissection table has bridged the gap during the absence of the dead bodies to learn human anatomy. Also majority had the view that 3D table has provided the opportunity to view detail magnified multi-Dimensional view on the screen using human atlas through split screen option and relating the human viscera with the latest CT scan and MRI on the machine. Approximately 70% agreed on the fact that 3D dissection table has decreased the chances of cut injuries to the dissector and improved the chances to protect oneself from hazards during dissection like cross infections and glove allergy. 80% students had the opinion that 3D dissection table is a supplement source for anatomy rather than the main source. While, majority still consider the dissection of human cadaver as the primary learning source to enhance the knowledge of anatomy.

Gross anatomy is one of the fundamental subject to master the impact of medicine and to perform surgery. In medicine subject, the knowledge of human organs and the mutual collaboration of viscera greatly help to reach the perfect diagnosis and the impact of medicines on human organs and the excretion.

While for a surgeon, anatomical location of the organs, blood supply, nerve relations according to the organs, bones and lymph nodes location, anatomical knowledge greatly influence a successful surgery and its outcome.

With the passage of time and with the latest technologies advancements, engineers are able to condense all the information regarding human anatomy in a 3D machine, this helped a lot because of its multi-function For example, the usage of split screen atlas and scans options at the same time. Though this has done a lot to learn, human anatomy is complex. Human dissection provides a platform that helps the students to visualize and even feel the viscera trough tactile sensation along the multi-dimension

Received on 24-04-2022

Accepted on 13-08-2022

views. Also, different cadavers provide the opportunity to explore different structural variations and even common silent pathologies during dissection. While, this enhance anatomical wisdom, communication during the dissection gives the opportunity for open communication between a senior and a junior regarding gross anatomy. Researchers strongly believe now that human cadaver dissection should be made the gold standard learning methodology for gross anatomy. Some surgeons are even of the view that dissection increases surgical competency as it help by providing a beforehand practice opportunity and decrease the chances of human errors during the surgical procedure.

## CONCLUSION

The results concluded that human dissection is the primary tool to learn human anatomy and greatly impact learning the human anatomy. The 3D technology can greatly help to build a better understanding after having a strong platform of human anatomy through dissection.

**Limitations and implications:** Majority institutes do rely on the conventional human dissection because of the expenses of new technologies. To get a better and more clear understanding of the topic multiple institutes with both facilities should be included in an elaborated effort to get more generalized results.

