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Cadaveric Dissection: A View on Perceptions of Medical Students

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ABSTRACT

Anatomy subject is the 1st year subject of the academic curriculum of M.B.B.S. Anatomy forms the basis of many clinical subjects. Aim of the present study is to know the importance and perceptions regarding cadaveric dissection and other learning methods among medical students. The present study is based on the feedback through 18-item questionnaire google form inquiring into the role of dissection from the medical students of Government Medical College, Bhavnagar, Gujarat. The google form link was provided to the medical students of through WhatsApp application in their corresponding batch group. The response of the google form was received on a forms application and was assessed in google drive application. Total 259 responses were received on a google form. Most of the respondents gave feedback about the importance of dissection in understanding the anatomy subject easily and preparing the students for surgical procedures. 45% students gave feedback on limitations of dissection such as time consuming, demanding lot of physical work, unpleasant experience and difficulty to find out structures. 14% students gave feedback about watching the dissection and to skip rather than performing. 91% students preferred less number of students per table. 12% students gave feedback on elimination of dissection from the curriculum. 84% gave positive feedback on dissection as an important method to learn anatomy when compared with the other methods. Perceptions about the dissection among the medical students is dependent on its own mental thinking. In the current modern era of technologies dissection still remains the important methodology to learn anatomy.

INTRODUCTION

Human Anatomy is the science which deals with the structure of the human body^[1]. The word Anatomy is derived from Greek word "ANATOME" which means cutting up. Latin equivalent for anatomy is dissection, where "DIS" means as under and "SECARE" means to cut^[2]. Anatomy forms the firm foundation of the whole art of medicine and introduces the student to the greater part of medical terminology^[1]. Cutting up of cadaver is the method by which study of structure of living things is made possible. From time immemorial, Anatomy has been studied by methodically dissecting and observing the cadavers which are preserved and well embalmed. The anatomical dissection are done region-wise and the structures, their position and relations are well observed^[2]. Anatomy becomes significantly applicable for medical students as they transition into the preclinical and clinical phases following their initial introduction to the subject during the first year of their curriculum. Hence it lays foundation for many paraclinical and clinical subjects^[4]. Herophilus the father of anatomy was one of the first to dissect the human body in 300BC^[1]. So history of learning anatomy through dissection dates back around 2300 years. It forms an integral part of learning anatomy as it gives opportunity to explore, observe and learn about structure of human body^[3]. Medical students of 1st year learn human gross anatomy through cadaveric dissections, lectures, demonstration classes, prosected specimens, prosected body parts, radiographs, surface anatomy or living anatomy, models, charts, mannequins, dry human skeletons, bones, textbooks and atlases^[4]. Besides conventional dissection method, recent technological advances have brought about new ways to teach and learn anatomy. These includes animation, dissection videos, mobile application on anatomy, computerized photographs and well labelled diagrams with full explanation which helps students to understand better^[4]. An recent innovative technique which includes anatomage virtual dissection table which allows dissection without cadavers through simulator software has now extended into many medical colleges around the world^[4,7]. Medical colleges often require sufficient cadavers each year to ensure that dissection remains a part of first year medical curriculum providing hands on practice to students. As a result these institutions frequently face challenges in obtaining adequate number of cadavers leading to persistent scarcity issues. Hence more students have to perform dissection on single cadavers leading to crowded dissection tables. Despite efforts to promote body donation the ratio of students to cadaver remains unsatisfactory^[4]. Furthermore as teaching hours of anatomy continue to decrease the dissection tasks given to students frequently go unfinished^[4,5]. In light

of this context several questions have emerged and are being debated by researchers and educators like i) What is the role of cadaveric dissection among medical students? ii) What are the challenges and drawbacks of the dissection? iii) Can newer methods substitute the dissection? iv) Can dissection be eliminated from academic curriculum^[4]?. Hence the present study aims i) To asses the perceptions of medical students regarding cadaveric dissection. ii) To determine role of dissection in clinical practices. iii) To determine challenges and drawbacks of dissection. iv) To determine newer methods capable of replacing dissection. v) To determine continuing dissection as a learning method of gross anatomy in academic curriculum^[6].

MATERIALS AND METHODS

The present study focused on gathering feedback through 18item-based questionnaire google form regarding the role of cadaveric dissection from medical students of 2nd, 3rd, final year and interns of Government Medical College, Bhavnagar. The google form link was provided to students through whatsapp mobile application in their corresponding year-wise batch group. Students was informed to complete the google form. 2-point likert scale questionnaire was used where option 1 represented AGREE and option 2 represented "DISAGREE". Total 270 respondents completed the questionnaire. The responses were received on google "Forms" application and was uploaded to google drive for the assessment and Microsoft excel sheet was formed.

