

Comparison between didactic lectures and small group discussions among second year medical undergraduates in pharmacology

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ABSTRACT

Background: The drawbacks associated with didactic lectures can be overcome by small group discussions (SGDs) which involve a limited number of participants, produce interaction, allow better understanding of concepts, and critical thinking. The objectives of our study were to assess the preferences of 2nd year medical undergraduates between the didactic lectures and the SGDs and the enhancement of knowledge by SGDs in Pharmacology.

Methods: This is a mixed (qualitative and quantitative), interventional study, conducted in 2nd MBBS students (n=130). After obtaining the informed consent and Institutional Ethics Committee clearance, the pre and post-tests (20 MCQs) before and after the didactic lectures were conducted. Second set of pre and post-tests with different and validated MCQs of the same topic were conducted before and after 3 SGDs. The preferences of the students between these 2 methods were also assessed using 10 parameters. The results were analysed by paired and unpaired 't' test and percentages.

Results: The means (Standard Deviation [SD]) of the scores obtained by the students before and after didactic lectures were 7.53 (2.27) and 9.02 (2.92), respectively and before and after SGDs were 8.2 (1.95) and 11.42 (2.74), respectively. When the means of post-tests of lectures and SGDs were compared using unpaired 't-test' the difference was extremely significant with the P value of <0.005. Students showed preferences for SGDs over lectures in all 10 parameters.

Conclusions: More SGDs should be incorporated in the subject of pharmacology, along with didactic lectures to enhance the active learning, communication skills and critical thinking among the students.

Keywords: Didactic lectures, Enhancement, Knowledge, Small group discussions, Pharmacology

INTRODUCTION

Pharmacology is a basic medical science. This subject encompasses the knowledge of the sources, physical and chemical properties, compounding, mechanisms of action, pharmacological effects, fate, excretion and clinical applications of drugs. This subject requires the understanding of concepts, retention of knowledge and application of pharmacological information in the prevention and treatment of diseases. Therefore, the teachers must teach pharmacology to medical students in away that helps them in the application of the pharmacological information in the practice of medicine.¹

Among the teaching methods employed in medical sciences, the commonest, oldest and integral method is didactic lecture. Lectures are frequently employed to

teach large group of students. They stimulate interest, provide knowledge and efficiently explain the concepts.² Due to minimal interaction with the faculty during lectures; there are less chances for clarification of doubts.³ Learning of skills and change in attitudes do not take place.⁴ These drawbacks could be overcome by employing the active learning strategies in the medical education. Many research studies have shown that the active involvement of students in the classroom enable them to learn better by promoting deeper levels of thinking, and facilitate encoding, storage, retrieval of the information than lectures.⁵ The small group teaching (SGT) methods, such as small group discussions (SGDs), problem based learning (PBL), role-play, tutorials and case studies are being incorporated in medical institutions to promote the active learning by the students.⁶ In our institution,

we are yet to incorporate small group discussions, and problem-based learning as a part of active learning strategies in Pharmacology.

SGT methods are student centered strategies; they enhance student-faculty and peer-peer interaction, improve communication skills, and provide opportunity to share the responsibility. Students tend to develop the skills of leadership, teamwork, organization, prioritization, problem solving, and time management by participating in SGT.⁷ Among the SGT methods, small group discussion is being increasingly employed in medical colleges. SGDs are the face-to-face discussions involving⁸⁻¹² students in each group under the guidance of a facilitator.⁸ These help students learn clinical aspects more efficiently and retain longer. Students can understand the meanings, express themselves and establish closer contact with the academic staff than is permitted by more formal methods.³ SGDs provide a unique environment to achieve high standards in medical education. According to many studies SGDs contribute for deeper understanding, critical thinking, problem solving skills, and better student satisfaction.⁹ Since SGDs were not incorporated as a method of teaching in our department so far, the present study was taken up as a pilot study to assess the knowledge enhancement by SGDs in comparison with lectures and to study the students' preferences among these two methods.

METHODS

This is a mixed (qualitative and quantitative) and interventional study. The study was conducted in the 2nd year medical undergraduates at Adichunchanagiri Institute of Medical Sciences, Bellur, Karnataka, India between January and April 2016.

The study was initiated after obtaining the Institutional Ethics Committee (IEC) clearance. The study methodology (Figure 1) was explained clearly to the students and the informed consent was obtained. The topic selected for assessing the knowledge enhancement was "Routes of drug administration". A pre-test was conducted before the lecture classes about the topic using 20 validated Multiple Choice Questions (MCQs). This was followed by 3 didactic lectures, each lasting for about 1-hour about the above mentioned topic. After an interval of 1 week of didactic lectures, a post-test was conducted using same MCQs as that of pre-test and the answers were analysed. After 1 week interval following the lectures, a pre-test using different set of questions was conducted before we began SGDs. For SGDs, 3 big groups consisting of 43 or 44 students in each group were made. Each group was subdivided further into 6 small groups consisting of 7 or 8 students. The students were informed 1 week before SGDs to prepare for the topic discussion. A teacher was allotted for facilitating the group discussions for 2 small groups. 3 Small Groups Discussions (SGDs) lasting for about 1 hour about the same topic were conducted for each of the small groups.

