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Original Research Article

Team based learning: an effective teaching-learning method in undergraduate teaching in community medicine

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ABSTRACT

Background: "Team-based learning (TBL)" is a special approach by using small groups that is student centered, teacher guided Teaching and Learning method. Medical Council of India (MCI) emphasizes small group teaching. With increasing student numbers and decreasing/no change in faculty strength, the need for an effective T-L method for incorporating small group teaching in a large group is essential. So, this study attempts to evaluate the effectiveness and student reaction for TBL.
Methods: A cross sectional study was conducted among III-year MBBS students attending block posting in the Department of Community Medicine, KIMS and RC. Pre-test and post-test after Team based learning implementation by designated faculties was conducted, and scores were analysed. The feedback of TBL was collected by using a Likert scale from students and also from faculties.
Results: The mean scores of pre- and post-test were analyzed by Paired T test which was statistically significant (p value <0.05). The student reaction evaluated by 7 items Likert scale questionnaire showed that most of the students either agreed or strongly agreed that TBL enhanced their learning experience and confidence. The faculty feedback about TBL was also positive.
Conclusions: TBL can be effectively implemented in medical colleges for the better results and student reaction.

Keywords: Team based learning, Likert scale, Cross sectional study

INTRODUCTION

Team-based learning (TBL) is a special approach towards the utilization of small groups for effective communication. It takes both teaching and learning to a whole new level of educational significance.[1] Professor Larry Michaelsen created the original concept during the United States of America in the 1980s for usage in business and educational institutions. He created TBL in reaction to class sizes growing, and his worries regarding the efficaciousness of instruction given to big groups through lectures.[2] TBL gave the chance to carry on instructing in a manner that was captivating and appropriate for a big group of students, gave prompt comments, and engaged pupils in decision-making, encouraged engaged small group discussions, and talks in class.[2] In team-based learning, students work in large groups under the direction of a single instructor, with five to seven members per group.[3] TBL is more than just a transfer of information, to the utilization of understanding through solving problems

conceptually and procedurally.[4] This is a student centered, teacher guided/controlled teaching-learning method. Team-based learning represents a more intense use of small groups in that it changes the structure of the course in order to develop and then take advantage of the special capabilities of learning teams. TBL is an Instructional strategy which has a set of sequential activities: preparation, application, and assessment.[1] Medical Council of India (MCI) emphasizes the use of small group teaching. With increasing student numbers and decreasing/no change in faculty strength, the need for an effective T-L method for incorporating small group teaching in a large group is essential. So, this study attempts to evaluate the effectiveness and student reaction for Team based Learning.

Objectives

To evaluate the effectiveness of TBL as a Teaching-Learning method. To evaluate the student reaction about TBL as a Teaching-Learning method.

METHODS

A cross sectional study was conducted among III-year students attending block posting in the Department of Community Medicine, Karpaga Vinayaga Institute of Medical Sciences and Research Centre, Maduranthagam, Chengalpattu District during the period September 2019 to March 2020. The sampling technique was chosen as universal sampling including all students. Those students who did not consent to the study and those who remained absent on the day of the study were excluded from the study. A pretest was given on the topic selected for TBL. A module for the topic in Community medicine was given with 2 weeks preparation time. The students were divided into 4 teams of 5/6 based on their past academic performance.

Designated faculty were assigned to take care of the teams and they conducted the TBL. The session lasted for 2 hours with active participation of students. Immediately after the TBL, posttest session was conducted. The feedback on the session was done by using a Likert scale from the students. The first method evaluated the student learning by comparing pre and post-course examination scores. Secondly, an anonymous, voluntary course survey instrument that included 7 Likert-scale items were administered to the students which contained 4 items which focused on the TBL process, 2 were based on improved student confidence regarding the topic, and 1 related to recommending the course to other students.

The feedback from the faculty was recorded as verbatim and transcribed as sentences. The pretest scores and posttest scores were expressed as Mean and Standard deviation and scores and were analyzed by paired T test. The p value less than 0.05 was considered as significant. The study was approved by the Institutional Ethics committee, Karpaga Vinayaga institute of medical Sciences and Research Centre.

RESULTS

The students were divided into 4 teams, each teams having 5, 5, 6, 6, members who were respectively guided by designated faculties. The pretest was conducted among them by giving specific course questionnaires which included close ended and open ended questions. After TBL implementation, posttest was conducted among them. The students scored 3.68±1.36 in pretest, and 4.82±1.10 in posttest. The mean scores of pre and posttest was analyzed by paired T test. And, it was found statistically significant (p value <0.05). Table 1 shows the relationship of pretest and posttest mean scores.

Table 1: Relationship between pre test and post test mean scores (n=22).

	Mean±SD	P value
Pre-test	4.82±1.10	0.0029*
Post-test	3.68±1.36	

*-statistically significant.

