

A Comparative Study on the Effectiveness of Interactive Lecture and Tutorial as Teaching Methodology among Undergraduate Medical Students

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ABSTRACT

Introduction: Performance by the medical students has been deteriorating in past few years. So reviewing and modification of teaching methodologies is important. To some extent interactive lectures are taken in our department but tutorials has not been introduced. So in the present study an attempt has been made to compare the level of knowledge gained by the two different teaching methodologies, that is, Tutorial and Interactive lecture and to assess the perception and preference between the two teaching methodologies.

Material and methods: A Comparative study was done among first year MBBS students (n=130) studying at Govt. Medical college Kottayam. They were divided into two groups by lottery method. For tutorials each group was further divided into small groups containing 9-10 students. Both the groups were allotted to interactive lectures and tutorials. A pretest followed by posttest was given to compare the knowledge gained and a self-administered feedback form to assess the perception and preference between the two methodologies.

Results: There was statistically significant difference between the means of Pretest and Posttest marks ($P=0.001$) of both interactive lectures and Tutorials. Knowledge gained by interactive lectures was significantly higher ($P=0.001$) than by tutorials. 76% students preferred and accepted tutorials as a better teaching methodology.

Conclusion: More knowledge was gained by interactive lecture, but students preferred and accepted tutorial as a better teaching methodology. Tutorial teaching can be introduced for some small topics in the first year MBBS curriculum.

Keywords: Interactive lecture, Tutorial

INTRODUCTION

During the past few years the performance by the medical students has been deteriorating. Can it be due to some defect in the teaching methodology. Reviewing the teaching methods by feedback from students and modification of methodologies accordingly is very important for the undergraduate medical teaching.¹⁻³

Physiology is one of the foundation subject in medical curriculum. It has to be learned in depth for better understanding the disease and its management. In most of the medical colleges of India, it is taught mainly by means of didactic lectures and practical classes. Such a system is teacher centered with minimal active participation from the students.⁴ In conventional lectures students are passive receivers of information and therefore are not involved in process of learning.⁵

Active learning is a student centered teaching technique that uses various interactive, multimodal strategies to create a more engaging classroom setting compared with the traditional didactic lecture. The purpose of using active learning is to keep

students engaged in the materials to provide an environment that increases student performance while also motivating the students to learn, increasing classroom satisfaction and facilitating higher level thinking skills. Interactive learning has been evaluated more positively than formal lecturing by medical students.⁶ The teaching might not be effective if taught only by lectures. However there is evidence showing that lectures can be an effective method of teaching when used properly and can help to organize and transmit content knowledge effectively.⁷ Active learning encompasses various methodologies, with each serving the purpose of fostering an active classroom. One method is interactive lectures, where students are given short periods of lectures followed by breaks that may consist of one minute papers, problem sets, brainstorming sessions or open ended discussion. These breaks are incorporated into the lecture to improve student concentration.

Smaller classes are found to be a key ingredient in student success.⁸ A tutorial is one method of smaller classes, transferring knowledge and may be used as a part of a learning process. A tutorial is a collection of several learners, and varies in numbers, who interact and work together to achieve common learning goals. Tutorial literally means a class conducted by a tutor for one student or a small number of students.⁹ More interactive and specific than a book or a lecture, a tutorial seeks to teach by example and supply information to complete certain task.¹⁰ Tutorial classes for medical students are imparted to develop and test their own ideas, clarify materials presented in lectures, apply general concepts to the solution of specific, apply general concepts to the solution of specific problems, define new problems and seek solutions to them, develop problem solving skills and encourage students in self-learning.¹¹ Small group tutorials is growing in popularity in medical education. This is indicative of the movement from a traditional teacher centered approach to more student-centered learning.

Traditional and to some extent interactive lectures are taken in our department but tutorials has not been introduced. So an attempt has been made in this study to compare the level of knowledge gained by the two different teaching

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methodologies, i.e Tutorial and Interactive lecture and to assess the perception and preference between the two teaching methodologies.

