



## Original Research Article

## Perception and feedback of medical students about teaching methods in anatomy

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## ABSTRACT

**Introduction:** Student's feedback is a useful basis for modifying and improving medical education. Through feedback we can identify areas of strength and weakness of teaching methodology. More emphasis is being placed on student centred, integrated, and problem based, clinically relevant teaching and learning. **Aims & Objectives:** To find out the Perception and Feedback of Medical Students about Anatomy Teaching, Identify methods used to teach Anatomy, Identify those methods that are demonstrated to enhance knowledge retention in Anatomy, either short-term or long-term and what factors, other than the teaching methods, affect long-term knowledge retention in Anatomy.

**Materials and Methods:** This cross-sectional, descriptive study was conducted in the form of an anonymous survey in a Medical College of Bareilly, U.P. India. Medical students belonging to the 3rd, 5th and 7th semesters were participating in this study. A questionnaire was circulated amongst them during college hours. The questions in the questionnaire were based on the course content, methods of teaching, quality of teaching, teaching tools, mode of assessment of students, and suggestions to improve the quality of the curriculum in relation to gross anatomy.

**Results:** In present study 91.75% (total 367 students out of 400) students responded. Most of the students were satisfied with the coverage of content (41.27%), methods of teaching (44.93%), quality of Teaching (45.47%), tools used in teaching (39.33%) and mode of assessment (44.16%).

**Conclusion:** Learning process can be improved by adopting the better teaching methods; latest teaching tools along with interactive teaching sessions between students and faculty obtained by student's feedback for anatomy teaching.

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## 1. Introduction

For doctors training, appreciation of the anatomy of the human body is essential for the application and practice of medicine and surgery. It allows the clinician to understand the theory behind patient symptoms, perform a relevant physical examination, interpret clinical images, form differential diagnoses and communicate these findings with both the patient and other medical professionals. It is therefore critical that anatomy remains at the core of the medical curriculum to enable the 'modern doctor' to practice medicine safely.<sup>1</sup> Medical education is currently

undergoing a series of changes to meet the demands of modern medical practice.<sup>2</sup> More than half of the newly qualified doctors considered that their knowledge of anatomy to be inadequate for their job.<sup>3</sup> and Senior medical staff believe that this is a potential threat to patient safety.<sup>4</sup> Studies suggested that reduction in the teaching hours of anatomy in anatomy curriculum in medical schools across the UK<sup>5</sup> have resulted in a decline in the knowledge of anatomy among the medical students and young doctors.<sup>6,7</sup>

Anatomy is one of the most important subject during the course of medical curriculum and it is very difficult and challenging to teach and learn the subject for both the teachers as well as the medical students.<sup>8</sup> Anatomy has been recognized as one of the key subject for foundation

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of good clinical excellence. It is very challenging to teach and learn the subject for the teachers and learners in medical education in spite of having different education modalities. In 2015, Medical Council of India (MCI), recommended curricular which are reforms for teaching of undergraduate and postgraduate medical students, they replace traditional teaching via cadaveric dissection and lecture to incorporation of foundation course in first year, an integrated curriculum and introduce early clinical exposure and skill development training for the undergraduate medical students.<sup>9</sup>

Medical students recommended integrated teaching horizontal as well as vertical, early clinical knowledge and exposure and internet resources during the teaching of anatomy. Teaching and learning the anatomy becoming easier and interesting day by day due to availability of new technologies like three-dimensional audio visuals, digital radiological imaging, and web-based study materials and use of models. Comprehensive knowledge of Anatomy key stone in proper understanding of further clinical subjects like Medicine and Surgery that's why the student's feedback become a useful basis for modifying and improving the methodology of Anatomy teaching. With the help of feedback from medical students we can find out the areas of strength and weakness of teaching methodologies used for teaching. Because, according to new medical curriculum anatomy teaching is becoming more student centered, integrated, problem based and clinically relevant. Numerous studies evaluate the effect of teaching methods in Anatomy, but the majorities is evaluating singular interventions and their outcome. This study aims to consolidate this information and provide guidance to those teaching undergraduate Anatomy students in the development of effective teaching strategies to promote learning. So the present study was conducted in a Medical College of Bareilly.

