

## Comparison of Team Based and Traditional Teaching Methods in Forensic Medicine: on the Basis of Assessment Tools

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### ABSTRACT

**Objective:** To compare two different teaching methods in Forensic Medicine on the basis of assessment tools.

**Study design and setting:** A cross sectional analytical study was conducted at the Department of Forensic Medicine at Al-Tibri Medical College and Hospital, from February to August 2019

**Methodology:** Total 100 students of third year MBBS were included in this study after taking ethical approval from the ethical review committee. These students were randomly divided into two groups of 50 students each, with Group A being taught through the traditional didactic lectures and Group B by Team Based Learning (TBL). Both groups were assessed using different assessment tools. Each assessment was of 25 marks and for comparison of marks, independent “t” test was applied comparing the mean value through SPSS version 20.0 and the level of significance was taken at  $< 0.05$ .

**Results:** The student’s involved in Team Based Learning performed superior than teacher centered strategy. In Group A, the students were taught via traditional lecture-based method and Group B was introduced to Team Based Learning. The mean score of assignment in Group A and Group B showed P value  $< 0.001$  that showed significantly higher grades in student-centered teaching.

**Conclusion:** Team based learning showed significant successful results in all assessment methods, therefore, it has been concluded through our study that Team Based Learning is a more effective method of teaching Forensic Medicine and it helps in making learner autonomous.

**Key word:** Andragogy, Self-directed learning, Team Based Learning

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### INTRODUCTION:

Several medical universities across Asia use conventional, orthodox teaching methods that largely do not encourage the notion of active learning or student participation.<sup>1</sup>

Pakistan, being a third world country is marred by its own set of problems and financial constraints, which allows for a very restricted budget to be utilized towards medical education.<sup>2</sup> Most of the medical universities across the country are still relying on the traditional didactic lecture based learning method calling for a large, passive audience instead of inspiring student engagement or team work. However, efforts are being made to incorporate newer methods of teaching such as Team Based Learning (TBL) so as to keep the level of medical education being provided in Pakistan, at par with the international standards.<sup>3</sup> In Team Based Learning, a class of students is divided into multiple small groups and assigned with tasks ensuring their involvement and a know-how regarding the application of the facts, with the teacher functioning as the facilitator to the small groups. These teams are then assigned with small tasks or tests to gauge the clarity of their concepts regarding the topic, which is followed by a discussion and feedback from the faculty. Finally, the students are evaluated via examination.<sup>4,5</sup>

TBL has proven to be quite effective in several of the disciplines of medical sciences as recorded in various researches.<sup>6,7,8</sup> Forensic Medicine is a clinically oriented subject assimilating knowledge from a variety of other

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medicinal disciplines such as pathology, emergency medicine, orthopedics and surgery. In Pakistan, the legal framework is such that it frequently requires collaboration from the medical fraternity to solve various criminal cases amidst the dearth of forensic experts. Therefore, on an undergraduate level, forensic medicine requires a diversity of new teaching methods so as to effectively impart the knowledge of forensic medicine among the medical students and to help them acknowledge the importance of this dynamic subject.<sup>9</sup> Team Based Learning is a teaching methodology which was introduced in 1970 by Michaelson to improve student participation and performance in business schools. Since then, this learning tool has been embraced by various medical universities globally.<sup>10</sup>

Keeping this in perspective; Team Based Learning was introduced in Forensic Medicine to see its effectiveness as far as the academic progress of the students is concerned. Therefore; this study was aimed to compare two different teaching methods in forensic Medicine on the basis of assessment tools.

**METHODOLOGY:**

Cross sectional analytical study was conducted at Department of Forensic Medicine for a period of six months from February 2019 to August 2019 after taking ethical approval from the ethical review committee. A total of 100 students of third year MBBS of Forensic Medicine were included in study and were randomly divided into two groups by using two color flags on the basis of teaching methods. Each group comprised of 50 students with one group of students being taught through traditional didactic lectures which is a teacher centered method and the students in the second group were engaged in team-based learning which is a student-centered teaching method. Four different topics were taught by applying either of the two methods in their respective teaching groups. Students were later assessed by using four different assessment tools: multiple choice questions (MCQs), short essays, observed structured practical examinations (OSPE) and assignments.<sup>11</sup> To exclude bias as much as possible, same faculty member was appointed to teach both the groups and students were randomly selected irrespective of their gender and past academic record.

Each assessment was of 25 marks and to measure the grading, a scoring scale was designed, with score 1 representing less than 5 marks, score 2 representing marks between 6 to 10, score 3 representing marks between 11 to 15, score 4 representing marks between 16-20, and score 5 representing marks between 21 to 25. This grading method was designed to evaluate the marks of the students participating in these two different teaching methodologies. Assessment were taken by facilitator and using a checklist for marking. Data was analyzed using the SPSS 20 version. Independent “t” test was applied to compare the mean value of the scores and P-value of less than 0.05 was considered significant.

Frequency and percentage were used for representation of grades among the class.

**RESULTS:**

Total of 100 students were divided into two groups labeled as group A and group B. Mean age for both the groups was 21.34 ± 1.32 and 51 students were males and 49 students were females being randomly divided into either of the two groups.

