

## Perspective of the 1<sup>st</sup> Year Undergraduate Medical Students in Learning Anatomy

### Abstract

**Introduction:** Anatomy, one of the basic sciences' subject of the 1<sup>st</sup> year medical education curriculum, is recognized as an essential foundation for clinical sciences. However, there is a continuing debate on the best method of learning anatomy. In this study, we infer the perception of the 1<sup>st</sup> year medical students on the best method of learning anatomy. **Material and Methods:** The present study was conducted on 246 1<sup>st</sup> year undergraduate medical students, of the academic year 2015–2016. An online platform – Survey Monkey – was utilized to conduct the survey where multiple-answer multiple-choice questions were sent to the students, and the results were tabulated on a graph. **Results:** The optimal way of learning anatomy according to 80% of students was through small-group teaching in comparison to didactic lectures according to 12%. Integrated teaching introduced as talks by physicians (31%) and problem-based learning (28%) was not well appreciated. However, they felt an exposure to the clinical side where small groups are taken to the hospital to demonstrate relevant case/procedure/examination would have a more significant impact (78%). There was a favorable opinion (74%) on the formation of an Anatomy mentor cell where the students who had performed poorly during the first sessional test were under the guidance of anatomy staff, and regular assignments were given. **Discussion and Conclusion:** Anatomy exposes the student to an ocean of knowledge; it also inculcates a particular attitude and communication toward another human being. The students' perspective in learning Anatomy plays a crucial role in the changing times and demand reforms which would best aid the student-centric learning.

**Keywords:** Didactic lectures, integrated teaching, mentor cell, small group

### Introduction

Anatomy is one of the fundamental disciplines of the 1<sup>st</sup> year medical education curriculum and has always been recognized as an essential foundation and keystone for a student to embrace the clinical field they would encounter in the years to come. It provides a platform on which the other subjects of medicine are easily comprehended. However, there is an ongoing discussion on the amount, the appropriate time, and the best methodology to teach anatomy.<sup>[1]</sup> A lecture is the universal form of teaching since prehistoric time. The word lecture dated from the 14<sup>th</sup> century and was derived from the Latin word *lectus*, which means “to read.” Lecture is defined as an oral discourse on a given subject before an audience for the purpose of instruction and learning. This unidirectional method of teaching is criticized since there is minimal interaction with the audience.<sup>[2]</sup> Large

number of faculty prefer didactic lectures as a mode of teaching in the medical sciences. With the advancing times, use of PowerPoint presentation has increased among the educators, and these educational technologies are commonly used for classroom teachings in medical education.<sup>[3]</sup>

Nagar *et al.* reported in their study on students' perception on anatomy teaching methodologies that the students encounter obstacles in studying and understanding the preclinical subjects (especially Anatomy). Along with coping with studies, issues related to adjusting with the odor associated with the dissection of cadavers and adapting to the new college and hostel life could be stressful. As a result, learning becomes very dreadful, leading to frustrations, and in the process affecting the self-confidence of the students, with consequent poor performance in the first-term examination which is very upsetting in a new environment.<sup>[4]</sup>

Students entering the medical field encounter the cadaver as their first

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patient and should be taught to handle their work with a professional attitude.<sup>[5,6]</sup> The facilitator, a learned and skillful anatomist, represents a perfect role model for the students. In the current medical curriculum, a faculty member's role is to facilitate the process of learning. Teaching-learning tools in medical education need to be learner specific to capture their interest in the particular topic. It is observed that curriculum review, teaching methodology, and evaluation at an institutional level are done by the senior faculty members and by medical council of India.<sup>[7]</sup>

Anatomy has been recognized as an important core subject for basic sciences. Medical education should aim at training students to acquire basic knowledge, skill, and attitudes, such that these fundamental skills help them to become competent doctors – either in the private or in the government setup. Hence, the revision of medical curriculum needs to be done keeping in mind the opinion of students and their feedback regarding the best teaching methodology and the appropriate techniques to evaluate their knowledge and skills.<sup>[4]</sup>

In this study, we aim to analyze and report the perception of the undergraduate medical students on the appropriate methods of educating them so that they can grasp and preserve the anatomical knowledge they obtain during the initial year of their medical study.

