

Small group discussions as an effective teaching-learning methodology for learning the principles of family medicine among 2nd-year MBBS students

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ABSTRACT

Teaching methodology has a great impact on the learning outcomes in an undergraduate's education. **Objectives:** 1. To assess the effectiveness of small group discussions (SGD) over lecture in learning the principles of family medicine among 2nd-year MBBS students. 2. To assess the perception of students on SGD over lecture in learning principles of family medicine among 2nd-year MBBS students. **Materials and Methods:** This medical education, quasi-experimental study was conducted at a medical college in north Kerala. Study subjects were the 2nd-year MBBS students of this college. They participated after giving informed consent and were divided into two groups using serial roll number. The study was conducted for 2 months after getting ethical clearance. Study tools included PowerPoint presentation slides, literature regarding principles of family medicine, structured questionnaire, and question paper for posttest. Statistical analysis was done with an independent sample Z-test and Mann-Whitney test, using SPSS 20 software. **Results:** SGD show a definite advantage over lecture-based learning in improving the attention span of students, understanding the principles of family medicine, and recall. The scores for the overall learning experience was found to be significantly higher for SGD. Evaluating the effectiveness of training on the Kirkpatrick model showed that learners show better satisfaction and learning in small groups. **Conclusion:** Students strongly preferred SGD over lectures as the teaching-learning methodology for principles of family medicine. SGD is a more effective instructional tool in improving the attention span of students, understanding the principles of family medicine, and recall. The overall learning satisfaction was found to be significantly higher with SGD for learning the principles of family medicine.

Keywords: Innovative teaching-learning methods, lecture, small group discussion, student-centered

Introduction

Family medicine is a comparatively new medical specialty but it is probably the oldest medical discipline. Understanding the principles of family medicine, which characterize the fundamental values of this specialty, forms the basis of good family practice.

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As far as undergraduate education is concerned the impact of teaching makes a huge difference in the learning outcomes. While preparing a lesson plan, an important step is to choose an appropriate teaching method. There are many different teaching methodologies employed by medical colleges to teach the undergraduates. Lectures, seminars, symposiums, case-based learning, problem-based learning, small group discussions (SGD), bedside teaching, role plays, videos, etc., are some of the methodologies.

As a routine, for the past several decades, medical undergraduates have been taught basic health sciences and introductory

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clinical material in the conventional lecture format, which is a large group teaching methodology. Here a great amount of information is transferred to a large group of students, within a short period. However, this has some drawbacks. In a lecture-based class, students are just passive listeners. The main focus is on memorizing what is heard in the class rather than trying to understand that information and how to apply it in clinical practice.^[1] Moreover, lectures do not contribute much to challenge the mind of students or stimulate them as far as problem-solving is concerned, a skill that is important in their clinical practice.^[2] Even excellent lectures by great professionals cannot fully ensure student's performance.^[3]

Of late, we are witnessing a changing trend in the field of medical education. Nowadays the focus is more on student-centered methodologies that actively engage students in the learning process, rather than the traditional teacher-focused didactic teaching.^[4] Small-group discussion is a student-centered methodology, that allows students to actively involve and be partners in the teaching-learning process. Students interact with peers and instructors, discussing, and sharing ideas. They develop the ability to build consensus in a group. Weimer points out that it is through discussions that students learn communication skills as well as the ability to cooperate.^[5] Both these qualities are very important as far as family practice is concerned. Discussions and sharing of ideas, which happens during group discussions, help the students to gain a better perspective regarding the principles of family medicine. Teamwork is another skill needed for a successful family practice. Students get an opportunity to be familiar with teamwork and the role of a team leader, through SGD. They learn to listen, discuss constructively, to question, to think, and arrive at a consensus.

Owing to advances in the field of technology, it has become very easy for students to have access to data and information. However, just accumulating knowledge is not the objective of learning. Students should be able to apply what they have learned to the day to day problems and clinical situations they come across.^[6] SGD has the merit that they encourage independent thinking and problem-solving skills.