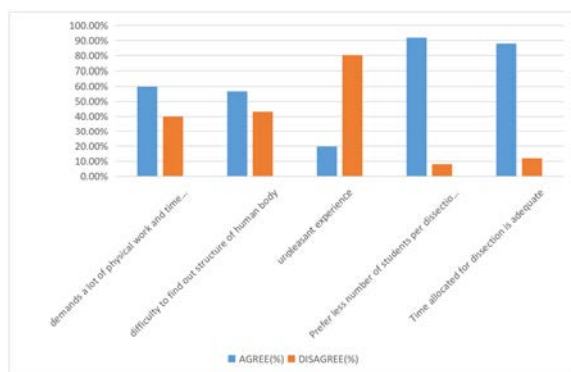
RESULTS AND DISCUSSIONS

Total 270 medical students completed the questionnaire among which 11 students filled the form incorrectly so only 259 respondents were taken into consideration in this study. 172 Males and 87 Females of 2nd and 3rd year medical students ranging from 18-24 years of age group was part of this study. 196 students of 2nd year and 63 students of 3rd year responded the questionnaire while students of final year and interns did not responded and did not complete so they were excluded from the study. When students were asked about requirement of cadaveric dissection, all 100% students agreed that dissection deepens their understanding about anatomy subject. 98.5% students agreed dissection provides 3 dimensional perspective of structure of human body and prepares them for surgical procedures. 99.6% agreed that dissection makes learning more interesting and teaches them to respect the human body. 87.6% student agreed that dissection should not be eliminated from the academic curriculum while 12.4% students favored elimination. 97% students agreed that they will not be benefited if they did not attend the dissection classes.

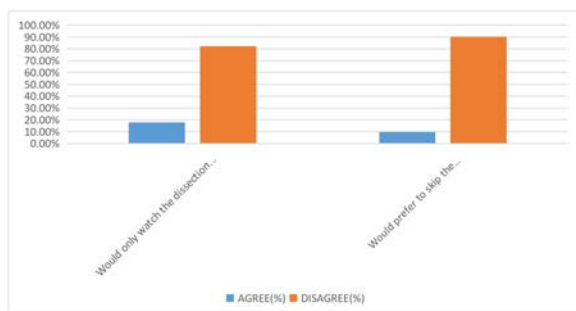
Table 1: Perception Regarding Requirements of Dissection

Perceptions	No. of respondents	Agree (%)	No. of respondents	Disagree (%)
1. Deepens my understanding about anatomy subject	259	100	0	0
2. Provides 3 dimensional perspective of structure of human body	255	98.5	4	1.5
3. Prepares me for surgical procedures	255	98.5	4	1.5
4. Makes learning anatomy more interesting	258	99.6	1	0.4
5. Teaches me to respect human body	258	99.6	1	0.4
6. Would be disadvantaged if I did not attend dissection classes	251	97	8	3
7. Complete elimination of dissection	32	12.4	227	87.6

When students were inquired about challenges and drawbacks which they face during dissection, 59.9% students agreed that it demands lot of physical work and time consuming. 56.8% students face difficulty to find out structure during dissection. Only 19.7% students found dissection an unpleasant experience. 88% students agreed that 5 hours of dissection time was adequate. Majority 91.9% students preferred less number of students per dissection table for performing dissection.

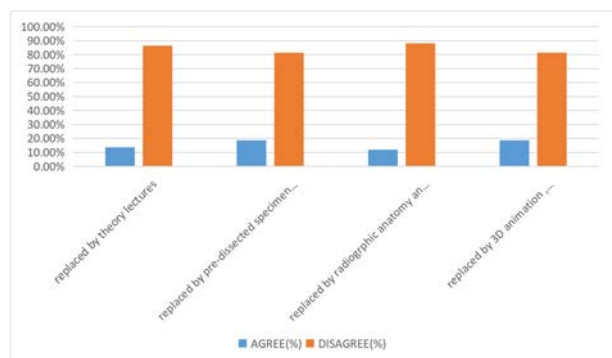
**Graph 1: Perception Regarding Drawbacks and Challenges of Dissection**

When respondents were inquired about hands on practice on cadaver, 17.8% students prefer to only watch the dissection rather than practicing and 9.7% students preferred to skip the dissection.