Pre-test and Post-tests with different set of validated MCQs were conducted before and after the SGDs and the answers were analysed. The feedback from the students on 10 parameters (Table 2) pertaining to didactic lectures and SGDs were also collected and analysed.

Statistical analysis

The results obtained after pre-test and post-test for didactic lectures and SGDs were analysed separately using Paired 't' test. The Mean (SD) of pre-test and post-test scores of didactic lectures and SGDs were compared with each other by unpaired 't' test. The feedback about the opinions for didactic lectures and SGDs were analysed by calculating percentages.

RESULTS

A total of 130 students participated in the study. The mean (SD) of the pre-test and post-scores of didactic lectures and SGDs are as shown in the Table 1.

Table 1: The comparison of mean (SD) of scores obtained by the students.

	Didactic lectures	SGDs
Pre-test	7.53 (2.27)	8.2 (1.95)
Post-test	9.02 (2.92)	11.42 (2.74)
P value	< 0.005 (Highly significant)	< 0.005 (Highly significant)

Table 2: The number of students showing the preferences for didactic lectures and SGDs.

	Didactic lectures	SGDs
Most comfortable method	64	66
Most active way of learning	24	106
Most understanding method	36	94
Most interest arousal method	33	97
Most relevant to the topic	77	52
Method which improves conceptual thinking	30	100
Method of opportunity to clear doubts	21	109
Method stimulating for further studies	30	100
Method of teachers interest towards you	56	74
Method which is well organized	66	64

The pre-test scores were compared with the post-test scores following the didactic lectures and SGDs the

difference was statistically highly significant with the P value <0.005 . When the comparison was done between the Mean (SD) of pre-test and post-test scores of didactic lectures and SGDs, a highly significant statistical difference of P value <0.005 was obtained. The preferences of the students between the didactic lectures and SGDs for 10 parameters of teaching are as shown in the Table 2.

The preferences of the students among the didactic lectures and SGDs for 10 parameters are shown in percentages in Figure 2.

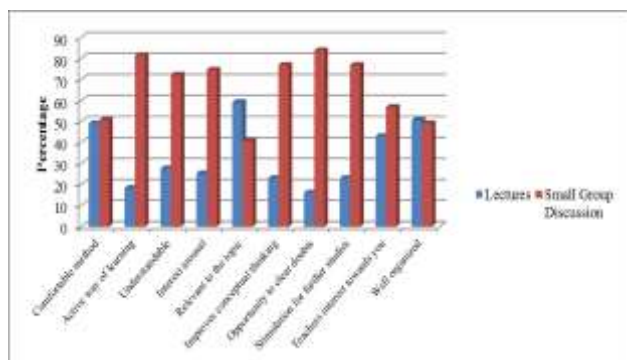


Figure 1: Preferences of students for didactic lectures and SGDs in percentages.

DISCUSSION

The results of the present study have shown that there is significant enhancement of knowledge among the students following the didactic lectures as well as SGDs. In comparison to didactic lectures SGDs showed highly significant improvement in knowledge in the students. This difference could be explained in a way that though lectures are efficient ways of delivering information, auditory learners learn better by the lectures than the students with other learning styles. Whereas, other students will need other opportunities to apply and reflect on the content for deep learning to occur.¹⁰ However, a properly planned, well organized lecture with the engagement of students, with relevant examples can be very effective.⁶

The enhancement of knowledge by SGDs could be due to many reasons as explained in many other research studies such as, they help in more active learning, increase the interest in the subject, motivate the students, foster reasoning and problem solving skills, and better retention.^{8,11} Students develop confidence in themselves to ask questions, raise doubts and express their views.¹² These group discussions also help to improve the communication skills, teamwork ability, organization and self-directed learning. SGDs facilitate adult learning.¹³ By small group discussions, students can explore the key skills, students can identify their learning styles.⁶ SGDs have shown positive effects on short and long-term knowledge acquisition.¹⁴

However, SGDs are not without disadvantages. Few weak participants hesitate or fear to express themselves; SGDs require proper planning and organization, more space and faculty than lectures. Too much of group discussions are also irrelevant, unprofitable, uninteresting and less cost-effective.^{15,16}

Research studies by various authors have shown that SGDs improved the knowledge at various levels significantly in comparison to didactic lectures in subjects such as physiology, microbiology, pathology, and dentistry and community medicine.^{12,17-19} Qamar et al. showed the better results following lectures than SGDs.⁸

In this study, we conducted SGDs following 3 didactic lectures. The knowledge obtained by the lectures might influence the scores of pre-test and post-test of SGDs to some extent when compared to that of lectures as the students had no idea at all about the topic during the pre-test of lectures.

CONCLUSION

SGDs in many studies have shown the enhancement of knowledge of topics in medical sciences. In our institution, there is a need for us to implement the SGDs in Pharmacology as a part of teaching especially for the drugs used for common health problems and difficult-to-understand topics in Pharmacology.

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