

**Research Article**

**Comparison and Evaluation of modified TBL method of teaching versus tutorial method in pharmacology among slow learners of 2<sup>nd</sup> year medical undergraduates**

**<sup>1</sup>Rekha Nayaka M.R. and <sup>2</sup>Anita Teli**

<sup>1</sup>Associate professor, Department of Pharmacology, JN Medical College, Belagavi, Karnataka, India .Phone no..9900017699, Email Id: drrekharaghu@gmail.com

<sup>2</sup>Assistant professor, Department of physiology, JN Medical college, Belagavi,, Karnataka,, India. Phone no.8197946106. Email Id: anita.v.teli@gmail.com

[Received: 30/01/2019;

Accepted: 22/02/2019;

Published: 23/02/2019]

**ABSTRACT**

**BACKGROUND:** A slow learner is one who has the ability to learn necessary academic skills ,but at rates and depth below same age peers.[1] These students have learning difficulties which tend to increase, if the teaching is not suitably graded to their slower rate of progress, and modified to achieve the most effective ways of learning.[2]As there is a need to introduce variety in teaching learning method for slow learners, which will make their learning more interesting , remembering ,repetitive type ,the current study is planned. The aim of the present study is to compare and evaluate the modified TBL method of teaching with that of tutorial method of teaching in pharmacology among slow learners of 2<sup>nd</sup> year medical undergraduates.

**METHODOLOGY:** A total of 24 slow learners from II MBBS repeater batch were included in the study. Out of 6 classes, first 3 classes were taught by modified TBL method and next 3 classes were taught by tutorial method. Students taught by modified TBL underwent with IRAT,GRAT and application based exercises like discussion of 2 clinical cases with previous university exam questions covering the topic, and drug of the week. Four teams of students were constituted by six students in each team .On the day of teaching session, topics were discussed in the presence of the faculty facilitator. Students evaluated these teaching sessions through questionnaire. **RESULTS:** 83 % of slow learners felt that the modified TBL sessions were better at fulfilling learning objectives , enabled better understanding(83%) , were more interesting(87%) ,ensured greater student participation and involved greater effort on the part of students( 91%) , as compared to traditional tutorial teaching methods. Most of the students( 96%) opined that more modified TBL sessions should be organized in the future.**CONCLUSIONS:**Modified TBL method of teaching improves the learning ability & learning outcomes of the slow learners when compared with tutorial method of teaching

**Key words :** pharmacology teaching, tutorials, modified team based learning

**INTRODUCTION:**

In today's world, unfortunately 'learning' has become a one size-its-all process that is not

tailored to suit a person's abilities. The problem, however, is that not all children can adapt to such

a rigid style of learning. Some student just cannot cope with the fast-paced and rigid approach that is characteristic of conventional teaching. Due to this, a gap forms between their true ability and their performance level. We need to give special attention to slow learners which will help them to overcome their problems that are the concomitants of severe educational and social failure and they need more time, more repetition, and often, more resources from teachers to be successful.[1] As today's conventional teaching is not helping these slow learners we teachers need to direct our teaching towards the development of slow learners. [2]A study on "evaluation of a modified team based learning method for teaching general embryology to 1st year medical" in department of anatomy of St.john's medical college,Bangalore,India showed that modified TBL method of teaching were better in fulfilling learning objectives, enabling better understanding, more interesting, ensured greater student participation and involved greater effort on the part of students as compared to traditional teaching methods.[3] Another study conducted in a medical school of Mauritius to identify slow learners, their problems and to innovate a method sticking to the time constraint and devised a method to streamline their learning in students. So they used peer tutoring as innovative method of teaching to slow learners .Result of the study showed significant improvement in learning outcome of slow learners.[4]

As there is a need to introduce variety in teaching learning method for slow learners, which will make their learning more interesting, remembering ,repetitive type ,the current study is planned. The aim of the present study is to compare and evaluate the modified TBL method of teaching versus tutorial method of teaching in pharmacology among slow learners of 2<sup>nd</sup> year medical undergraduates

#### **MATERIAL AND METHOD:**

A total of 24 slow learners from II MBBS repeater batch were included in the study. Students with <

40% in 1st internal assessment marks were identified as slow learners. Before the beginning of study, ethical approval was obtained from the institutional ethics committee and written informed consent was obtained from students who participated in the study. These slow learners were given with structured questionnaire to assess their attitude towards teaching learning aspects in pharmacology. A total of 6 tutorial classes were allotted and each class last for 2 hours. Out of 6 classes,3 classes ie.antianginal drugs,anticoagulants & treatment of anemia were taught by modified team based learning (modified TBL) method and remaining 3 classes ie. drugs for Rheumatoid arthritis & gout, Antiemetics, Antimigraine were taught by tutorial method.