Being a new specialty family medicine education models are in the process of development. More research has to be done to find ways to advance the field of family medicine education. This study aims to find out whether SGD is better than lectures for learning principles of family medicine among 2nd-year MBBS (Bachelor of Medicine and Bachelor of Surgery) students.

Objectives

1. To assess the effectiveness of SGD over lecture in learning principles of family medicine among 2nd-year MBBS students.
2. To assess the perception of students on SGD over lecture in learning principles of family medicine among 2nd-year MBBS students.

Materials and Methods

This was a quasi-experimental study conducted in the department of family medicine at a medical college in north Kerala, India, from 15th June 2018 to 15th August 2018. Second-year medical students who were willing to participate in the study were included after getting informed consent. Students who were absent in any one educational session were excluded from the study.

Before the commencement of the study, approval was obtained from the institutional ethics committee. Approval from institutional ethics committee is obtained. Ref No: IEC/DMWIMS/July/2018-008 Date of approval : 05-07-2018. The 2nd-year MBBS batch comprising of 109 students were divided into Group A (55) and Group B (54) by using serial roll number.

Understanding the principles of family medicine, which forms the core of the family practice, is very important. Consequently, nine principles of family medicine were addressed: an open-ended commitment to patients; understanding the context of illness; using all visits for prevention of disease and promotion of health; addressing population at risk; forming a community-wide support network; living in the same community; patient care in the clinic, home, and hospital; subjective aspects of medicine; and resource management.^[7]

Reading material and references regarding principles of family medicine was given to Group A students the previous day and they were asked to come prepared for the discussion, with a pre-reading of the resources. SGD based on principles of family medicine was conducted in six sessions (in groups of 10–12). At the beginning of each session, the objectives were explained to the participants. A group leader and scribe was identified within the group. Each group was facilitated by a faculty. The facilitator introduced a case scenario based on the principles to be discussed that day and encouraged the group leader to take over the discussion.

Lecture on principles of family medicine was given to Group-B students in six sessions by the same instructor. Lecture classes were given in a large classroom using audio-visual equipment and PowerPoint presentation as teaching aids. At the beginning of each session, the objectives were explained to the students and the sessions were made interactive by asking questions, explaining real-life scenarios, and making conclusions.

Since the exclusion criteria were to exclude the absentees of any session, we had to exclude 18 students resulting in a total of 91 participants. Student feedback on the teaching-learning methodology was collected using a pre-validated questionnaire, which used the 5-point Likert scale, ranging from 1–5 (strongly disagree to strongly agree). The questionnaire helped to assess the student's perspective about the two teaching-learning methods. A posttest on the covered topics was conducted using a pre-validated question paper for both groups at the

same time, to assess their immediate/short-term understanding of the subject. The questions were set as short answer questions (SAQ) and multiple-choice questions (MCQ). The answer sheets of both group discussions and lecture groups were corrected by the same person. The crossover of groups was done for ethical reasons. The data were collated into Microsoft Excel. Statistical analysis was done using an independent sample Z-test and Mann-Whitney test, using SPSS-20 software.

Results

We had a total of 91 participants, $n_1 = 48$ in group discussions and $n_2 = 43$ in a lecture class.

All participants were students in the fourth semester of their MBBS course and 63 (69.2%) were female students. It was noted that in the small group discussion team, the mean posttest scores were 14.77 ± 3.915 and in the lecture group it was 13.67 ± 4.291 [Table 1].

The mean score of students who attended group discussions was higher, with smaller standard deviation, compared to those who attended lectures, though the findings are not statistically significant.

To understand student perception towards the two teaching-learning methodologies the seven variables used in the Likert scale were analyzed using the Mann-Whitney Wilcoxon U-test. Figure 1 depicts the mean rank scores of the two teaching-learning methodologies.

