Original Article

Perception of Undergraduate Medical Students Towards Cadaveric Dissection as a Learning Tool in Anatomy: A Cross-Sectional Study

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Abstract

Background: Cadaveric dissection has traditionally been considered the cornerstone of anatomy education. Despite the increasing use of digital simulations, virtual anatomy platforms, and integrated teaching approaches, cadaver-based learning continues to play a significant role in developing anatomical understanding and clinical orientation among medical students. The present study aimed to evaluate the perception of undergraduate medical students regarding the role and educational value of cadaveric dissection in learning anatomy. **Material and Methods:** A cross-sectional questionnaire-based study was conducted among 200 Phase I MBBS students at the Department of Anatomy, Government Medical College Srinagar. An internet platform was used to deliver a structured questionnaire with a five-point Likert scale (strongly agree to strongly disagree). The survey assessed student perceptions regarding the usefulness of cadaveric dissection in understanding anatomical structures, developing clinical skills, appreciating anatomical variations, and its relevance in medical training. Responses were compiled and analysed using descriptive statistics. **Results:** The majority of students expressed positive perceptions regarding cadaveric dissection. Approximately 89% reported that dissection helped in identifying anatomical structures and clarifying concepts, while over 84% agreed that it provided a three-dimensional understanding of anatomical relationships. Around 87% believed dissection was important for clinical practice and physical examination skills. Formalin-related irritation was identified as the most common discomfort experienced during dissection sessions. **Conclusion:** Cadaveric dissection remains an effective and valued method for learning anatomy among undergraduate medical students. While modern educational tools can supplement anatomy teaching, cadaver-based learning continues to provide unique educational, clinical, and professional benefits.

Keywords: Cadaveric dissection, Student perceptions, Professionalism, Curriculum Development.

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Introduction

The word "cadaver" comes from the Latin word "cadere," which means "to fall." This word was used to describe warriors who perished in combat. So, a cadaver is a deceased person that is used for medical or scientific research. The word "dissect" comes from the Latin word "dissecare," which meaning "to cut apart" or "to break into pieces."[1] Cadaveric dissection has served as the primary instructional method in anatomy education since antiquity. In the 3rd century BCE, Herophilus of Chalcedon and Erasistratus of Chios conducted the first human cadaveric dissections in Greece to comprehend the entire body from the perspectives of anatomy and physiology.[2] Medical students learn more and improve their theoretical knowledge by seeing genuine anatomical parts. Also, they learn more about how the body works by touching and feeling the anatomical relationships on cadavers.[3] Anatomy is the subject which gives the medical students their very first exposure to human body and helps them overcome their inhibitions. It was Sushruta's belief that for one to be a skilful and knowledgeable surgeon, one must be a good anatomist. Cadaver act as a first teacher in medical education and without them medical education will be hamper and therefore cadavers are the valuable gift to medical education. Cadaveric dissection has been the foundation of anatomy teaching since centuries.[4] Dissection offers students a distinctive, tactile method to understand the body's structure, tissue texture, and three-dimensional interactions that computerised technologies cannot entirely replicate. It also helps to acquire key professional traits like respect for the body, empathy, and an understanding of life and death. [5,6] This study also shows that dissection can teach you about anatomy and give you other useful learning experiences that can help you improve your skills and mindset for future medical studies.

Materials and Methods

Study Design and Setting: A cross-sectional questionnaire-based study was conducted in the Department of Anatomy,

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Government Medical College, Srinagar, Jammu and Kashmir, India. The study aimed to assess the perceptions of undergraduate medical students regarding the educational value of cadaveric dissection in learning anatomy.

Study Participants: The study included Phase I MBBS students enrolled during the academic year at the institution. A total of 200 students participated in the survey. Participation was voluntary and all students who had been exposed to cadaveric dissection in the anatomy dissection hall were eligible to participate.