One week prior to modified TBL sessions, all 24 slow learners was given handouts which contained the following: 1) Topic with learning objectives; 2) 2 clinical case histories with five related questions; 3) the previous university exam questions covering the topic, 4) drug of the week and 5) references. On the day of modified TBL session, 24 slow learners were randomly distributed into 4 teams (6 students in each team). The teams were changed in all three sessions. Modified TBL procedure was explained to all the students. All of them undergone individual readiness assurance test for 10 minutes (IRAT), group readiness assurance test for 20 minutes (GRAT), and Application based exercises (60 minutes). IRAT was conducted by giving 10 MCQs to individual students and answers was collected immediately and it was considered as pretest. In GRAT, group wise discussion on MCQs was done. Application based exercises was conducted by discussing 2 clinical case histories with five related questions with previous university exam questions covering the topic and drug of the week. Same staff facilitates all the sessions. Out of four team, randomly each team was asked to present and discuss either of any one case history with 5 question and answers, university question and answers, drug of the week. The five questions that followed each case

history were framed in such a way as to cover, as far as possible, all important material related to that topic. The drug of the week was taught as same as we teach in tutorials. Eg: for the topic Antianginals, drug of the week was Nitrates. At the end of each session, post test was conducted by giving the same 10 MCQs given in IRAT. In tutorial sessions, lecture was given on the topic and drug of the week was discussed. In this study, TBL method is modified according to the learning need of slow learners.

After all six pharmacology classes were completed, the students were asked to fill up a questionnaire [Table 1]. This questionnaire was devised specifically for comparing the modified TBL sessions to the tutorial classes on certain key aspects of learning ie. overall satisfaction with the method of teaching, impact on quality of learning, satisfaction with team assignment, learning impact on clinical reasoning ability and professional development. These students had to answer total eight items with the yes/no options. The number and percentage of students responding to each item was noted. The mean rating for each item

was calculated [Table 1]. Students suggestions and remarks were also elicited. The facilitator's subjective opinion about the modified TBL sessions was noted. Learning outcome of slow learners were evaluated by comparing pre and post test score and also observed their performance in 2<sup>nd</sup> IA which was compared with that of 1<sup>st</sup> internal marks.

### RESULTS:

All 24 slow learner from 2<sup>nd</sup> MBBS odd batch students responded to the questionnaires. In the beginning of study, attitude of slow learners on conventional pharmacology teaching and their learning abilities with their learning outcomes, were assessed through questionnaire. From the table 1 it was observed that 42% of students were not confident in subject because of conventional teaching method and 88 % think that there is a need of more interesting, remembering, repetitive type of teaching in pharmacology. 29% of students accepts that they are lack of concentration, communication skills and also low self esteem which reduced their learning abilities.

**Table 1:** Assessment of the attitude of slow learners on the teaching and learning aspect in pharmacology

Items	Items	Yes	%	No	%
Q1	I can understand pharmacology very well by conventional teaching method	20	83.3	4	16.7
Q2	I can take notes during the theory class	21	87.5	3	12.5
Q3	I can concentrate very well in the theory class	20	83.3	4	16.7
Q4	I am confident in the subject because of the conventional teaching method	14	58.3	10	41.7
Q5	I have got good self esteem, communication skills and concentration skills	17	70.8	7	29.2
Q6	I am aware of my internal assessment marks	23	95.8	1	4.2
Q7	I got less marks in internal assessment.	23	95.8	1	4.2
Q8	I need special class to improve my performance	10	41.7	14	58.3
Q9	I think there is a need of more interesting, remembering, repetitive type of teaching in pharmacology	21	87.5	3	12.5

At the end of 6 week, perception of all 24 slow learners on modified TBL method of teaching versus tutorial method of teaching were collected through structured questionnaire. The responses to each statement are summarized in Table 2.