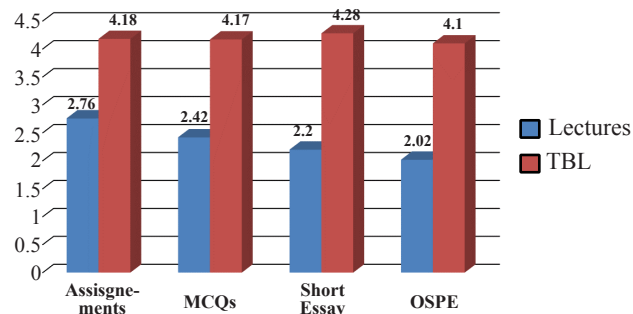
Frequency and Percentage of grades among two different groups were showed in Table I

In Group A, the students were taught via traditional lecture-based method and Group B was introduced to Team Based Learning. The mean score of assignment in Group A was and Group B showed P value <0.001 that showed significantly higher grades in student-centered teaching. The mean score of Group A in MCQs based assessment and in Group B its p value was <0.001, showing higher achievement of marking in Group B as compared to A. Mean score of Group A in short essay and in Group B, which is a significantly higher number as compared to that of Group A with p value <0.001. In Group A the grading of OSPE and in Group B was again a higher number of marking in comparison to that of Group A with p value <0.001 as shown in Figure 1.1

Table I Comparison of Grades among the groups

Assessment Tool	Grading	(Group A) Traditional lecture based n (%)	(Group B) Team based n (%)
Scoring Assignments	<5	6(12%)	-
	6-10	14(28%)	-
	11-15	21(42%)	9(18%)
	16-20	4(8%)	23(46%)
	21-25	5(10%)	18(36%)
Scoring MCQs	<5	15(30%)	1(2%)
	6-10	13(26%)	2(4%)
	11-15	13(26%)	5(10%)
	16-20	4(8%)	21(42%)
	21-25	5(10%)	21(42%)
Scoring OSPE	<5	19(38%)	1(2%)
	6-10	13(26%)	2 (4%)
	11-15	16 (32%)	8(16%)
	16-20	2(4%)	19(38%)
	21-25	-	20 (40%)
Scoring Short Essay	<5	15(30%)	-
	6-10	16(32%)	-
	11-15	15(30%)	8(16%)
	16-20	2(4%)	20(40%)
	21-25	2(4%)	22 (44%)
	Total		50(100%)

Figure: 1.1 Mean of grading among different groups and Level of significance between different assessment tools



### DISCUSSION:

Team Based Learning is a teaching methodology which was introduced in 1970 by Michaelson to improve student participation and performance in business schools. Since then, this learning tool has been embraced by various medical universities globally.<sup>11</sup>

In this study; it was observed that the group introduced to TBL did remarkably well as compared to the group being taught by traditional lectures. Another study reported that medical students taught via team based learning were better able to retain the knowledge gained.<sup>12</sup> Our study also exhibited similar finding as our students showed an improvement in remembering and recalling the content taught to them through TBL which also boosted their level of confidence during exams.

A study published on clinical neurology education on undergraduate level reported that students engaged in Team Based Learning performed far better academically and scored higher as compared to those engaged in passive learning.<sup>13</sup> This is a finding which is analogous to our study. Several other studies in the past have also recorded the superiority of Team Based Learning Method over the passive lecture based learning method.<sup>14,15</sup> Another study was done among the students of engineering and Nursing and they observed the positive effects among the students using flipped class and TBL sessions. Similarly in this study the TBL induced highly positive scores.<sup>16,17</sup> In accordance with the study results there was an effective learning among the multiprofessionals groups of medical students taught through TBL, as in this study the student centered approach was highly effective as compare to teacher centered.<sup>18</sup> One of the study conclusion revealed that there was highest grading among the students those taught through TBL in comparison with traditional teaching method among the students of optometry.<sup>19</sup>

Our study, however, had its own limitations with regards to the limited number of topics covered during this study and also that it did not compare TBL with any other active learning methods. For more favorable outcomes a research study covering all the topics of Forensic Medicine should

be conducted and other active learning methods in andragogy should also be explored. It was recommended that flipping the 2 groups teaching them from both the strategies and assessing them so if you haven't done that you should include in your study design. Therefore, this teaching strategy should be made an integral part of the curriculum devised for the subject of Forensic Medicine and for other disciplines being taught at undergraduate level to the MBBS students across the medical universities of Pakistan. Along with that, other active learning methods must also be researched and experimented upon.

### CONCLUSION:

Team based learning is a better learning tool compared to the traditional didactic lecture based learning for students as it has been found to improve the students' performance in exams, enhance their confidence and also inspires cooperation and teamwork amongst classmates.

#### Authors Contribution:

- Shahid Kamran:** Experimentation / Study conduction
- Muhammad Sajid Khan:** Manuscript writing
- Jamil Ahmed Siddiqui:** Analysis / Interpretation / Discussion
- Natasha Mustafa:** Facilitated for reagents / Material analysis
- Waqar Shaikh:** Critical review
- Hina Khan:** Conception of study / Designing / Planning

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