Inclusion Criteria

- Phase I MBBS students who had attended cadaveric dissection sessions
- Students who consented to participate in the study

Exclusion Criteria

- Students who declined participation
- Incomplete questionnaire responses

Data Collection Tool: A structured questionnaire was used to gather data on how students felt about the role of cadaveric dissection in learning anatomy. The questionnaire consisted of statements related to understanding of anatomical structures, three-dimensional visualization, clinical relevance, development of professional skills, and physical discomfort experienced during dissection sessions. Responses were recorded on a five-point Likert scale that went from "strongly agree" to "strongly disagree."

The questionnaire was distributed electronically using an online platform (Google Forms) and shared with students through the official academic communication group. Students were requested to complete the survey anonymously to encourage honest responses.

Ethical Considerations: People may choose whether or not to take part in the study, and everyone who did had to give their informed consent before filling out the questionnaire. Responses were kept private, and no information that might be used to identify the participants was collected.

Statistical Analysis: The responses obtained were compiled and analysed using descriptive statistics. Frequencies and percentages were calculated for each response category. The results were presented in the form of tables and graphical representations to facilitate interpretation of the findings.

Results

A total of 200 Phase I MBBS students participated in the study assessing their perceptions regarding the role of cadaveric dissection in learning anatomy. The responses were recorded using a five-point Likert scale ranging from strongly agree to strongly disagree. Only 165 participants completed the questionnaire.

The majority of students expressed a positive perception toward cadaveric dissection as an effective learning tool. Approximately 89.1% of respondents either strongly agreed (69.7%) or agreed (19.4%) that dissection helps in identifying anatomical structures and clarifying anatomical concepts. Similarly, 88.5% of students strongly agreed (70.3%) or agreed (18.2%) that dissection improves their understanding of the structure and function of the human body and makes learning more interesting.

A considerable proportion of students also acknowledged the three-dimensional learning advantage offered by dissection, with 84.8% strongly agreeing (62.4%) or agreeing (22.4%) that dissection provides a three-dimensional view of anatomical structures not easily achievable through other learning methods. Regarding clinical relevance, 87.9% of respondents either strongly agreed (65.5%) or agreed (22.4%) that dissection is important for physical examination and clinical practice.

Students also recognized the role of dissection in medical research and development of clinical skills, with 84.8% agreeing that it contributes to advancements in medical research and the development of new treatments and procedures. Similarly, 85.4% of students agreed that incorporating cadaveric dissection in medical training helps clinicians develop skills necessary for providing high-quality patient care.

Exposure to cadaveric dissection was also perceived to help students understand anatomical variations, with 85.9% either strongly agreeing (65.5%) or agreeing (20.6%) that dissection prepares them for unexpected findings during surgical procedures. Additionally, 82.9% of students believed that cadaveric dissection contributes to the development of fine motor skills.

When asked about learning preferences, 82.4% of students either strongly agreed (60.6%) or agreed (21.8%) that cadaveric dissection is the preferred method of learning anatomy compared with other modalities such as online videos and simulation-based learning. Conversely, a large proportion of students disagreed with the statement that dissection is a waste of time, with 58.8% expressing disagreement or strong disagreement, indicating strong support for maintaining dissection in the anatomy curriculum.

Formalin-related irritation was reported as the most common unwanted physical symptom during dissection sessions, with 48.5% strongly agreeing and 33.3% agreeing that irritation due to formalin exposure is commonly experienced.

In general, the results show that most undergraduate medical students think that cadaveric dissection is a very useful and effective way to study anatomy, especially for figuring out how different parts of the body are related to each other, improving clinical orientation, and developing practical skills relevant to medical practice.

Table 1: Perceptions of Phase I MBBS Students Regarding the Role of Cadaveric Dissection in Learning Anatomy

Statement		Strongly Agree% (No.)	Agree % (No.)	Neutral % (No.)	Disagree % (No.)	Strongly Disagree % (No.)
1.	Dissection helps in identifying structures and helps in clear concepts	69.7 (115)	19.4(32)	3.6(6)	5 (3)	4.2(7)
2.	Dissection improves understanding of human body structure and function and makes learning easy and interesting	70.3(116)	18.2(30)	4.2(7)	3.6(6)	3.6(6)
3.	Dissection gives 3D view of structures not possible by other methods	62.4(103)	22.4(37)	8.5(14)	3(5)	3.6(6)