MATERIAL AND METHODS

A Comparative study was done. Ethical clearance for the study was obtained from Institutional Review Board of Govt. Medical College Kottayam. Data was collected from first year MBBS students studying at Govt. Medical college Kottayam in Kerala, after taking Informed consent. All the students gave consent to participate in the study. From first year MBBS students who have already been divided into four batches based on alphabetic order of their names for practical classes in the conventional teaching schedule, random selection of two batches was done by lottery method and were grouped together and named group A and the remaining two batches were grouped together and named group B. Thus each group had 75 students and so all 150 students were enrolled into the study. For tutorial each group was further divided into small groups containing 9-10 students. Two different topics in Physiology which were not covered previously were selected from the Prescribed textbook, and the topic with subtopics was given to the students one week prior to the classes for uniformity of discussion. Students were asked to go through the topics, and come for the class on the concerned day. The facilitators/tutors involved in tutorial class were given instruction regarding the class plan. For the first topic, group A was allotted to interactive lecture class, and group B to tutorial class. A pretest followed by posttest containing 15 objective questions were given to assess the knowledge gained. To avoid ethical issue, for the same topic group A was allotted to tutorial class and group B to Interactive lecture. But that was not taken for assessment. For the second topic, group A was allotted to tutorial class and group B to Interactive lecture. A pretest followed by posttest containing 15 objective questions were given to assess the knowledge gained. Again to avoid ethical issue, group A was allotted to interactive lecture class, and group B to tutorial class for the second topic, but not taken for assessment. After the second topic all the students were given a self administered feedback form containing closed and open questions regarding perception and preference of the two methodology. Data from 130 students who attended both

methodology was taken for evaluation.

STATISTICAL ANALYSIS

Statistical Analysis was done by SPSS Version 21. Comparison of Pretest and post test marks between Interactive lectures and tutorials was done by Paired T test. Comparison of marks gained by the two methodologies was done by Unpaired T test. Perception and preference between the two methodologies was assessed using Likert scale and the result expressed as percentage.

RESULTS

On analysis of data to find the difference between the pre test and post test marks by each methodologies by paired T test, and it was found that, there was statistically significant difference between the means of Pre test and Post test marks ($P=0.001$) of both interactive lectures and Tutorials (Table 1). So there was significant gain in knowledge by both methodologies.

Again knowledge gained by each methodologies was analysed by unpaired T test, and it was found that knowledge gained by interactive lectures was significantly higher ($P=0.001$) than that gained by tutorials (Table 2).

Thus analysis revealed that learning improved by both methods, however the performance improvement was better with interactive lecture

Perception and preference between the two methodologies was assessed by feedback from students using Likert scale and the result expressed as percentage. In the feedback received 76% students preferred and accepted tutorials whereas only 14.7% preferred and accepted interactive lecture as a as a better teaching methodology (Figure-1).

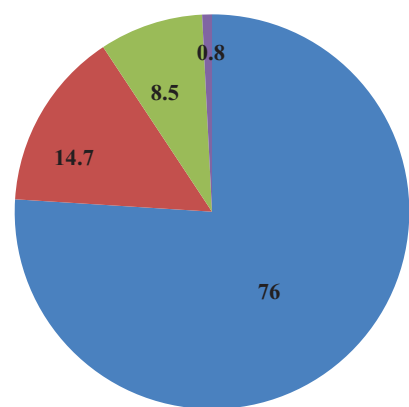
On analyzing the different parameters it is seen that majority of the students found tutorial to be more interesting, less time consuming, non repetitive, less confusing, better understandable. They expect to score more with tutorials and they recommend it to be implemented for the first year MBBS Classes (Figure-2). Apart from the parameters given above, majority liked tutorials as it helped them to clear their doubts in the class itself, and promoted more involvement of students. Main reason mentioned by students for not preferring Interactive lecture was inability to concentrate the lecture after 30 minutes of lecture.

