



Performance and perception of the first year medical students about the team based learning in Anatomy

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ABSTRACT

Back ground and Aim: Team based learning (TBL) possibly relies on student centered small group interaction more heavily than any other commonly used instructional strategy. It is being adapted in medical education to implement interactive small group learning. Present study was done to explore the perception and performance about TBL in teaching Anatomy. **Materials and Methods:** This study involved a group of seventy first year MBBS students of RAK Medical and Health Sciences University, Ras Al Khaimah UAE. TBL was conducted in a topic of Anatomy as per the standard protocol that includes pre class study, readiness assurance followed by application of course content by small group discussion. Perception of TBL was determined by administering the eight items questionnaire and performance was analyzed by their scores in individual and group readiness assurance test and in course assessment scores. **Result:** About 68.5% of students were able to learn and understand the topic effectively through TBL method. 73% students felt, interaction among the group members helped them to understand the course content better. About 62% were of the opinion that the lectures should be replaced with more and more TBL sessions in their teaching methodology. About 65% students were able to score well in the level 2 multiple choice questions in the in course assessment. **Conclusion:** in conclusion, TBL facilitated the group learning among the first year MBBS students and it can be substituted as one of the important mode of teaching along with other teaching methodologies.

KEY WORDS: Team Based learning; Anatomy; Individual readiness assurance test; Team readiness assurance test

INTRODUCTION

Team based learning (TBL) is an instructional strategy that combines independent out of class preparation for in class discussion in teams. It relies on small group interaction more heavily than any other instructional strategy. Since 2001, it's been adapted in medical education through interactive small group learning [1]. Though there is substantial evidence that TBL is an effective in interactive small group teaching and learning with enthusiasm [1, 2], there are only a few studies that has explored the impact of this educational strategy on learning outcomes.

TBL is a teaching methodology where the course concepts and the applications of it are given importance. It involves student centered approach, led by faculty, where in students are expected go through the concepts prior to the TBL session. The students going through this concepts are then assessed both on the concepts as well as on its application individually (i - RAT) and as team (t - RAT). TBL appreciates the involvement of individual knowledge as well as the group performances as team. Hence TBL has been proven to be one of the effective methods for teaching and learning.

Clinical anatomy is generally grouped under "Basic Science" dealt during first year of MBBS course. It is one of the most unique and inquisitive subject to learn as it is one of the only sciences which involve physical material that you must explore with multiple senses like hands, eyes and ears to truly master. In order to teach this content area with efficacy, you

must find ways of engaging students to make the learning meaningful and thus successful so that they can retain the concepts for their future clinical practices.

There are various teaching strategies followed to teach anatomy in our medical college like didactic lectures, dissection with small group discussions, problem based learning (PBL) and practical sessions. The medical education is evolving over the years to make the teaching more efficient with various innovations and recent addition to this is TBL.

Some studies have shown that, in the field of medical anatomy, TBL is an efficient strategic approach since it not only helps the students to learn the anatomical facts effectively but also to construct concepts for clinical problem solving which is very essential in clinical practice. [2, 3, 4, 5 and 6].

The present study was conducted to explore the perception of TBL in teaching Anatomy in a more interactive and effective way and also to determine the students' performance in the examination.

MATERIALS & METHODS:

This study involved group of 70 first year medical students of RAK Medical and Health Sciences University, Ras Al Khaimah, UAE. A topic in Anatomy was selected and related reading materials were provided before the session. Ten heterogeneous teams were formed based on the academic performance in previous exams. Students of good, average

and poor performers were combined together in each team. TBL was conducted as per the standard protocol that includes pre-class study, readiness assurance (iRAT & gRAT) which had five multiple choice questions followed by group application exercise. The iRAT, individual readiness assurance test where students complete the test by answering multiple choice questions individually. In gRAT (group readiness assurance test) students complete the test having same questions in a team or group interacting with each other. The five multiple choice questions included two knowledge/recall type (Level 1) and three comprehension and application type (Level 2) [7].

Perception of the TBL was determined by administering eight items questionnaire feedback form to the students. The questionnaire included the opinion of the students about the TBL in relation to their understanding, team work and to implement more TBL instead of lectures. It also included difficulty index of the quiz and useful aspects of TBL activity (group learning, tutorial, testing, feedback and pre-class preparation). We also asked students to specify the least useful aspects of the TBL activity and what changes they suggest to improve the TBL. The impact of the TBL on student learning and educational achievements was based on numerical data, including the scores from the iRAT, gRAT, application group exercise and feedback from the students. Performance was also analyzed by giving a set of questions on the same topic in the in-course assessment.

RESULTS

Students evaluated the TBL through feedback form which had eight questions. Out of 70 students who attended the TBL session, 68.5% of students were able to learn and understand the topic. 74.2% of our students believed that discussing the answers with their team members helped them to understand the material better. 65.7% of students were of the opinion that lectures should be replaced to TBL which is more interesting (Fig 1 and Table 1). There was a mixed opinion from the students that group learning, testing through iRAT and gRAT and pre-class preparation were useful aspects of this TBL activity (Fig 2 and Table 1).