**Table 2:** Perception of slow learners on modified TBL method of teaching versus tutorial method of teaching

Items	Items	MTBL	%	Tutorials	%
Q1	The teaching method more effective in fulfilling learning objectives	20	83.33	4	16.67
Q2	The teaching method enabled better understanding of the subject	20	83.33	4	16.67
Q3	The teaching method enabled greater student participation	22	91.7	2	8.33
Q4	The teaching method was more interesting and interactive	21	87.50	3	12.50
Q5	The teaching method was more of repetitive type	15	62.50	9	37.50
Q6	The teaching method will help to improve my performance in exams	22	91.67	2	8.33
Q7	The teaching method required more effort on the part of the student	21	87.50	3	12.50
Q8	This type of teaching classes should be organized in future	23	95.83	1	4.17

From Table 2, it is evident that a large majority of the students preferred the modified TBL method over tutorial method of teaching. 83% of the students felt that the modified TBL sessions are better at fulfilling the learning objectives & enabled better understanding of the subject and 87% felt modified TBL classes are more interesting as compared to tutorials respectively. Ninety two and 88% of the students thought that the modified TBL method enabled more student participation and involved greater effort on the part of students as compared to traditional tutorial method of teaching. 63% students thought that mTBL method was more of repetitive type which helps them to remember the subject & it was evident that 92 % of students thought that mTBL will help to improve their performance in exams respectively. 96% of students opined that more such modified TBL sessions should be organized in the future.

The learning outcome of the students are assessed through their performance in tests . Evaluation of pretest and post test showed that slow learners after modified TBL classes scored high in post test in comparison with post test score after tutorial classes. Evaluation of 2<sup>nd</sup> IA marks showed that 71% of slow learners got more marks when compared to 1<sup>st</sup> IA marks.

Most of them felt that modified TBL method was good, provided they were given adequate time to prepare for these sessions. From the facilitator's point of view students came well prepared for first two sessions and interest in the class was kept up throughout. Most of the answers came from the students themselves and the facilitator had to use the already prepared PowerPoint presentation only to show relevant pictures and diagrams to further aid understanding. But in third session many students did not prepared for the class and facilitator felt difficult to get individual answers.

## DISCUSSION

Slow learner doesn't have the same cognitive ability as the other students in their class, the characteristics of a slow learner has to be understood to deal with them in the mainstream class. The slow learner cannot do complex learning i.e., learning which involves complex thoughts. They are usually anxious, have low self-esteem and poor concentration skills. They live in the present and have no long-term goals [4]. In a medical school, the curriculum content is vast and the time span limited. Most of the teaching hours at the medical school are assigned to learning theoretical knowledge from didactic lectures and practical

and clinical skills from doing and experiencing. The curriculum is not designed for different learning styles of the student and definitely not giving any thought to the slow learner. The vast curriculum, the huge expectations of the teachers and parents put an emotional burden on the students. Such students are the ones who go on to becoming Slow Learners (SL) [4]. These learners pose a problem not only for themselves but also for their teachers. Repeated poor performance causes these students to become a burden not only to their parents but also to the medical school.

The current study is focused on teaching methods i.e. modified TBL versus tutorial method of teaching among slow learners. The most widely used method in India for theory classes is the lecture method. However there are many drawbacks of this method like passive nature of audience, limited opportunity for feedback lead to low receptivity.[5,6] and very often material covered by a lecture can be more easily acquired from a textbook or internet etc. Slow learners and under achievers learn better by tutorials, as lectures do not adapt to the rate of learning of individuals.[6,7]

In order to encourage more interesting active teaching learning, modified TBL approach of teaching was introduced to the slow learners. Three important principles were followed during the study- 1) proper formation of group ,2)pre class preparation time was given before each session 3) the students must receive frequent and immediate feedback on group performance.[8] In present study, TBL sessions were modified so as to fit them into the time frame of a 2-hour tutorial class. Each time 4 new teams were made by random selection of students before conducting TBL session. Modified TBL sessions were designed in a logical sequence, thus promoting active learning. An additional benefit to the students was that the examination questions were also discussed and immediate feedback was

provided to each group by the faculty facilitator after discussion of the case histories .Modified TBL method helped student to achieve higher level cognitive skills and also they learnt to apply their knowledge in solving clinical problems. Such problem solving abilities are required on a day-to-day basis by clinicians. Students learn better when they have to explain their thought process, rather than just reading a book and attending a lecture and assuming that they have understood the topic. This method play a major role in developing communication skills of the students.

Some of the drawbacks of this method are adequate time should be given to prepare for the classes. Thus, it is not possible to use this method successfully if the classes follow each other in close succession, as is often the case in most medical colleges. In one of the study[reference]on modified TBL ,Some of the students felt that difficult concepts within a particular topic needed a lecture class and that these topics could not be adequately covered by the modified TBL method. A solution to this could be to have short lecture classes emphasizing important concepts along with active learning methods.[9,10]But in our study important concepts were emphasized by explaining drug of the week as a part of modified TBL method.

