

Use of interactive teaching – Learning approaches in anatomy

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Abstract

Introduction: Understanding of anatomy is fundamental for clinical practice; Anatomy must be taught and learnt within a context that is clinically meaningful and related to the competencies required by new medical graduates so that students understand its relevance to their future practice. Hence in this study we decided to implement interactive clinical anatomy lecture.

Aim: To assess the impact of the interactive teaching learning methods on student cognitive outcomes and to evaluate the perceptions of students about interactive teaching learning approach.

Materials and Methods: Faculty members were sensitized. The study was approved by institutional Ethics Committee. Written informed consent was taken from students. The anatomy knowledge was evaluated by a pre-test and post-test (10 MCQ), which were designed based on the learning objectives of the sessions. Student's perception was evaluated through prevalidated questionnaires. The topic was chosen for interactive sessions namely "Venous drainage of lower limb" and we were including video clips and demonstration of Trendelenburg test in this session. Students had learned this topic already during didactic lecture as a part of routine timetable.

The pre-test and post-test results of the study group were compared using 'paired t' test. Students feedback was determined by analysis of questionnaires based on 5 point Likert scale.

Results: Total participants were 150. The mean score of pretest and posttest were 3.7 and 4.2 respectively. Standard deviation for pretest and posttest were 1.52 and 1.51 respectively. t value of this study was 7.99 and P value was 0.0000. Here P value is less than 0.001, it shows the highly significant difference between the mean of pretest and posttest score. It indicates definite improvement in the knowledge of students. In the prevalidated feedback questionnaires, 64.7% students had agreed that session was better than didactic lecture and 82.7% students had agreed that it was more effective in fulfilling learning objective. 70.7% students wanted the need to conduct more such sessions on the other topics also. All faculties agreed that this method increases student interest in learning and better understand clinical aspects of anatomy. However faculties believed that this method requires planning, extra effort, infrastructure and also some training.

Discussion: Introducing clinical knowledge in interactive teaching is beneficial in assessment also, it can lead to improvement in anatomy scores. Educational research has shown that students who are actively involved in the learning activity will learn more than students who are passive recipients. Learning and its retention is facilitated when the subject matter of the topic is linked to authentic contexts since the students experience the essentiality of knowing the topic for future clinical practice.

Conclusion: This study determined that the interactive and engaging learning strategy can be used as an effective learning tool in anatomy. So there was not only significant improvement in anatomy knowledge with its applied aspects but also it helps to improve students communication.

Keywords: Interactive teaching learning in Anatomy, Clinical Anatomy.

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sessions namely "Venous drainage of lower limb" and we were including video clips and demonstration of Trendelenburg test on the patient in classroom setting. Students had learned this topic already during didactic lecture as a part of routine timetable.

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Introduction

The transition from undergraduate to first year medical education can be difficult for students because of the dramatic increase in the volume of content. Anatomy is usually considered to be the ‘foundation of medical sciences’,¹⁻³ but it is also perceived to be an onerous and challenging subject in medical education.⁴ Although an understanding of anatomy is fundamental for clinical encounters and professional practice.^{2,5} Furthermore, anatomists face the recent pressures of the changing modes of medical education and assessment, with fewer contact hours and limited resources to teach an extremely diverse group of students with different sets of prior scientific literary levels, cultural backgrounds and experiences.^{6,7} New strategies are emerging in anatomy teaching that incorporate technology, making learning interactive, student-centered and more appealing to general student body.⁸⁻¹⁰ Bonwell and Eison defined active learning as “anything that involves students in doing things and thinking about the things they are doing”,¹¹ and Felder and Brent mentioned active learning as “anything course-related that all students in a class sessions are called upon to do other than simply watching, listening and taking notes”.¹² Anatomy must

be taught and learnt within a context that is clinically meaningful and related to the competencies required by new medical graduates so that students understand its relevance to their future practice. Competent clinicians, particularly surgeons, need a deep understanding of anatomy for safe clinical procedures. However, because students have had very limited exposure to anatomy during clinical training, there is a concern that medical students are ill prepared in anatomy when entering their internship and residency programs. Therefore, developing effective modalities for teaching anatomy is essential to safe medical practice.

Hence in this study we decided to implement interactive clinical anatomy lecture. This helps in recognition of the relevance of the subjects taught in the class room, thus making the learning “contextual.”