Maximum score obtained by the students in iRAT was 15 and in gRAT were 20. So, the gRAT scores were significantly higher than the iRAT scores which show that team work among the students was better (Fig 3)

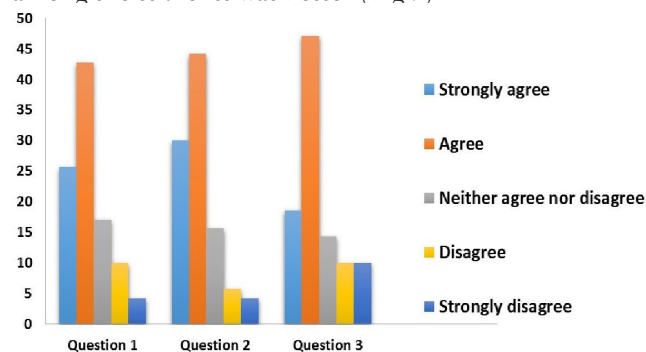


Fig 1. Students' response on TBL

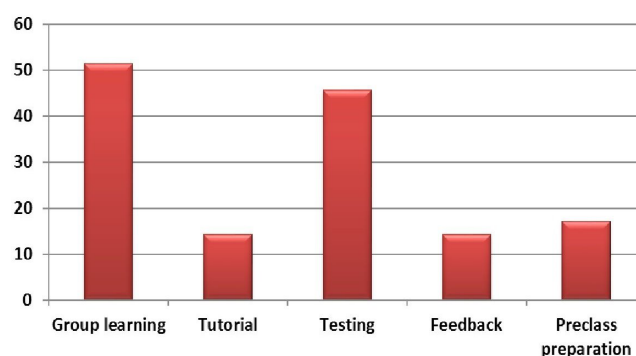


Fig 2. Students' response to most useful aspects of TBL

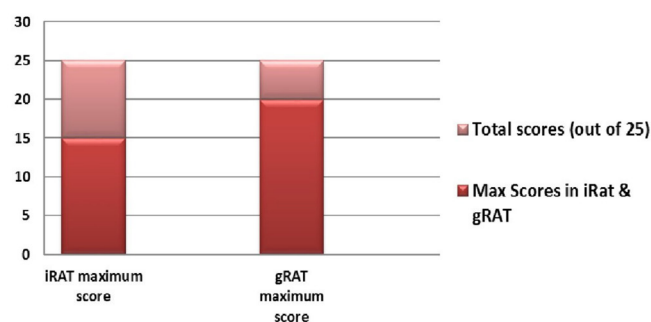


Fig 3. Students' performance in readiness assurance tests (iRAT & gRAT)

Student evaluation of TBL also indicated that TBL was interesting, interactive, and useful to understand the topic better, helped them to brain storm more which encouraged clinical problem solving. In contrast 14% of students disagreed about the benefits of TBL and 17% of students gave neutral opinion. (Fig 1 and Table 1)

Performance was analyzed in the internal assessment examination where three level 2 type questions related to the TBL topic were given. About 65% of students were able to analyze and answer the questions correctly.

DISCUSSION

A TBL was organized on a topic in Anatomy to improve the "active learning" experience for our students. The result of our study showed that the TBL session was interesting for the students and most of them were able to learn, understand and analyze the topic much better than the lectures. The other studies done by Neider GL et al [3] and Vasan NS et al [2, 4, 5 and 6] showed similar results.

Our students were able to score better in gRAT than iRAT and were of the opinion that they were able to learn better in teams. Previous study done by Gopalan C et al [8] reported that the gRAT combined with the iRAT is an effective team-based approach to the teaching.

Performance of our heterogeneous group of students showed significant improvement in analyzing the questions and 65% of them were able to answer the level 2 type of multiple

Table 1. Students' response on team based learning in Anatomy

S. No	Questions	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
1	I was able to learn and understand the perineum and pelvis using the TBL method.	18	30	12	7	3
2	Discussing the answers to the quiz questions with my group helped me to understand the material better.	21	31	11	4	3
3	We should use TBL to replace more lectures this semester.	13	33	10	7	7
4	The quiz was:	Very easy	Easy	Neutral	Difficult	Very difficult
		0	5	52	12	1
5	What were the most useful aspects of this TBL activity?	Group learning	Tutorial	Testing	Feedback	Pre class preparation
		36	10	32	10	12

choice questions. But one of the limitations was with one TBL on a topic; we were not able to judge the performance of the students. Previous study by Vasana NS et al [2 and 5] reported that examination scores for TBL-based anatomy were higher than those for lecture-based anatomy where in their study all Anatomy lectures were replaced with TBL and Embryology and clinical correlations were given as lectures.

In many other studies on team based learning [1, 6, 9, 10, 11, 12, 13 and 14] demonstrated that TBL is an effective and highly rated innovative learning technique for all courses in medical colleges and student performance will be high if the course content is learned through TBL. Also these studies demonstrate that students' attitudes about working within teams, sense of professional development and comfort change in a curriculum using TBL which is very essential in a medical profession.

CONCLUSION

A TBL in Anatomy facilitated the active and group learning among the first year MBBS students and the students evaluated it positively. Even majority of the students showed significant improvement in analyzing and answering the questions related to the TBL topic in the examination. Hence, TBL has been adopted as one of the important modes of teaching along with other teaching methodologies.

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