## 2. Aim

To find out the Perception and Feedback about anatomy teaching of Medical Students.

## 3. Objectives

Identify the methods used for teaching anatomy, to demonstrate, to enhance knowledge retention either short term or long term in Anatomy and identify factors, other than the teaching methods, which affect the long-term knowledge retention in Anatomy.

## 4. Materials and Methods

Present study was a cross-sectional and descriptive study. This was conducted in the Medical College of Bareilly, U.P. India, during April 2019 to September 2019. Participants were the medical students who have passed the first

year of MBBS (4th, 6th and 9th semesters). After getting the clearance from Institutional Ethics Committee a questionnaire based on Likert's five points scale and open and close ended questions was circulated to participants during college hours after taking the consent from the participants. Questionnaire covered the topics- 1) coverage of course content, 2) methods of teaching, 3) quality of teaching, 4) teaching tools used, 5) mode of assessment of students and 6) suggestions to improve the quality of the curriculum in relation to gross anatomy teaching. (Table 1) By Question 1, 2, 3 and 21 we evaluated the coverage of course content, by question 4, 5, 9, 19 and 20 evaluate the methods of teaching, by 6, 7 and 8 we evaluated quality of teaching from and by question 10,11,12 and 22 we evaluated the teaching tools and mode of assessment of students was evaluated by response from question 13, 14 and 15. Response 1 and 2 was considered as inadequate or dissatisfactory, response 3 was considered neutral or median and response 4 and 5 was considered as adequate or satisfactory for each question. Suggestions from the students by question 17 (open-ended) and from questions 18-21 (close ended) were included in discussion.