Aim and Objectives

1. To assess the impact of the interactive teaching-learning methods on student cognitive outcomes.
2. To evaluate the perceptions of Students about interactive teaching- learning approach.

Materials and Methods

Faculty members were sensitized. The study was approved by Institutional Ethics Committee. The objectives of the study were explained to first year MBBS students. Written informed consent was taken from student (n=150) who were willing to participate in the study. The anatomy knowledge was evaluated by a pre-test and post-test (10 MCQ), which were designed based on the learning objectives of the sessions. Student’s perception was evaluated through prevalidated questionnaires. The topic was chosen for interactive session namely “Venous drainage of lower limb” and we were including video clips and demonstration of Trendelenburg test on the patient in this session. Students had learned this topic already during didactic lecture as a part of routine timetable.

Statistical analysis

The pre-test and post-test results of the study group were compared using ‘paired t’ test. Student’s feedback was determined by analysis of questionnaires based on 5 point likert scale.

Results

Table 1: The pre-test and post-test results of the study were compared using ‘paired t’ test.

	Pre-test score	Post-test score
Mean	3.7	4.2
SD	1.52	1.51
‘t’ value 7.99		
P value <0.001		

Here P value <0.001 shows the highly significant difference between the mean of pre-test and post-test score. It indicates definite improvement in the knowledge of students.

Table 2: Students perception about interactive teaching-learning session questionnaires in percentage (%)

Questionnaires	Percentage of student’s Responses				
	SA	A	N	D	SD
Session was better than didactic lectures	20	54.7	17.3	6	2
Session motivates me to learn more in subject	18.7	50	12	11.3	8
Session was more effective in fulfilling learning objective	32	50.7	4	7.3	6
Session helps me to comprehend better in discussion	25.3	40	12.7	15.3	6.7
Session improves my communication skill	21.3	41.3	20	9.3	8
Session promotes understanding of basics rather than memorization	37.3	52	4	4	2.7
Session provides an opportunity to apply knowledge to different clinical cases	34.7	45.3	10	8	2
Session definitely helps to improves my diagnostic skill	25.3	34.7	12	24.7	3.3
Session was well organized	29.3	45.3	14.7	6.7	4
Session was enjoyable	22.7	24	17.3	21.3	14.7
Need to conduct more such sessions on the other topics	24	46.7	21.3	5.3	2.7
Session discussion facilitates interaction between faculty and students	27.3	50.7	14.7	4	3.3

Likert’s Scale- Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D), Strongly Disagree (SD).

In the prevalidated feedback questionnaires, 74.7% students had agreed that session was better than didactic lecture and 82.7% students had agreed that it was more effective in fulfilling learning objective. 70.7% students wanted the need to conduct more such sessions on the other topics also.

Faculty Perception

All faculties agreed that this method increases student interest in learning and they better understand clinical aspects of anatomy. However faculties believed that this method requires planning, extra effort, infrastructure and also some training.

Discussion

The present study demonstrated that students found the interactive learning strategy beneficial. It helped them to use and apply knowledge in a constructive, active and interesting way. Moreover; students achieved

significantly better scores in post-test. Interactive teaching enriches and contextualize that learning and offers a wider variety of teaching and learning methods. Introducing clinical knowledge in interactive teaching is beneficial in assessment also, it can lead to improvement in anatomy scores.¹³ Spencer J et al found direct contact with patients can be seen to play a crucial role in the development of clinical reasoning, communication skills, professional attitudes and empathy.¹⁴

Educational research has shown that students who are actively involved in the learning activity will learn more than students who are passive recipients.¹⁵ Learning and its retention is facilitated when the subject matter of the topic is linked to authentic contexts since the students experience the essentiality of knowing the topic for future clinical practice.¹⁶

The goals of medical education should be student oriented in which the student development should be

along with knowledge, skills and attitude. Learning is the active process going on inside the student's mind and teachers main role is to facilitate this learning process.¹⁷ A good learning involves a good communication.¹⁸

Conclusion

This study determined that the interactive and engaging learning strategy can be used as an effective learning tool in anatomy. So there was not only significant improvement in anatomy knowledge with its applied aspects but also it helps to improve students communication. Though the use of this method requires planning and commitment to the teaching process, the result of this learning are productive.

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Conflict of interest

None.

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