Figure 1 highlights, that small group discussion are superior to lecture format, in teaching principles of family medicine to 2nd-year medical students. This feedback also helped us to evaluate the effectiveness of the training on the Kirkpatrick model of training evaluation (Step 2) where the students appear to be satisfied with the training, resulting in increased knowledge on the principles of family medicine, with a better appreciation and learning in small groups.

It was seen that there was a significant increase in the scores for the following variables in group discussion as compared to conventional lecture - holding the attention span of students, understanding principles of family medicine, and remembering better what was learned ($P < 0.001$). More number of students in the small group discussion sessions opine that they agree/strongly agree with SGD to be a good teaching-learning method ($P < 0.001$). When considering aspects like generating interest in the topic and clearing doubts of the students, the two teaching-learning methodologies did not show any significant difference.

By combining the scores of the seven variables, the overall learning experience was computed [Table 2]. Students in the group discussion sessions showed higher median scores for

Table 1: Comparison of mean marks of written test

Group	Size of the sample (n)	Mean marks with Standard deviation	$P=0.197858$
Group discussion	48	14.77 (3.915)	1.2926
Lecture	43	13.67 (4.201)	1.2878

Table 2: Overall learning experience- Median score

Characteristic	Group Discussion	Lecture
Median	30.00	26.00
Std. Deviation	3.293	2.814

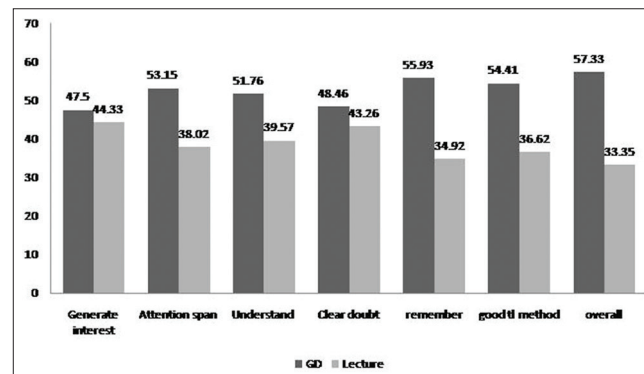


Figure 1: Mean ranks for group discussion and lecture

learning experience indicating better learning experience as compared to the lecture group.

The composite median score for the SGD group for the overall learning experience is $30+/3.29$ as compared to $26+/2.81$ of the lecture group. A larger number of students in the group discussion team feels that the overall teaching learning experience (by combining all the 7 variables) is better in the group discussion format.

Discussion

The objective of this study was to assess the effectiveness of SGD over lecture in learning principles of family medicine among 2nd-year MBBS students and to assess the satisfaction of these students on SGD over lecture in learning principles of family medicine. This study is relevant in this era where we see a changing trend from traditional teacher-focused teaching-learning methods to more student-centered methods, to improve the learning outcomes. Several previous medical education research work shows that when the students were actively participating in the learning process, they had greater satisfaction levels.^[8-11] In this study, we made a move to find out whether the short-term academic performance of the students improved by using a new teaching-learning methodology - SGD, compared to the traditional lecture format. The students were not given any choice over the specific method of teaching they would receive. The results of the study showed that the mean scores in the posttest for group discussion participants were found to be

higher compared to the lecture group. But this difference in the mean test scores was not found to be statistically significant. The instructional format of the sessions; SGD or lecture format, did not seem to have a direct influence on the knowledge acquired at the end of the sessions. These results are comparable to a study conducted by Fischer *et al.* among 3rd-year medical students, during their obstetrics and gynecology rotation. The students strongly preferred SGD over conventional lectures to learn about hypertension and diabetes in pregnancy. However, this preference did not lead to improved test scores in these subjects.^[2] In another study by Mosher *et al.*, it was observed that even though the students seemed to enjoy the interactive group discussions more, the test scores were similar for both groups of students, whether they were taught with a passive lecture or active discussions.^[12]