Teaching methodology	Number of students	Pretest marks (Mean±SD)	Post test marks (Mean±SD)	Stat. Test (T value) (P Value)
Interactive lectures	130	2.34±1.73	7.01±1.87	Paired T test (t=25.71) (P=0.001)
Tutorials	130	4.22±1.90	6.43±2.21	Paired T test (t=15.02) (P=0.001)

Table-1: Pre-post test marks - comparison of interactive lectures and tutorials

Teaching methodology	Number of students	Marks gained (Mean ±SD)	Statistical test (t value) (P value)
Interactive lectures	130	4.67±2.07	Unpaired T test (t=10.43) (P=0.001)
Tutorials	130	2.21±1.68	

Table-2: Comparison of interactive lectures and tutorials in terms of marks gained



■ Tutorial ■ Interactive ■ Both ■ Neutral

Figure-1: Preferred method of teaching from feedback

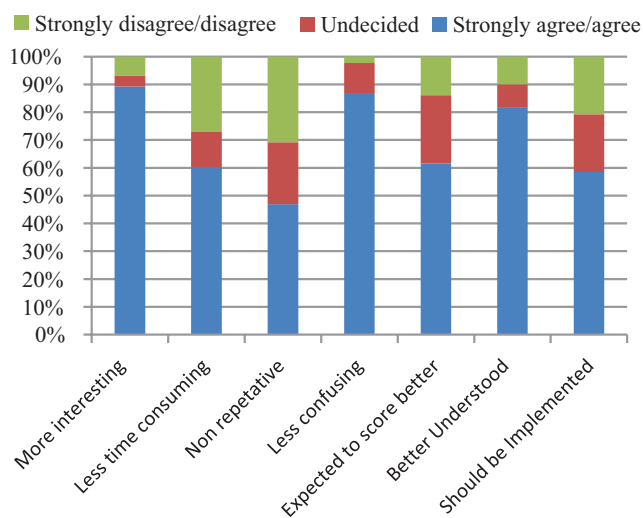


Figure-2: Feedback from students on tutorials

DISCUSSION

In the present study, there was statistically significant gain in knowledge by both methodologies as evident from the pre test and post test marks of each methodology, but knowledge gained by interactive lectures was significantly higher than that gained by tutorials. Also majority of students preferred and accepted tutorials as a better teaching methodology. This finding is similar to a study on small group tutorials in pre clinical medical education in which they found that small group tutorials leads to greater satisfaction but not to better learning results.¹² In a recent study, the key message given was that, reducing the size of the class is not sufficient for improving the students performance, but the teaching sessions need to be more interactive.¹³ But in another study on the effectiveness of different teaching methodology in Pharmacology the students accepted and preferred interactive lectures than tutorials.¹⁴

In the open ended question in the present study the students preferred tutorials as it helped them to clear their doubts in the class itself, and promoted more involvement of students. This is similar to a study on the role of small group interactive sessions in which students agreed that small group interactive sessions helps them in understanding contents and facilitates active learning.¹⁵

Attention span studies have indicated that there is considerable decrease in attention after 20 minutes in traditional lecture.¹⁶ In

the present study also the main reason for students not preferring Interactive lecture was inability to concentrate after 30minutes of lecture however interactive it may be.

Those preferring interactive lecture are of the opinion that it impart more information on a topic and they feel the content taken in the class is correct without any mistake. Similar to this, in a study, students gave the opinion that interactive lecture helps more to understand the subject and give more information than other teaching methodologies.¹⁴ Whatever be the method, better interactivity and more student involvement can enhance students learning.

Implications of the study is that Tutorial teaching can be introduced for some of the small topics in the first year MBBS curriculum. But further studies are needed.

Limitations of the study is that the Study setting was conveniently chosen and could be done only in one centre.

CONCLUSION

In the present study more knowledge was gained by interactive lecture, but students preferred and accepted tutorial as a better teaching methodology

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