**Conflict of interest:** Nothing to declare

## REFERENCES

- P. Maguire, Barriers to psychological care of the dying, *Br. Med. J.* 291 (6510) (1985) 1711–1713, <https://doi.org/10.1136/bmj.291.6510.1711>.
- J. Older, Anatomy: a must for teaching the next generation, *Surgery* 2 (2) (2021) 79–90, [https://doi.org/10.1016/s1479-666x\(04\)80050-7](https://doi.org/10.1016/s1479-666x(04)80050-7).
- E.M. Bergman, C.P. Van Der Vleuten, A.J. Scherpbier, Why don't they know enough about anatomy? A narrative review, *Med. Teach.* 33 (5) (2011) 403–409, <https://doi.org/10.3109/0142159X.2010.536276>.
- E.M. Bergman, Discussing dissection in anatomy education, *Perspect. Med. Educ.* 4 (5) (2019) 211–213, <https://doi.org/10.1007/s40037-015-0207-7>.
- A. Burgess, G. Ramsey-Stewart, Anatomy by whole body dissection: a focus group study of students' learning experience, *Adv. Med. Educ. Pract.* 6 (2018) 533, <https://doi.org/10.2147/AMEP.S86583>.
- M. Monaco, M. Martin, The millennial student: a new generation of learners, *Athl. Train. Educ. J.* 2 (2) (2007) 42–46, <https://doi.org/10.4085/1947-380X-2.2.42>.
- S.G. Kalthur et al. Translational Research in Anatomy 26 (2022) 1001596
- J.K. Gregory, N. Lachman, C.L. Camp, L.P. Chen, W. Pawlina, Restructuring a basic science course for core competencies: an example from anatomy teaching, *Med. Teach.* 31 (2019) 855–861, <https://doi.org/10.1080/01421590903183795>.
- A.K. Pandey, S. Prabhath, A.D. Souza, S.G. Kalthur, The approach of anatomists towards voluntary body donation: inspiring or dispiriting? *J. Krishna Inst. Med. Sci. Univ.* 9 (1) (2020) 8–17.
- J.L. Coulehan, P.C. Williams, D. Landis, C. Naser, The first patient: reflections and stories about the anatomy cadaver, *Teach. Learn. Med.* 7 (1) (1995) 61–66, <https://doi.org/10.1080/10401339509539712>.
- G.L. Engel, Care and feeding of the medical student: the foundation for professional competence, *JAMA* 215 (7) (1971) 1135–1141.
- L.M. Sarkis, A. Treble, L.W. Wing, G. Ramsey-Stewart, Retention of topographical anatomical knowledge following surgeon-facilitated whole-body dissection, *ANZ J. Surg.* 84 (11) (2017) 820–822, <https://doi.org/10.1111/ans.12826>.
- J.A. Burr, R.C. Winter, I. Heyerdahl-King, M.A. Warren, A.K. Redman, O. Nicholls, A qualitative study of how students learn from human cadavers, *Eur. J. Anat.* 23 (6) (2019) 447–452.
- R.J. Hlavac, R. Klaus, K. Betts, S.M. Smith, M.E. Stabio, Novel dissection of the central nervous system to bridge gross anatomy and neuroscience for an integrated medical curriculum, *Anat. Sci. Educ.* 11 (2) (2018) 185–195, <https://doi.org/10.1002/ase.1721>.
- C.E. Dinsmore, S. Daugherty, H.J. Zeitz, Teaching and learning gross anatomy: dissection, prosection, or "both of the above"? *Clin. Anat.* 12 (2) (1999) 110–114, [https://doi.org/10.1002/\(SICI\)1098-2353\(1999\)12:2<110::AID-CA5>3.0.CO;2-3](https://doi.org/10.1002/(SICI)1098-2353(1999)12:2<110::AID-CA5>3.0.CO;2-3).
- C.E. Duran, E.N. Bahena, M.D. Rodríguez, G.J. Baca, A.S. Uresti, R.E. ElizondoOmana, et al., Near-peer teaching in an anatomy course with a low faculty-to-student ratio, *Anat. Sci. Educ.* 5 (3) (2019) 171–176, <https://doi.org/10.1002/ase.1269>.
- B.D. Robbins, A. Tomaka, C. Innus, J. Patterson, G. Styn, Lessons from the dead: the experiences of undergraduates working with cadavers, *Omega J. Death Dying* 58 (3) (2009) 177–192, <https://doi.org/10.2190/om.58.3.b>.
- M.A. Mc Garvey, T. Farrell, R.M. Conroy, S. Kandiah, W.S. Monkhouse, Dissection: a positive experience, *Clin. Anat.* 14 (3) (2001) 227–230, <https://doi.org/10.1002/ca.1037>.
- R.E. O'Carroll, S. Whiten, D. Jackson, D.W. Sinclair, Assessing the emotional impact of cadaver dissection on medical students, *Med. Educ.* 36 (6) (2018) 550–554, <https://doi.org/10.1046/j.1365-2923.2002.01235.x>.
- T.A. Quince, S.I. Barclay, M. Spear, R.A. Parker, D.F. Wood, Student attitudes toward cadaveric dissection at a UK medical school, *Anat. Sci. Educ.* 4 (4) (2021) 200–207, <https://doi.org/10.1002/ase.237>.
- H. Ellis, Teaching in the dissecting room, *Clin. Anat.* 14 (2) (2001) 149, [https://doi.org/10.1002/1098-2353\(200103\)14:2<149::AID-CA1023>3.0.CO;2-U](https://doi.org/10.1002/1098-2353(200103)14:2<149::AID-CA1023>3.0.CO;2-U).
- D. Cahill, R. Leonard, A. Weiglein, M. Von Lüdinghausen, Viewpoint: unrecognized values of dissection considered, *Surg. Radiol. Anat.* 24 (3–4) (2002) 137–139, <https://doi.org/10.1007/s00276-002-0053-2>.
- P.L. Willan, J.R. Humpherson, Concepts of variation and normality in morphology: important issues at risk of neglect in modern undergraduate medical courses, *Clin. Anat.* 12 (3) (1999) 186–190, [https://doi.org/10.1002/\(SICI\)1098-2353\(1999\)12:3<186::AID-CA7>3.0.CO;2-6](https://doi.org/10.1002/(SICI)1098-2353(1999)12:3<186::AID-CA7>3.0.CO;2-6).
- I. Memon, Cadaver dissection is obsolete in medical training! A misinterpreted notion, *Med. Princ. Pract.* 27 (2018) 201–210, <https://doi.org/10.1159/000488320>.
- S. Patel, D. Mauro, J. Fenn, D. Sharkey, C. Jones, Is dissection the only way to learn anatomy? Thoughts from students at a non-dissecting based medical school, *Perspect. Med. Educ.* 4 (5) (2015) 259–260, <https://doi.org/10.1007/s40037-015-0206-8>.
- A.A. Jaffar, YouTube: an emerging tool in anatomy education, *Anat. Sci. Educ.* 5 (2012) 158–164, <https://doi.org/10.1002/ase.1268>.
- S.A. Azer, Can "YouTube" help students in learning surface anatomy? *Surg. Radiol. Anat.* 34 (2012) 465–468, <https://doi.org/10.1007/s00276-012-0935-x>.
- A. Raikos, P. Waidyasekara, How useful is YouTube in learning heart anatomy? *Anat. Sci. Educ.* 7 (2020) 12–18, <https://doi.org/10.1002/ase.1361>.
- K. Torres, A. Torres, L. Pietrzyk, J. Lisiecka, M. Błonski, M. Bączk-Donica, et al., Simulation techniques in the anatomy curriculum: review of literature, *Folia Morphol.* 73 (1) (2014) 1–6, <https://doi.org/10.5603/FM.2014.0001>.
- N.A. Moore, To dissect or not to dissect? *Anat. Rec.* 253 (1) (1998) 8–9, [https://doi.org/10.1002/\(SICI\)1097-0185\(199802\)253:1<8::AID-AR6>3.0.CO;2-Z](https://doi.org/10.1002/(SICI)1097-0185(199802)253:1<8::AID-AR6>3.0.CO;2-Z).
- S.K. Ghosh, Cadaveric dissection as an educational tool for anatomical sciences in the 21st century, *Anat. Sci. Educ.* 10 (3) (2017) 286–299, <https://doi.org/10.1002/ase.1649>.