Recently, we have observed several research works that are being undertaken in the field of innovative teaching-learning methodologies. Bahar-Özvaris *et al.* found students in small-group teaching formats gaining more knowledge between pre and posttests than students in a control group.^[13] Ferreri and O'Connor reported small-group students' improvement as measured by grades at the end of the year.^[8] By contrast, Fischer *et al.* and Haidet *et al.* reported no improvement in students' test scores after a change in the delivery format of the class.^[2,14]

A quantitative study was conducted by Arias *et al.* to compare the outcome of using different teaching-learning formats on dental students. They did a comparison between two instructional formats- SGD and traditional lecture format. The observations from this study once again reinforced the fact that active participation by the students in the learning process, as was happening in SGD, was significantly related to better skill acquisition. However, it was observed that the format of the session did not seem to have a direct influence on the acquired knowledge, as was evidenced by no significant differences in the acquisition of knowledge between the two groups on the written test at the end of the rotation.^[15]

To understand student perception towards the two teaching-learning methodologies, feedback from students was collected using a pre-validated questionnaire on the instructional format, using a 5-point Likert scale, ranging from 1–5 (strongly disagree to strongly agree). The questionnaire helped to assess the student's perspective about the two teaching-learning methods. Seven variables were addressed on the Likert scale and the results were analyzed using the Mann-Whitney Wilcoxon U-test.

Both group discussion and lecture was found to be equally effective in generating interest in the topic and clearing the doubts of the students. But our study showed that the attention span of the students was better in the group discussion group compared to the lecture group. This is an advantage because it improves learning. In addition to this, it was seen that there was a significant increase in the following variables for group discussion sessions as compared to the conventional lecture team - understanding

principles of family medicine and remembering better what was learned ($P < 0.001$). Hill's comparison between lecturing and discussion showed that students' mental abilities and skills were higher in group discussions and that this approach was useful for remembering information.^[2]

More number of students in our small group discussion sessions opine that they agree/strongly agree with SGD to be a good teaching-learning method ($P < 0.001$). They enjoyed the active participation and teamwork and thanked the facilitators for the change in the instructional format. When looking at the overall findings of this study, we see that SGD shows a definite advantage over lecture-based learning, in improving the attention span of students, understanding principles of family medicine and remembering better. A strong argument in favor of group discussion in our study was that the scores for overall learning experience were found to be significantly higher for a group discussion group, indicating better learning experience as compared to the lecture group. These findings provide an insight into the role of different teaching-learning methods' in students' performance.

There are some limitations to the present study. This study was conducted in a group of students in a single medical college, and the duration of the study was limited. Due to time constraints, we could conduct only six sessions each of SGD and lectures and the focus was only on a selected area of family medicine.

Conclusion

To conclude, 2nd-year MBBS students learning principles of family medicine strongly preferred SGD over conventional lectures as the teaching-learning methodology. SGD is a more effective instructional tool in improving the attention span of students, understanding the principles of family medicine, and recall. The overall learning experience was found to be significantly higher with SGD in learning the principles of family medicine. This study also provides insight into the role of different teaching methods in students' performance. Evaluating the effectiveness of training on the Kirkpatrick model showed that learners show better satisfaction and learning in small groups.

Recommendations

SGD actively engages students in the learning process and this can be used in place of traditional lectures to teach principles of family medicine in medical colleges. Teaching methodology has a great impact on the learning outcome. This may be reflected in the immediate outcomes such as student satisfaction, improved test scores or in the intermediate and long-term outcomes such as applying principles of family medicine in clinical practice and be able to perform effectively as first contact doctors in the community thereby improving the healthcare system. Family medicine education models are just evolving, this being a new specialty in our country. Further research is needed to assess the

long-term educational outcomes of this innovative methodology and to try this out in other areas of the discipline of family medicine.

Ethical approval

Before the commencement of this study, ethical approval was obtained from the institutional ethics committee.

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Conflicts of interest

There are no conflicts of interest.

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