The response of the students in this study indicates that most of the students preferred the modified TBL method to the tutorial method. The students felt that working in teams was an effective way of learning content and applying this to practice clinical reasoning skills. The faculty felt that this method ensured a closer interaction between them and the students , also found that students learning abilities improved by Modified TBL method which was proved on evaluation of pre & post test and 2nd internal assessment. Other studies have shown that knowledge acquisition with the TBL method compared favorably with more traditional methods such as lectures.[11-15]A study by

Parmelee et al. have recently assessed the attitudes of medical students to TBL in the pre-clinical curriculum. Overall result of the study showed that students gave a favorable evaluation of the TBL method of teaching.

In a field of medical education, there is a need of innovative teaching methods which makes the students more confident in gathering data, analyzing and solving the clinical problems. Modified TBL method of teaching is an active teaching method which creates appropriate learning environment for slow learners and also proved to improve the learning abilities as well as learning outcome of each student.

### CONCLUSION:

Slow learners have been taught by modified TBL as well as tutorial method of teaching. The students response was encouraging and a majority of them preferred modified TBL method over tutorial method and wanted these sessions to be continued in future. Modified TBL method of teaching created a good learning environment to the slow learners and help them to improve communication skills, clinical problem analyzing and solving ability, enhance their confidence to face exams and also improve their academic performance. Modified TBL, an innovative method of teaching can be implemented in curriculum to improve the learning abilities and learning outcome of slow learners.

### REFERENCES:

1. Muppudathi G. Role of Teachers on Helping Slow Learners to Bring Out Their Hidden Skills. *International Journal of Scientific Research*. 2014 Mar;3(3):98-100
2. Malik S. Effect of intervention training on mental abilities of slow learners. *Int J Educ Sci*. 2009;1:61-64.
3. Evaluation of a Modified Team Based Learning Method for Teaching General Embryology to 1st Year Medical Graduate Students. N Shankar et al. *Indian J Med Sci*, Vol. 63, No. 1, January 2009
4. Ray S, Ray U, Ray MK. Peer Tutoring as a Remedial Measure for Slow Learners in a Medical School. *JKIMSU*. 2015;4(1):130-134.
5. Parmelee DX, DeStephen D, Borges NJ. Medical students' attitudes about team-based learning in a pre-clinical curriculum. *Med Educ Online* 2009;14:1.
6. Ananthakrishnan N, Sethuraman KR, Kumar S editors. *Medical education: principles and practice*. 2nd ed. Published by alumni association of national teacher training centre, Pondicherry: JIPMER; 2000.
7. Bhusnurmath S and Bhusnurmath B. Making lectures more meaningful. Team based learning. Presentation at Department of Anatomy, St. Indian J Med Sci, Vol. 63, No. 1, January 2009. Johns Medical College. 2007. (unpublished)
8. Michaelsen LK. Getting started with team-based learning. In: Michaelsen LK, Knight AB, Fink LD, editors. *Team-based learning: a transformative use of small groups*. Westport, CT: Praeger. 2002b. p. 27-51.
9. Richardson D. Don't dump the didactic lecture; *Adv Physiol Educ* 2008;32:23-4.
10. Yiou R, Goodenough D. Applying problem-based learning to the teaching of anatomy: The example of Harvard Medical School. *Surg Radiol Anat* 2006;28:189-94.
11. Koles P, Nelson S, Stolfi A, Parmelee D, Destephen D. Active learning in a Year 2 pathology curriculum. *Med Educ* 2005;39: 1045-55.
12. Hunt DP, Haidet P, Coverdale JH, Richards B. The effect of using team learning in an evidence-based medicine course for medical students. *Teach Learn Med* 2003;15:131-9.
13. Levine RE, O.Boyle M, Haidet P, Lynn DJ, Stone MM, Wolf DV, et al. Transforming a clinical clerkship with team learning. *Teach Learn Med* 2004;16:270-5.

14. Dunaway GA. Adaption of team learning in an introductory pharmacology course. *Teach Learn Med* 2005;17:56-62.
15. Letassy N, Medina M, Stroup J, Fugate S, Britton M. The impact of team-based learning (TBL) on student and course outcomes compared to lecture methods. Paper presented at the annual meeting of the American Association of Colleges of Pharmacy, Disney.s Yacht and Beach Club Resort, Lake Buena Vista, Florida, July 14, 2007.