**Graph 2: Perceptions Regarding Hands on Practicing Dissection**

When students were inquired about whether the traditional dissection method could be replaced by newer method, 13.6% students agreed that it could be replaced by theory lectures. 18.6% students favored prosected specimens and plastinated specimens is

better to learn gross anatomy. 12% students agreed that anatomy should be learned by radiographic and surface anatomy. 18.6% students agreed that methods including innovative techniques like computerized photographs, 3 dimensional animated videos, dissection videos and anatomage virtual dissection table helps to understand better and capable of replacing the dissection. Majority of students favored cadaveric dissection.

**Graph 3: Perceptions Regarding Newer Methods and Replacing the Dissection**

Cadaveric dissection was crucial for studying human anatomy as it was only method to explore the body in ancient times. Hands-on practice through dissection by medical students dates back around 2300 years^[4]. In the present study, In spite of emerging newer methods due to advancements in technologies, majority of the students were in favor of cadaveric dissection as a learning method for human gross anatomy. Students agreed that dissection deepens their understanding about the subject and prepares them for surgical procedures which they can apply during clinical postings. The present study conveyed the preference of less number of students per dissection table as crowded dissection tables influence the interest of performing dissection. Students found theory lectures (13.6%), pre-dissected specimen, 3D animation, computerized photographs, dissection videos (18.6%), radiographic and surface anatomy (12%) as an alternate option to learn anatomy better than cadaveric dissection^[4-6]. Various researches were carried out in past regarding students views and attitudes towards cadaveric dissection. The study carried out by Maitreyee M *et al.* reflected about 89% students in favor of cadaveric dissection useful to

become doctor and helpful in remembering facts of anatomy. 85% students felt about need of less crowded dissection tables and 70% expressed about importance of living anatomy and radiological anatomy to be added in curriculum for future clinical practice. 20% students felt dissection time consuming and demanding lot of physical work. In present study, about 99% students agreed that dissection helps in understanding subject better and provides 3-dimensional perspective with enhancing surgical skills. 91% students preferred less crowded tables and 59% felt dissection time consuming^[4]. In the study carried out by Rani *et al* 78% respondents were in favor of dissection as a mandatory approach while 45% performed dissection and 6% respondents never performed. 83% students thought about shortage of time while majority of them thought that mass bunking, lack of proper guidance, lack of confidence and proper knowledge of the part to be dissected, language problem and non-conductive environment of dissection hall were the reasons for not completing the dissection tasks. 80% students opined that dissection provides 3D perspective of human body with better understanding. In present study, 12% students felt about shortage of time while 17.8% students liked to watch the dissection rather than performing and 9.5% students felt to skip the dissection^[5]. Study carried out by Azer *et al* among 1st and 2nd year medical students at university of Melbourne showed 44% students of 1st year ranked dissection the choice of learning anatomy while 38% students from 2nd year ranked textbooks preferred tool. 10% students preferred computer aided learning with dissection videos and multimedia while only 5% preferred lectures to be helpful. Majority students from 1st and 2nd year showed less preference to pre-dissected specimens, CAL multimedia and lectures over dissection and textbooks. Female respondents showed concern about smell associated with dissection. In present study, 99% students ranked dissection as a choice of learning. 18.6% students found prosected specimens, computer aided learning, 3D dissection videos as a learning tool and 13.6% preferred lectures^[6]. Longitudinal survey by Abay M. *et al* university of Gondar showed about the emotional impact and reaction of dissection among medical students. Symptoms such as fear, nausea, trembling, sweating, desire to leave dissection room and stressors like chemical odour, darkness, irritation of the eyes impact the students performance and interest towards dissection. Fear and nausea among medical students decreased along 3 surveys and excitement towards dissection increased after prior exposure to students before entering into dissection room. Smell of the cadaver and irritation of eyes were the major factors making dissection room stressful. 99% students consider dissection as important educational value. In