## Material and Methods

The present study was conducted by the faculty of Department of Anatomy, Kasturba Medical College, after taking ethical clearance from the institutional ethics committee. The study population comprised of 246 1<sup>st</sup> year MBBS students of the academic year 2015–2016, just after they had cleared their 1<sup>st</sup> year examinations. Fifteen multiple-answer multiple-choice questions which were easily comprehensible relating to the current teaching practices of anatomy were sent to the students using an online platform (Survey Monkey).

In an era where everything is digital, we utilized an online platform to reach out to the students by sending a link and briefly explaining the reason as for conducting the research and evaluation purpose as well as the confidentiality of their participation. The student could take the survey at the comfort of their homes without disclosing their identity and were able to answer the questions freely and in an unbiased manner.

The set of questions prepared for the survey was validated by the Head of Department and other senior faculty members. The questions varied from students' view on best methodology in learning the subject to institution of the anatomy mentor cell for poor performing students. There were questions related to the best method of formative assessment as well as to indicate the problem areas in anatomy subject. The response obtained as percentage

was plotted on a graph for better understanding and interpretation.

## Results

The response to first exposure to the anatomy dissection hall, with an introduction to cadaver as the first teacher, was 60% of them were excited and 36% of them found this an eye-opener. However, an assignment was given on the same topic where they were asked to reflect on the cadaver as their first teacher was not beneficial (46%); only 20% of the students found it as a learning experience.

The best method of learning anatomy according to 80% of students was through small-group teaching in comparison to didactic lectures according to 12% [Figure 1]. The best teaching aid during didactic lectures were videos (38%), PowerPoint slides (29%), and chalk and talk (18%). The concept of self-study and small-group presentations aided in learning and retaining anatomy (87%).

Embryology topics (52%) required in-depth lectures and more emphasis since it took time to comprehend compared to gross and clinical anatomy (32%), histology (12%), and genetics (9%) [Figure 2]. Regarding histology practical classes, 69% of students felt direct preview in the histology laboratory was sufficient rather than a separate theory class [Figure 3]. Fifty-nine percent of the students were happy with the prosected specimens, while 50% of the students felt dissection under the guidance of expertise is a right way of learning anatomy.

The revision classes conducted as self-study with the aid of specimens got a better response (65%) compared to the live video demonstrations (57%) which were conducted for them. Formative assessment in the form of vivas (71%) was better in comparison to spotters (57%).

Integrated teaching introduced as talks by physicians (31%) and problem-based learning (28%) was not well appreciated. However, they felt an exposure to the clinical side where small groups are taken to the hospital to demonstrate relevant case/procedure/examination would have a significant impact (78%) [Figure 4].

There was a favorable opinion (74%) on the formation of an Anatomy mentor cell where the students who had performed poorly during the first sessional test were under the guidance of specific anatomy faculty, and regular assignments were given. The best method of formative assessment was found to be viva (72%) over spotters.

## Discussion

In an era where availability of information is just a click away, modern, innovative, and technological advances need to be made in the teaching-learning process to aid both the learner and the facilitator. With this in mind, it is essential to recognize and acknowledge the views of the student to improve the teaching ways so that knowledge imparted is

