

Effectiveness of Didactic Lecture Versus Small Group Teaching Methods Among Second Year Medical Undergraduates in Pharmacology: A Comparative Study

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DOI: <https://doi.org/10.52403/ijhsr.20251215>

ABSTRACT

Introduction: Since the introduction of the CBME curriculum, the total number of didactic lectures has decreased, and small-group teaching methods have been introduced, unlike the previous curriculum which relied mainly on didactic lectures. It is important to know the effectiveness of small group teaching among the second-year medical undergraduates compared to didactic lectures in learning Pharmacology. Hence, this study has been taken up to know the effectiveness of small group teaching method compared to lecture class and also to test the long-term retention of knowledge.

Aim of the study: To compare the effectiveness of small group teaching and didactic lectures in teaching Pharmacology

Materials and methods: A total of 150 students were randomly divided into two groups of 75 each. A pre-test in the form of MCQ was done in both the groups. For group 1, lecture class was done. Group 2 was further divided into small groups of 15 students each and the same topic was taught by problem-based learning. A Post test in the form of MCQ was done in both the groups. Test scores were compared in both the groups by using Students 't' test. After 2 weeks, one more MCQ test was done to test the long-term retention of the knowledge

Results: Study results shows that there is an improvement in Post test scores compared to pre test scores in both the groups. There is no statistically significant difference between the Post test scores and long-term retention scores between the groups.

Conclusion: Study results showed no significant difference between lecture class and small group teaching methods for the particular topic. However, there is a need to conduct more studies with large sample size.

Keywords: Didactic lectures, small group teaching, long term retention

INTRODUCTION

Since the introduction of the CBME curriculum, the total number of didactic lectures has decreased, and small-group

teaching methods have been introduced, unlike the previous curriculum which relied mainly on didactic lectures.

Didactic lecturing is one of the oldest, most widely used, and foundational teaching methods in medical education. It is particularly effective for presenting material to large groups, helping students acquire information and grasp key concepts.¹ Lectures are commonly used because they can spark interest, convey essential knowledge, and clarify complex ideas efficiently.¹ However, the limited interaction between students and instructors during traditional lectures reduces opportunities for immediate doubt-clearing.² They are also less effective for teaching practical skills or fostering changes in attitude.³ These limitations can be addressed by incorporating active learning techniques into medical teaching. Numerous studies indicate that when students engage actively in the learning process, they achieve better understanding, demonstrate deeper analytical thinking, and improve their ability to encode, store, and retrieve information compared with passive lecture-based learning.⁴

Small group teaching (SGT) approaches such as small group discussions (SGDs), problem-based learning (PBL), role-plays, tutorials, and case-based activities are increasingly being adopted in medical schools to encourage active student participation.⁵ These methods have gained prominence with the introduction of the CBME curriculum. SGT strategies help strengthen students' learning abilities while allowing ample opportunities for direct interaction with faculty members.⁶ As student-centered techniques, they foster communication, promote collaboration among peers and teachers, and encourage shared responsibility in learning. Participation in SGT also helps students develop leadership, teamwork, organizational skills, prioritization, problem-solving abilities, and time-management.⁷ Among these approaches, small group discussions have become particularly common in medical education. An SGD typically involves 8–12 students engaging in face-to-face conversation

guided by a facilitator.⁸ This format enhances understanding of clinical concepts, supports long-term retention, and allows students to express their ideas freely while building closer relationships with instructors—something not always possible in more formal teaching environments. SGDs create an effective setting for achieving high educational standards, and numerous studies show that they promote deeper comprehension, critical thinking, problem-solving skills, and improved student satisfaction.⁹

Second year Undergraduate medical students face slight difficulty in remembering Pharmacology subject as it is more volatile. Long term retention of the subject is a challenging aspect for second year students.

It is important to know the effectiveness of small group teaching among the second-year medical undergraduates compared to didactic lectures in learning Pharmacology. The primary objective of this study is to compare the effectiveness of lecture class and small group teaching learning methods among second year medical undergraduates. Secondary objective is to compare the long-term retention of the subject among the traditional lecture class and small group teaching methods

MATERIALS & METHODS

Study was conducted by Department of Pharmacology at Hassan Institute of Medical Sciences, Hassan, Karnataka.

Second year medical undergraduates were enrolled for the study after obtaining clearance from Institutional Ethics committee.

Students who were willing to participate by giving consent were enrolled in the study.

Students who were not willing or who were absent on that day were excluded.

By convenient sampling, students were divided into two groups with 74 students in each group. The study type was interventional and study design was randomized, interventional and open labelled study.