4.	Most common unwanted physical symptom observed during dissection is irritation by formalin	48.5(80)	33.3(55)	10.3(17)	3(5)	4.8(8)
5.	Dissection is important for physical examination and clinical practice	65.5(108)	22.4(37)	4.8(8)	3.6 (6)	3.6(6)
6.	Dissection helps in advancements in medical research to study human anatomy and develop new treatments and procedures	59.4(98)	25.5(42)	7.3(12)	4.2(7)	3.6 (6) `
7.	By incorporating dissection into training, clinicians can develop the skills and knowledge necessary to provide high quality patient care	63(104)	22.4(37)	6.1(10)	4.2(7)	4.2(7)
8.	Understanding anatomical variations by exposing various, which help them anticipate and prepare for unexpected findings during surgery	65.5(108)	20.6(34)	6.1(10)	3(5)	4.8(8)
9.	Help doctor develop fine motor skills	62.4(103)	20.6(34)	7.9(13)	4.8(8)	4.2(7)
10.	Cadaveric dissection is the preferred method to study anatomy compared to other methods like you tube and simulation	60.6(100)	21.8(36)	10.9(18)	3.6(6)	3(5)
11.	Dissection is a waste of time, as other methods of learning anatomy are available	10.9(18)	9.7(16)	7.9(13)	12.7(21)	58.8(97)

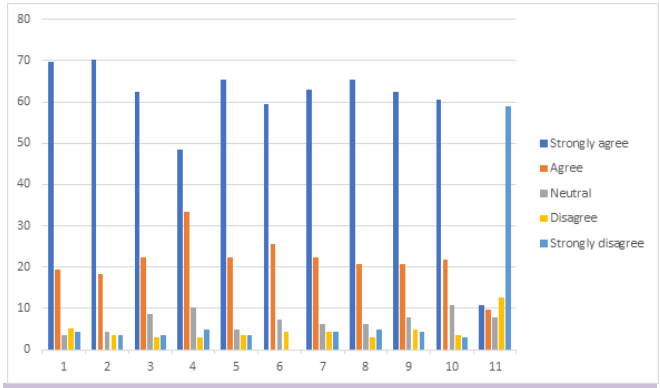

Figure 1: Graphical Representation of Perception of students about dissection

Discussion

Cadaveric dissection has long been regarded as the cornerstone of anatomical education, providing medical students with a direct and comprehensive understanding of the human body. The results of this study indicate that most undergraduate medical students regard cadaveric dissection as an essential aspect of anatomical education. A substantial proportion of students strongly agreed that dissection facilitates identification of anatomical structures and enhances conceptual clarity. This observation highlights the continued pedagogical value of hands-on exposure to human anatomy, which provides a three-dimensional understanding of spatial relationships that cannot be fully replicated by textbooks or digital resources.

The present study also revealed that students perceive dissection as an important tool for improving their understanding of human body structure and function and for integrating anatomical knowledge with clinical practice. More than four-fifths of respondents agreed that cadaveric dissection contributes to clinical orientation and physical examination skills. This supports the view that early exposure to cadaver-based learning fosters clinically relevant thinking and prepares students for future diagnostic and surgical training. Similar findings have been reported in previous studies, where medical students acknowledged the role of dissection in reinforcing theoretical knowledge and improving spatial comprehension of anatomical structures.

Another important observation from the present study is the recognition of cadaveric dissection as a valuable means for appreciating anatomical variations and developing fine motor skills. Exposure to real human specimens enables students to encounter natural anatomical variability, which is essential for understanding unexpected findings during surgical procedures. Such experiential learning also contributes to the development of manual dexterity and observational skills, both of which are essential attributes for future clinicians.

Despite the emergence of alternative teaching modalities such as virtual dissection tables, simulation software, and online anatomical resources, most students in this study expressed a preference for cadaveric dissection over these modern methods. Although digital tools and multimedia resources enhance visualization and accessibility of anatomical information, they are generally perceived by students as supplementary rather than substitutive learning aids. This supports the concept of blended anatomy education, where traditional dissection is complemented by modern educational technologies to optimize learning outcomes.