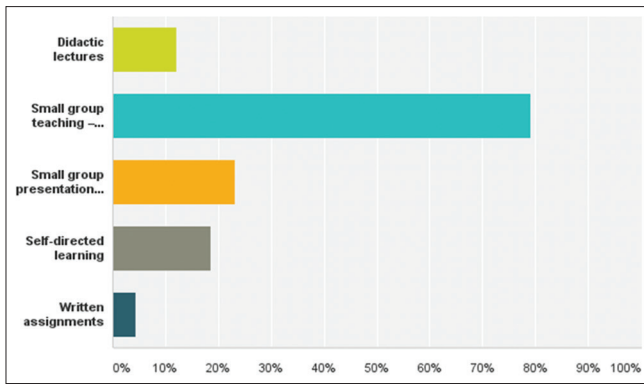


Figure 1: Graph depicting the best method of learning anatomy with small-group teaching leading over the other available options

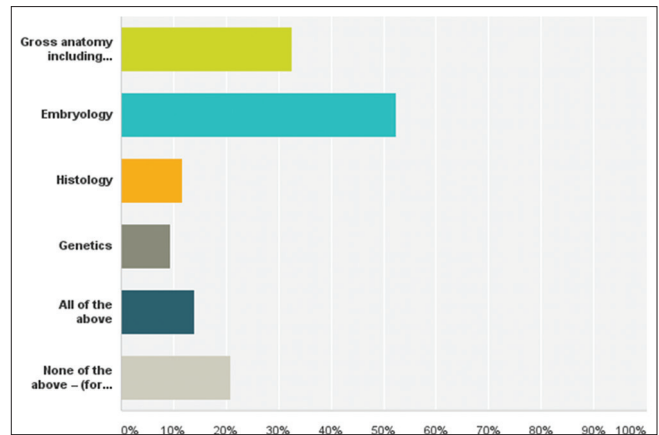


Figure 2: Graph depicting the topics which need to be dealt in detail

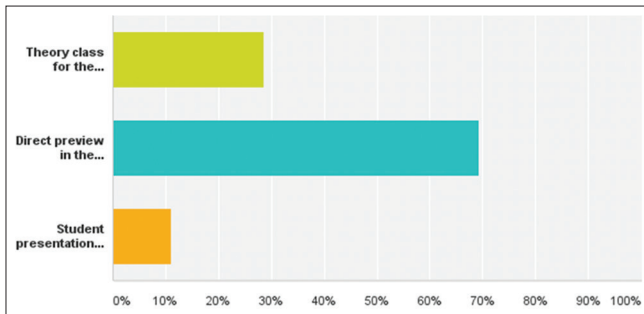


Figure 3: Graph depicting the best way of teaching histology

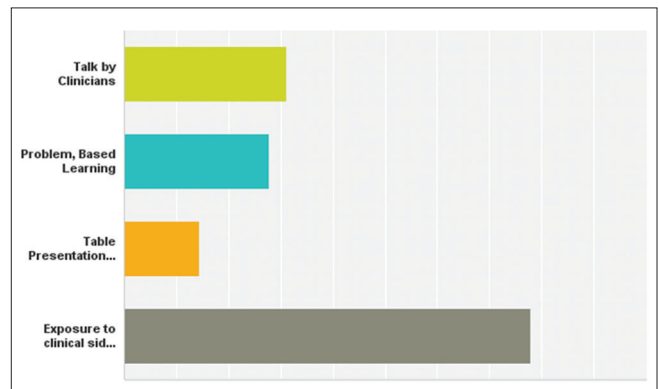


Figure 4: Graph depicting an appropriate way of conducting integrated teaching

retained in a manner in which students inculcate an interest in the subject.

A questionnaire-based study on evaluating anatomy teaching methodology conducted by Kumari *et al.* observed that 70% students preferred teaching aid was liquid crystal display with chalk and board, while only 8% opted for traditional chalk and board methodology. For theory classes, 51% of students preferred small-group teaching with the aid of interactive media, whereas 22% wanted problem-based learning. The remaining small population preferred the traditional teaching.<sup>[8]</sup> Hassanzadeh *et al.*'s study found that the best teaching methodology was dissection hall teaching, followed by slide projector/AV projection multimedia, conventional chalk and board methods.<sup>[9]</sup> Our survey revealed that videos and PowerPoint slides were the best teaching aid during didactic lectures. However, one study showed a contradictory finding where students found theory classes easy to understand using traditional teaching methods such as blackboard/transparencies.<sup>[10]</sup>

In a study conducted by Nagar *et al.*,<sup>[4]</sup> it was observed that students found teaching on dissection table (79.71%) compared to the conventional method as the best method of grasping the topic. Similarly, our study emphasized the need for small-group teaching (80%) rather than didactic lectures. It also threw light on the concept of self-study and small-group presentations which aided in learning and retaining anatomy (87%).