Randomization into two groups was done by using computer generated random table of numbers

Group 1: The topic was covered by didactic lecture class

Group 2: The topic was covered by problem-based learning method in small groups.

Pre-test was done by giving 10 Multiple choice questions each carrying 1 mark.

For group 1 (75 students), the topic was covered by lecture class (traditional didactic lecture).

Group 2 comprising 75 students was divided into small batches (5 batches of 15 students). The same topic covered for group 1 was taught by Problem based learning (PBL) teaching learning method.

At the end of intervention (lecture class for group 1 and Problem based learning small group teaching method for group 2) Post test was conducted by giving 10 multiple choice questions. One more assessment (10 multiple choice questions) was done in both the groups after 2 weeks to check the retention of knowledge.

STATISTICAL ANALYSIS

Statistical analysis was done for pre-test and post-test scores and also for the scores of test conducted after 2 weeks. Results were analysed.

Data was entered in excel sheet and exported to SPSS version 29.0. Continuous variables were reported as means with standard deviation. To compare the Mean Pre-test and Post test scores, paired t test was used and to compare the mean Post test scores between the groups, independent t test was used. P values were obtained by applying independent and paired t tests and statistically significant values was considered at <0.05 .

RESULT

A total of 148 second year medical students participated in the study with 74 students each in group 1 i.e. lecture class and group 2 i.e. small group teaching. Multiple choice questions were given for both the groups before and after the intervention. The test scores were compared within the groups and between the groups.

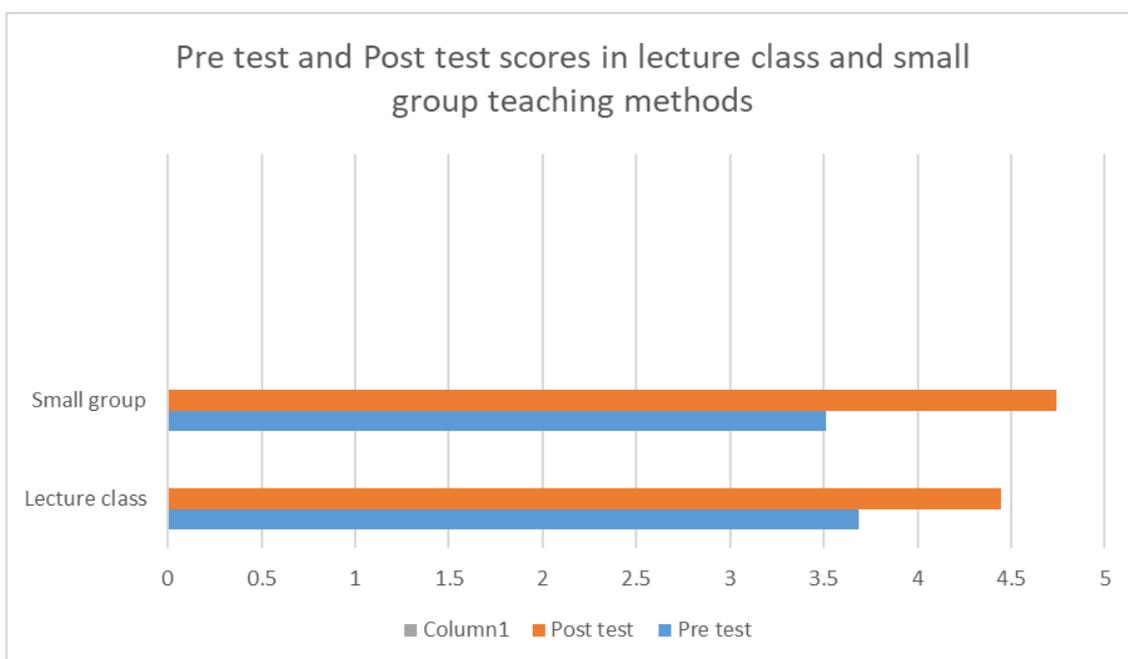


Figure 1 Comparison of Pre and Post test scores

Comparison of Pre and Post test scores in both the groups shows that there is a statistically significant improvement in Post

test scores in both lecture class and small group teaching methods. This implies that

there is a significant gain of knowledge after both the teaching learning methods.

Table 1: Comparison of Post test scores

Scores	N	Mean	Std. deviation	Std. Error Mean	Significance Two-sided P
Post test Lecture class	74	4.45	1.315	.153	0.178
Post test Small group	74	4.74	1.355	.158	0.178

Post test scores among lecture class and small group were compared. Mean Post test score was 4.74 in the small group whereas mean Post test score in the

lecture class group was 4.45. Though the Post test score was higher in the small group, there was no statistically significant difference between the groups.