Table 2: Evaluation of students reaction by using 7 items Likert scale questionnaire.

S. no	Survey items	Student response			
		Strongly Agree (%)	Agree (%)	Disagree (%)	Strongly Disagree
1	The required readings and activities prior to class enhanced my learning experience	6 (27.3)	15 (72.7)	0	0
2	The individual readiness assurance tests enhanced my learning experience	3 (13.6)	15 (68.2)	4 (18.2)	0
3	The group readiness assurance tests enhanced my learning experiences	13 (59.1)	9 (40.9)	0	0
4	The in-class application exercises enhanced my learning experience	6 (27.3)	14 (63.6)	2 (9.1)	0
5	The course increased my confidence in my ability to select appropriate contraceptive for the clients	10 (45.5)	12(54.5)	0	0
6	I would like to have TBL for other topics also	14 (63.6)	8 (36.4)	0	0
7	I would recommend this course to other students	10 (45.5)	12 (54.5)	0	0

The student reaction was evaluated by 7 items Likert scale questionnaire (Table 2). Of these 7 items, 4 of the items focused on the TBL process, 2 were based on improved student confidence regarding the topic, 1 was related to recommending the course to other students.

The faculty feedback was received verbatim and transcribed, quoted below: 1) “Gratifying, comprehensive, inclusive, participatory, practicable – TBL all in one”, 2) “Effective and fun to learn, create more involvement among students to learn", 3) “It was a good method of teaching and a better way for the students to understand the concept”.

DISCUSSION

This study found that TBL is an effective teaching method among medical undergraduate students and it can be effectively implemented in medical colleges for better results and student reaction. The faculties involved in this method of teaching also expressed satisfaction and gave extraordinary responses for this teaching method. Susan et al in their study among second year pharmacy students showed that TBL format was successfully integrated into a lecture-based cardiovascular module, resulting in improved student and faculty satisfaction with the course and no adverse effect on student performance which was similar to this study results.[5]

Nancy et al study among third professional year pharmacy students showed that The TBL format has been successfully implemented and benefits are fostering teamwork, increasing faculty-student interactions, improving faculty member feedback on content which was similar to this study.[6]

Wienner et al study among first year students of medical university interpreted that TBL students scored more compared with non TBL students which was similar to this study.[7]

Pogge et al study among second year pharmacy students which included 7 Likert-scale items illustrated that knowledge, was significantly improved by completing the course (59% and 91%, respectively, p=5, p=0.001).[5] The satisfaction survey instrument had a response rate of 97%, and the majority of students (85%) responded favorably to the TBL components which was similar to this study.[8]

Tan et al study compared Team-Based Learning (TBL) and Passive Learning (PL) for teaching neurology to third-year medical students.[9] TBL resulted in significantly higher knowledge scores immediately after and 48 hours post-intervention compared to PL. Academically weaker students showed greater improvement with TBL. The study suggests TBL as an effective method for enhancing knowledge in neurology among undergraduates, especially for those who might struggle academically which is in concurrence with our study.

The study by Andersen et al introduced Team-Based Learning (TBL) into four large second-year classes in a nursing program, highlighting the discrepancy between expected and actual effort required for implementation.[10] Faculty faced increased workload, occasional student conflicts, and technological challenges. Despite this, benefits included decreased attrition, reduced reading loads, and improved class readiness. Though not universally embraced, most students expressed liking and valuing TBL, supporting the commitment to continue teaching using this method. These findings were similar to our study in terms of the overall liking.

The study by Beatty et al implemented team-based learning (TBL) in three out of six pathophysiology and therapeutics courses in a pharmacy curriculum.[11] TBL incorporated team-building assignments, using readiness assurance tests to evaluate individual and team comprehension. Team assessments scored consistently 20% higher than individual ones. While professionalism and teamwork scores increased significantly post-TBL implementation, the improvement wasn't deemed educationally significant. However, 91% of students believed TBL enhanced their understanding of course material, and 93% supported the continuation of teamwork in workshops. The study concluded that TBL effectively ensures a uniform problem-solving approach and curriculum integration in pathophysiology and therapeutics workshop sessions which are in agreement with our study.

Limitations

The study's limitation lies in its restricted sample size. To strengthen the findings, conducting Team-Based Learning (TBL) across multiple batches and subsequently comparing the results would have provided a more comprehensive assessment.

CONCLUSION

The study demonstrates the effectiveness of Team-Based Learning (TBL) as a student-centered method in a large group setting, particularly within the context of small group teaching in medical education. Implementation of TBL during block postings significantly improved test scores among third-year MBBS students. Both student and faculty feedback highlighted positive perceptions of TBL, indicating enhanced learning experiences, increased confidence, and favorable reactions toward this teaching approach. These findings underscore the potential of TBL as an effective strategy to address the challenge of incorporating small group teaching in larger class settings within medical education.

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