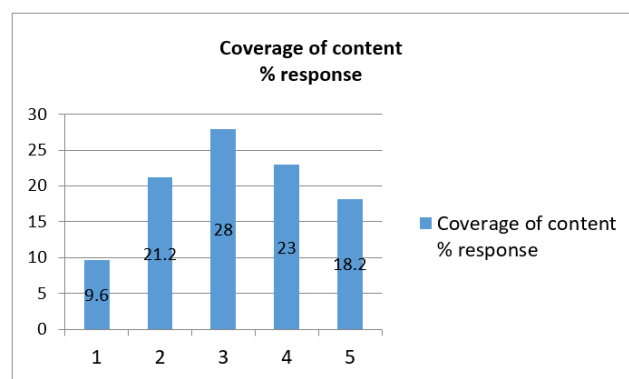


Fig. 1: Showing the % response of coverage of content

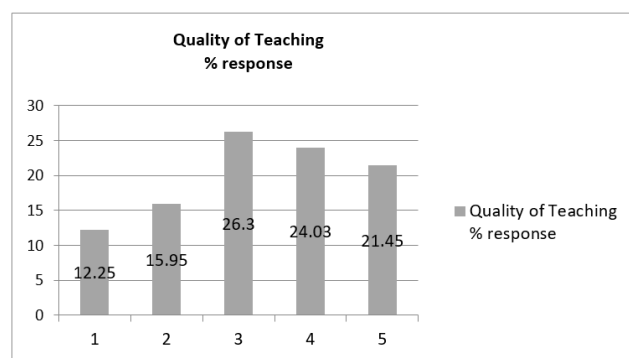


Fig. 2: Showing the % response of quality of teaching

**Table 1:** Student's feedback questionnaire<sup>10</sup>

| Student's Feedback Questionnaire - Gross Anatomy Teaching                                 |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| Please grade the following as 1-Poor, 2-Fair, 3-Good, 4-Very Good, 5-Excellent. Semester: |   |   |   |   |   |   |
| S. No.  | Questions   | 1 | 2 | 3 | 4 | 5 |
| 1.  | Coverage of important and relevant content of the topics taught in lectures.  |   |   |   |   |   |
| 2.  | Teaching of clinical correlation wherever relevant in lectures.   |   |   |   |   |   |
| 3.  | Flow of lectures clearly explained the content which helped you to understand the topic well  |   |   |   |   |   |
| 4.  | Highlighting of important points during lectures that helped you for further study in each topic  |   |   |   |   |   |
| 5.  | Explanation of the concept behind any statement in gross anatomy in lectures and demonstrations   |   |   |   |   |   |
| 6.  | Encouragement and freedom of students to ask questions and give answers during lectures   |   |   |   |   |   |
| 7.  | Delivery and pace of lectures was suitable to the level of your understanding in the class  |   |   |   |   |   |
| 8.  | Lectures and demonstrations were taken in a way that stimulated interest in the subject and encouraged you to study further   |   |   |   |   |   |
| 9.  | Supplementation of each session of dissection with suitable instructions that helped in proper identification and study of various structures   |   |   |   |   |   |
| 10.   | Readability and easy to follow concepts and facts from displayed lecture material   |   |   |   |   |   |
| 11.   | Usefulness of displayed teaching material e.g. illustrations and photographs in relation to content of lectures   |   |   |   |   |   |
| 12.   | Innovative tools like videos, animations and clinical case presentations that were included in lectures and demonstrations to help provide understanding of the topic   |   |   |   |   |   |
| 13.   | Assignments given during the semesters helped you to understand and learn the subject of gross anatomy  |   |   |   |   |   |
| 14.   | Assessments conducted in the form of written examinations (multiple choice questions and short answer questions) served the purpose to make you aware of your grasp of the subject  |   |   |   |   |   |
| 15.   | Assessment conducted in the form of viva voce examination helped you to improve your subject knowledge and application skills   |   |   |   |   |   |
| 16.   | Availability of teachers of department of anatomy to solve subject queries beyond teaching hours  |   |   |   |   |   |
| 17.   | What suggestions would you like to give to improve teaching of gross anatomy? Please write in maximum two sentences   |   |   |   |   |   |
| 18.   | Duration of curriculum of Anatomy should be<br>(a) Previous scheme of one and half year<br>(b) Present duration of one year<br>(c) Should be more than one and half year<br>(d) No idea   |   |   |   |   |   |
| 19.   | Best Teaching method for Theory classes<br>(a) Lecture with chalk and board<br>(b) Problem based learning<br>(c) Small group discussions<br>(d) Interactive lectures<br>(e) Lecture with Power point presentation<br>(f) Lecture with videos and other multimedia |   |   |   |   |   |
| 20.   | Preferred Teaching for practicals<br>(a) Dissection<br>(b) Prosection<br>(c) Educational videos<br>(d) Anatomical Models  |   |   |   |   |   |
| 21.   | Best source of study material<br>(a) Teacher's notes<br>(b)Textbook reading<br>(c) Solving frequently asked questions in last 5 years' theory examinations<br>(d) Internet sources  |   |   |   |   |   |
| 22.   | Best teaching methodology<br>(a) Dissection along with Chalkboard teaching<br>(b) Dissection along with multimedia teaching<br>(c) Dissection and demonstrations of anatomical models   |   |   |   |   |   |