Figure 2 compares the Post test score and long term retention scores in both the groups

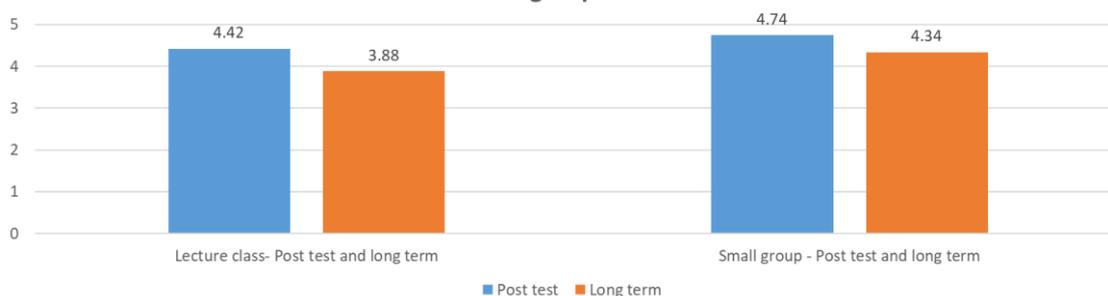


Figure 2 Comparison of the scores of Post test and long-term retention scores

Mean Post test score was 4.42 and mean long term retention score was 3.88 in lecture class method whereas mean Post test score was 4.74 and long-term retention score was 4.34 in small group teaching learning method.

Comparing the Post test scores and long-term retention scores in both the groups shows that there is no statistically significant difference between the test scores in both the groups.

Table 2: Comparison of long-term retention scores

Scores	N	Mean	Std. deviation	Std. Error Mean	Significance Two-sided P
Long term retention Lecture class	69	3.88	1.420	.171	.062
Long term retention Small group	74	4.34	1.464	.170	.062

The comparison of long-term retention scores between the groups shows that there is no statistically significant difference between the scores in both the groups. Study results shows that there is an improvement in Post test scores compared to pre test scores in both the groups. There is no statistically significant difference between the Post test scores and long-term retention scores in both the groups which implies that long term

retention of the knowledge is present even after 2 weeks of covering the topic. This study shows that small group discussion is equally effective compared to lecture class. This study suggests that doing a simple assessment after the class helps in long term retention of the knowledge

DISCUSSION

The results of our study shows that there is a significant improvement in the Post test

scores compared to Pre test scores in both lecture class group and small group learning group. There is no significant difference between Post test scores in both the groups which implies that both lecture class as well as teaching in small groups were equally effective for the particular topic covered. Assessment was also done by giving multiple choice questions after 2 weeks of covering the topic to check the long-term retention of the subject. There was no significant difference between the two groups in the long-term retention scores. Comparing the Post test scores and long-term retention also showed no significant difference. This means that the students were able to retain the subject knowledge even after 2 weeks of covering the topic. Conducting a simple test after the class might have helped to retain the subject for a longer time.

Savkar MK et al conducted a study to compare between didactic lectures and small group teaching methods in Pharmacology. Results showed that small group discussions enhanced learning Pharmacology along with lecture classes and small group discussions should be increased to enhance the learning skills of Pharmacology whereas our study showed no significant difference between the two groups.¹⁰

A study done by Bindu S et al comparing lecture classes and small group teaching in Pathology demonstrated that interactive sessions of small group teaching are effective than didactic lectures. Test results were poor when teaching was done by didactic lectures as compared to SGT. Our study results concluded that there was no significant difference between Lecture class and small group teaching methods.¹¹

Chilwant K S compared two teaching methods – structured interactive lectures and conventional lectures. At the end it was concluded that interactive lecture is a better teaching method. This study also shows that the teaching method of didactic lectures is having many lacunae and there is need to modify this teaching method. But our study

showed that both lecture class and small group teaching method were equally effective.¹²

CONCLUSION

The study results concluded that there is no significant difference between small group teaching and Lecture class for this particular topic. Long term retention of the knowledge was also found to be similar in both the groups.

However, there is a need to conduct more studies with large sample size.

Declaration by Authors

Ethical Approval: Approved

Acknowledgement: None

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

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- How to cite this article: Deepak P, Sahana GN, Jayashree V Nagaral. Effectiveness of didactic lecture versus small group teaching methods among second year medical undergraduates in pharmacology: a comparative study. *Int J Health Sci Res*. 2025; 15(12):116-121. DOI: <https://doi.org/10.52403/ijhsr.20251215>