Kramer and Soley's study on the medical students' perception of problem topics in anatomy revealed that 64% students found it challenging in comprehending embryology since they could not visualize the sequence of events which depict the developmental process, particularly the three-dimensional concepts.<sup>[11]</sup> 52% of students in our study said they needed embryology classes to be conducted in depth along with videos for better understanding.

Kramer and Soley's respondents perceived problems in histology such as complicated and confusing concepts, poorly structured lectures, and insufficient time.<sup>[11]</sup> Similarly, Kumari's *et al.*'s study disclosed students had difficulty in identifying structures on slides (77.5%).<sup>[8]</sup> Histology class taken in the laboratory with simultaneous lecture as well as visualization of the slide was well appreciated by our study group compared to theory class.

Jaiswal *et al.*'s study revealed that the best method of learning anatomy for practicals was dissection (89.14%).<sup>[12]</sup> However, in our study, students chose both prosected specimens as well as dissection under the guidance of expertise as a good way of learning anatomy.

Nagar *et al.* also revealed that most of the students preferred to have viva, quiz, and question-answer sessions which were

in line with our findings where students were inclined toward viva over spotters as formative assessment. Similarly, Jaiswal *et al.*'s study reported that the best assessment technique to measure skills in practicals should be viva on a dissected body (80.62%).<sup>[12]</sup> According to Rafique and Rafique, the best form of assessment was multiple-choice questions.<sup>[13]</sup>

Feedback on integrated teaching as a learning module for students was introduced as talks by physicians and problem-based learning; however, it was not well appreciated. Students felt that exposure to the clinical side wherein small groups taken to the hospital to demonstrate relevant case/procedure/examination would have a more significant impact. Nagar's *et al.*'s study only emphasized the usefulness of integrated teaching (70.80%).<sup>[4]</sup>

As a new teaching-learning initiative, we introduced the formation of an anatomy mentor cell where poor performing students were identified during the first assessment and were guided by specific teacher guardians assigned to them. We took an opinion on the same and received a favorable response (74%) since the assignments given to them and regular assessment were beneficial in improving their subject knowledge.

This survey also revealed an ideal manner of conducting revision classes. We conducted live video demonstrations followed by self-study with the aid of specimens to cater to the needs of the students, in revising and retaining the subject.

Another initiative taken as a part of overall student development – attitude and communication module was the cadaver as a first teacher. The response to first exposure to the anatomy dissection hall, with an introduction to cadaver as the first teacher, was most of them were excited and found it as an eye-opener. However, an assignment was given on the same topic where they were asked to reflect on the cadaver as their first teacher was not beneficial, and only a few of the students found it as a learning experience.

Therefore, by conducting this study, we were able to capture the views of the student on the best learning mode of anatomy which was small-group teaching as well as recognize the problem areas that needed more time and effort on the part of the facilitator. These changes need to be incorporated while revising and improving the curriculum keeping in mind the university and medical council guidelines.

Hence, the perception of a learner is of paramount importance when imparting knowledge.

### Limitation

The study would have been better if we could compare the response of two consecutive batches.

### Conclusion

As we change our curriculum, it is necessary to keep in mind the demands and needs of the present students. With the introduction of the competency-based medical education, the students' desire to have early clinical exposure and correlate their basic sciences' knowledge will be addressed.

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### Conflicts of interest

There are no conflicts of interest.

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