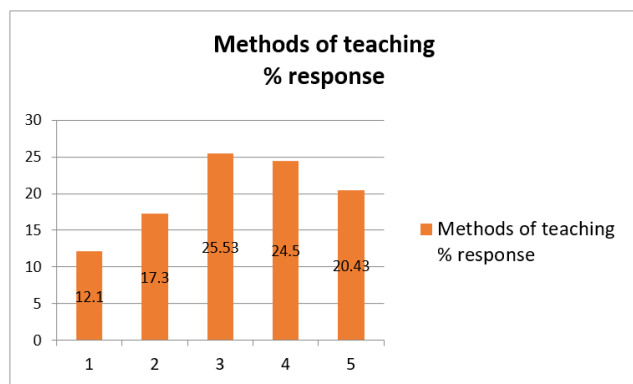


Fig. 3: Showing the % response of methods of teaching

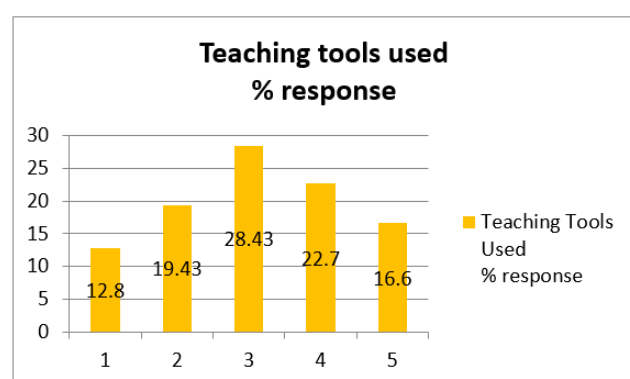


Fig. 4: Showing the % of response for used teaching tools

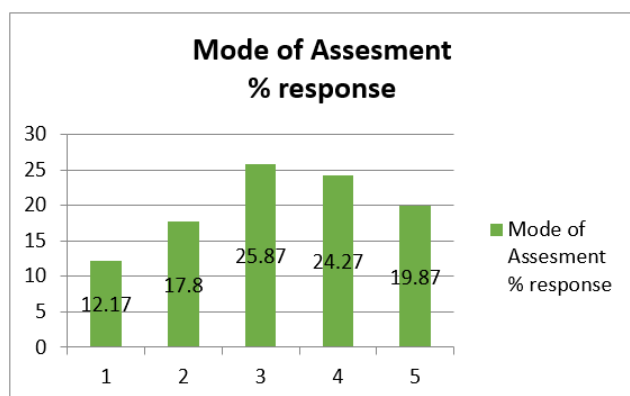


Fig. 5: Showing the % of response for the mode of assessment

## 5. Results

In present study 91.75% (total 367 students out of 400) students responded. In present study coverage of content during the anatomy teaching was found to be satisfactory by 41.27% students, 44.93% students were satisfied with methods of teaching, quality of teaching was found satisfactory by 45.47% students, 39.33% students were satisfied with the tools used in anatomy teaching and mode

of assessing the students was found to be satisfactory by 44.16% students. [Table 2, Figures 1, 2, 3, 4 and 5]

On Likert's five points scale, most of students responded that coverage of content, methods of teaching, quality of teaching, tools used in teaching and methods of assessment in Anatomy teaching is good. [Table 3]

## 6. Discussion

For training of medical graduates the thorough knowledge of human anatomy/ architecture is essential for the medical practice. Therefore anatomy is the core of medical education. In present study only 91.75% students participated. Coverage of content were found to be satisfactory in anatomy teaching by 41.27% students, similar was reported by Rafique S et al,<sup>11</sup> M. K. Anand et al<sup>10</sup> (35% students) and Nagar et al<sup>12</sup> (80% students). In present study 44.93% students were found the methods used in anatomy teaching were satisfactory. According to Arora N et al,<sup>13</sup> Larvalmawi F et al<sup>14</sup> and Rani et al,<sup>15</sup> most of the students reported that practical demonstration and practical skill work is helpful methods in learning anatomy but according to MK Anand et al<sup>10</sup> most of the students were not satisfied with the methods used to teach anatomy.[Table 4]

Study carried out by M K Anand et al,<sup>10</sup> Arora N et al,<sup>13</sup> Rafique S et al<sup>11</sup> and Nagar et al<sup>12</sup> and they found that most of the students were not satisfied with the teaching quality and tools used for anatomy teaching. In their study they reported that most of the students wanted advanced tool and methods of teaching like LCDs with power point presentation etc.

Mode of assessment of students were found to be satisfactory by the most of medical students in a study done by M K Anand et al<sup>10</sup> and in present study also most of the students (44.16%) were satisfied with the mode used for assessment in gross anatomy. Multiple modes of assessment like multiple choice questions, viva, short essay type questions etc were favored by most of the students as reported by Rafique S et al.<sup>11</sup> While Nagar et al<sup>12</sup> and Larvalmawi F et al<sup>14</sup> reported that most of the students favored weekly tutorials as most useful mode of assessment.