present study stressor and symptoms were included in unpleasant experience. 19.7% students felt dissection as an unpleasant experience^[9]. The study by Tanya C. *et al* at University of Nebraska showed advantages and disadvantages of utilization of anatomage virtual dissection table in imaging sciences where students found better 3-dimensional visualization of human body in all anatomical planes as a bigger advantage and inability to view sonography and PET scan images as disadvantage. 96% student felt of adding virtual dissection table as a learning tool for Anatomy^[7]. Study carried by Jayanthi A. *et al* showed 91.2% students were in favor of learning anatomy through dissection and 51% students felt faculty guidance in dissection hall helpful. 95.5% students felt the need of orientation before dissection^[14]. Study by Gaurav *et al* reports about preparing the students mentally and emotionally before entering the dissection hall^[12-15]. Similar study was carried by Kevin^[10]. According to study carried by Rashmi Jaiswal *et al*, students found chalkboard and dissection hall teaching as best method in learning anatomy. Students also felt that best method of assessment is part ending tests and opined about use of multimedia as a complementary tool. In present study, 87.6% students agreed that dissection should not be eliminated from academic curriculum^[11]. Study carried out by Appaji *et al* noted that 63.8% colleges barely had a sufficient cadavers for dissection and 49% institutes had 10:1 ideal cadaveric ratio. 41.81% institutes had donated and unclaimed body as a source of cadaver. We should appreciate and express our gratitude to the studies carried out by various researchers in past and should always look forward to find out changing perceptions regarding cadaveric dissection among medical students^[8].

CONCLUSION

Cadaveric dissection remains the soul foundation method for learning gross anatomy. It should be the part of academic curriculum and along with the emerging newer methods an integrated teaching efforts should be emphasized to make learning better and easier. College should make more efforts in providing cadavers which will reduce the crowdedness at dissection table and will enhance more hands-on practice to the medical students. Prior sensitization and brief about dissection room and process of dissection will enhance interest towards dissection and will decrease the stressors by providing conducive environment. Hence dissection should be continued even in the modern era to become a good clinical practitioner.

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REFERENCES

1. Garg K., 2019. BD chaurasia's handbook of general anatomy. 6th ed., Edn., CBS Publishers and Distributors Pvt Ltd, India., ISBN-14: 978-8194125419,.
2. Devi V.S., 2022. Textbook of general anatomy. 2nd ed., Edn., Jaypee Brothers Medical Publishers Pvt Ltd., ISBN-14: 978-9354651694.
3. Singh V., G.P. Pal, S.D Ganganeand S. Sanyal., Thieme Dissector. Upper limb and Thorax.
4. Mutalik, M. and S. Belsare, 2016. Methods to learn human anatomy: Perceptions of medical students in paraclinical and clinical phases regarding cadaver dissection and other learning methods. *Int. J. Res. Med. Sci.*, 2536-2541.
5. Rani A., J. Chopra, A. Rani and A.K. Verma., Reflections of medical students on cadaveric dissection in present scenario. *Int J Cur Res Rev.*, Vol. 8.
6. Azer, S.A. and N. Eizenberg, 2007. Do we need dissection in an integrated problem-based learning medical course? Perceptions of first-and second-year students. *Surg. Radiol. Anat.*, 29: 173-180.
7. Custer T. and K. Michael., 2015. The Utilization of the Anatomage Virtual Dissection Table in the Education of Imaging Science Students. *J Tomogr SimuL.*, Vol. 1.
8. Appaji A.C. and R. Kulkarni., 2012. A Survey on the role and the status of cadavers in medical education: an indian scenario. *J Clin Diagn Res.*, 6: 1132-1136.
9. Mulu A. and D. Tegabu., 2012. Medical students' attitudinal changes towards cadaver dissection: a longitudinal study. *Ethiopian Journal of Health Science.*, 22: 51-58.
10. Cahill, K.C. and R.R. Ettarh, 2009. Attitudes to anatomy dissection in an Irish medical school. *Clin. Anat.*, 22: 386-391.
11. Jaiswal R., S. Sathe, V. Gajbhiye and R. Sathe., 2015. Students perception on methods of anatomy teaching and assessment. *International Journal of Anatomy and Research.*, 3: 1103-1108.
12. Nagar S.K., O. Malukar, D. Kubavat, V. Prajapati, D. Ganatra and A. Rathwa., 2012. Students' perception on anatomy teaching methodologies. *National Journal of Medical Research.*, 2: 111-112.
13. Agnihotri G. and M.G. Sago., 2010. Reaction of first year medical students to the dissection hall experience. *NJIRM.*, 2010: 4-9.
14. A, D.A.J., 2014. Students' Perception of Teaching Learning Method in Dissection and Histology Lab. *IOSR J. Dent. Med. Sci.*, 13: 24-28.
15. Mulu A., A. Muche and D. Tegabu., 2010. Assessment of the attitude and views of second year medical students towards cadaver dissection in anatomy course. *Ethiop. J. Health Biomed Sci.*, 2: 111-117.