Physical discomfort associated with formalin exposure was also reported by a considerable proportion of students, with irritation due to formalin being the most commonly observed symptom. Similar findings have been documented in earlier studies examining student experiences in dissection laboratories. Although these symptoms are usually transient, they highlight the importance of adequate ventilation, improved preservation techniques, and proper safety measures in dissection halls to ensure a conducive learning environment.

Overall, the findings of the present study reaffirm that cadaveric dissection continues to hold substantial educational value in undergraduate medical training. Beyond facilitating anatomical knowledge acquisition, dissection promotes deeper cognitive engagement, enhances clinical orientation, and contributes to the development of professional attitudes toward the human body. Therefore, while modern educational technologies can effectively support anatomy teaching, cadaver-based learning remains an irreplaceable component of medical education. Integration of traditional dissection with contemporary teaching tools may provide the most effective approach for achieving comprehensive anatomical understanding among medical

students.

Multiple studies were conducted by different authors. Meghatar et al. conducted a study indicating that the majority of students held favourable opinions regarding the educational significance of dissection. 91% agreed that dissection gave them an important three-dimensional view, 89% said it helped them remember what they learned, and 87% said it made studying more fun. 93% of students said they grew to respect and care for the cadaver.80.5% said they were anxious before, during, or after their first dissection. A remarkable 94.5% (189) favoured dissection compared to alternative learning methods, and 91.5% (183) felt they would be at a disadvantage in its absence.[7] Mutalik and Belsare, conducted a study were most of the students were in favor of it, but 18.7% felt it was an unpleasant experience, 17.8% thought it was time consuming, 9.8% said they were scared to dissect a cadaver, while 13.8% did not enjoy the dissection.[8] Another similar study was done by Saini and the research revealed that 90% of the students believed that dissecting cadavers was the most effective and efficient approach to learn anatomy. Additionally, 79% of students believed that dissecting a cadaver was ethically acceptable, and 89% of students said that going to the dissecting room for the first time was exciting. More than 90% of the students who were asked agreed that cutting up a dead body was one of the best ways to teach them about human anatomy.[9] Another survey by Sneha Guruprasad Kalthuret.al found that most students (91.8%) said that dissecting something helps them comprehend it better and gives them a three-dimensional view of structures (92.4%). 57% of the pupils thought that dissection took too long and 64.6% thought that prosection helped them learn faster. But when asked if dissection should be taken out of the curriculum, most of the students (86%) said no. But 74% of the students agreed that instructional tools should encourage dissection.[10] Dissabandara et.al conducted a study and revealed out of 133 students, 106 students which attended the dissection sessions regularly had significantly more positive perceptions about their experience, 27 students indicated they had not attended regularly and had less than 50% attendance had negative perception about their experience and were linked to comments about dissections like "I don't like the smell," "it's too time-consuming," and "I'm bored with how it's done."[11]

Limitations: There are some problems with the current study. First, it was done at just one medical school, which may mean that the results can't be applied to other medical schools with diverse teaching styles. Second, the study used students' own reports of how they felt, which could be affected by response bias or social desirability bias. Third, the study assessed student perceptions rather than objective learning outcomes, and therefore the actual impact of cadaveric dissection on academic performance could not be determined. Finally, the study employed a cross-sectional design, capturing perceptions at a single point in time without evaluating how students' attitudes toward cadaveric dissection may change over the course of their medical training.

Conclusion

The present study demonstrates that cadaveric dissection remains a highly valued and effective method for learning anatomy among undergraduate medical students. Most participants recognized its importance in improving conceptual understanding, providing a three-dimensional perspective of anatomical structures, and enhancing clinical orientation and professional skills. Although modern educational tools can supplement anatomy teaching, students largely perceive cadaveric dissection as an indispensable component of medical education. Therefore, integrating traditional dissection with contemporary teaching methods may provide the most effective approach for comprehensive anatomical learning.

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Conflicts of interest

There are no conflicts of interest.

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