Following suggestions were given by the students in response to Question number seventeen;

More cadavers should be there, Dissection classes should be more, teaching should be more interactive, early clinical exposure and correlation should be there, teaching should be at lower pace and student oriented.

In response to question number 18 to 22; around 53.4% students agreed with present one year duration of anatomy teaching while 18.3% responded that previous scheme of one and half duration was good. 20.2% students found that lectures with chalk and board is a best teaching method, 25.3% students responded that lectures with videos

**Table 2:** Showing student's responses as a satisfactory or dissatisfactory

| Attribute           | Inadequate/ dissatisfactory % response | Adequate/ satisfactory % response |
|---------------------|--|-----------------------------------|
| Coverage of content | 30.83                                  | 41.27                             |
| Methods of teaching | 29.5                                   | 44.93                             |
| Quality of Teaching | 28.23                                  | 45.47                             |
| Teaching Tools Used | 32.23                                  | 39.33                             |
| Mode of Assessment  | 29.96                                  | 44.16                             |

**Table 3:** Response of students to questionnaires' on Likert's five points scale

|           | Coverage of content % response | Methods of teaching % response | Quality of Teaching % response | Teaching Tools Used % response | Mode of Assessment % response |
|-----------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|-------------------------------|
| Poor      | 9.6                            | 12.1                           | 12.25                          | 12.8                           | 12.17                         |
| Fair      | 21.2                           | 17.3                           | 15.95                          | 19.43                          | 17.8                          |
| Good      | 28                             | 25.53                          | 26.3                           | 28.43                          | 25.87                         |
| Very Good | 23                             | 24.5                           | 24.03                          | 22.7                           | 24.27                         |
| Excellent | 18.2                           | 20.43                          | 21.45                          | 16.6                           | 19.87                         |

**Table 4:** Comparison of responses of questionnaires' with other study

| Attribute           | Mahindra Kumar Anand et al (2015)<br>Gujrat, India <sup>10</sup> |                                   | Present Study<br>(2019) Uttar Pradesh, India |                                   |
|---------------------|--|-----------------------------------|--|-----------------------------------|
|                     | Inadequate/ Dissatisfactory % Response                           | Adequate/ satisfactory % response | Inadequate/ Dissatisfactory % Response       | Adequate/ satisfactory % response |
| Coverage of content | 21.1   | 35                                | 30.83  | 41.27                             |
| Methods of teaching | 38.5   | 23.9                              | 29.5   | 44.93                             |
| Quality of Teaching | 33.65  | 31.3                              | 28.23  | 45.47                             |
| Teaching Tools Used | 35.25  | 25.7                              | 32.23  | 39.33                             |
| Mode of Assessment  | 28   | 36.3                              | 29.96  | 44.16                             |

and other multimedia is a best method of teaching while others were agreed with problem based learning, small group discussion, interactive lecture and lectures with power point presentation (11.4%, 10.1%, 15.8% and 6.3 % respectively). Dissection was reported as preferred practical teaching methods by 55.3% students, educational videos by 15.8%, prosection by 12.5% and anatomical models by 9.5% students. Most of the students (34.3%) preferred textbook as a source of study material, teacher's notes were preferred by 32.4% students, 14.7 % students found that solving frequently asked questions in last five year's theory examination are the best and 9.5% student preferred study material from internet. 35.7% students reported that dissection with demonstration of anatomical model as a preferred teaching methodology, 29.2% student reported that dissection along with chalk board teaching is best methodology while 28.9% students agreed that dissection with multimedia teaching as a best teaching methodology.

## 7. Conclusion

In medical teaching and learning process active student participation is necessary. It is needed to analyze the

implemented curriculum, the mode of teaching, the quality of how it is delivered, and the infrastructure within which it is delivered. With the help of student's feedback we can adopt the better teaching methods like latest tools for teaching along with interactive sessions of teaching between students and faculty, learning process can be improved for anatomy teaching.

## 8. Source of Funding

None.

## 9. Conflict of Interest

None.

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