Original Article

Lectures or small group discussions: What do undergraduate medical students perceive and prefer

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[DOR: 20.1001.1.29807670.2023.15.48.5.1]
[DOI: 10.52547/edcj.15.48.38]

Article Info

Article history:
Received 18 Nov. 2022
Accepted 30 Dec. 2022
Published 16 Feb. 2023

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How to cite this article:
Ali Z, Khan R, Gulshad S, Mushtaq S, Waqas S, Farooq R. Lectures or small group discussions: What do undergraduate medical students perceive and prefer. J Med Edu Dev. 2023; 16(48): 38-43.

Abstract

Background & Objective: Physiology is the knowledge of normal functions of the body. Although different teaching methods are used to teach the subject, including didactic lectures, small group discussions, tutorials, etc., students' perception of these methods is important. The study assessed the perceptions of medical students about lectures and small group discussion (SGD) and to check the preference of high achievers about the two methods.

Materials & Methods: A cross-sectional survey was conducted at a medical college from April till July 2022. After approval from the Institutional review board, students of first- and second-year Bachelor of Medicine, and Bachelor of Surgery (MBBS) participated with consent. Data was collected with a structured questionnaire and described as frequency and percentages. To check the association between categorical variables chi-square test was applied.

Results: A total number of 268 students participated, including 148 females and 120 males. 65.3% of the students preferred SGDs over lectures. The Chi-square test revealed a significant association between high performance and SGDs regarding accountability in the session, communication skills, presentation skills, and analytical thinking, as well as problem-solving (p-value < 0.05). Overall, 75% of the high achievers preferred SGDs while 25% were in favor of lectures. There was a significant association between the high achievers and SGDs (p < 0.001).

Conclusion: Medical students preferred SGDs over lectures as SGDs improved their communication, analytical, and reasoning skills. SGDs are associated with high performance regarding communication skills, presentation skills, and analytical thinking, as well as problem-solving.

Keywords: Physiology, Perception, Preference, Medical students

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Introduction

Physiology is the basic science subject that covers the functional aspect of different systems of the body. Understanding the concepts of physiology, keeping the knowledge, and applying the information are all essential in understanding the pathogenesis of different diseases. The subject should be taught to the students in a way that enables them not just acquisition of knowledge but also to make them capable of application and analysis of this information in clinical practice (1 ,2). Different teaching methods have been introduced in medical education, the commonest and oldest being the didactic lectures. In lectures, knowledge is imparted to a large group of students. Besides providing knowledge, lectures can explain concepts and stimulate the interest of the students (3). The lecture can be used as an effective method, provided it is used as an interactive learning session involving a large group of students engaged by frequent

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questions. The effectiveness of a teaching method is related to the approximation of the achievement of its learning outcomes and goals (4). Effective teaching has been reported to span six key elements: the content of the subject, motivation of students, complacent atmosphere, well-organized subject, effectual communication, and concern for the student's learning (5). Although lecturing is one of the most used teaching techniques, the lack of interaction between students and faculty leaves a gap to clarifying by the students in medical education (9).

Many studies have provided evidence that active participation of the students in the classroom can promote deep thinking and help in encoding and retrieving knowledge (10). New teaching strategies involving small groups of students have been incorporated into medical education to promote and facilitate active learning, including problem & team-based learning, role play, tutorials, small group discuss facilitator, but also among the peers. It improves the communication skills of the students and provides them with an opportunity to take responsibility. The other benefits of SGD include development of the leadership skills, organization, problem-solving, and working in teams (12). SGDs are discussion sessions where 8-12 students participate under the supervision of a facilitator (13). The discussions are helpful in better understanding and longer retention of the information. The participants understand the topic well, get a chance to express their ideas, and develop close contact with the faculty (14). SGDs provide a friendly environment to attain higher standards in medical education. Studies have reported that SGDs have a role in developing the skills of the participants to solve problems, become lifelong learners, and evolve critical thinking (15, 16). The current study assessed perceptions and preferences of the first-year and second-year Bachelor of Medicine, Bachelor of Surgery (MBBS) students at a medical college about lectures and small group discussion and to check the association of these methods to students' performance in the subject of physiology.

Materials & Methods

Design and setting(s)

After approval from the institutional review committee, a cross-sectional survey was conducted in the department of physiology at a medical college for three months duration. The study was conducted after students had 12 SGD working sessions and sixty lectures.

Participants and sampling

The study participants were all the students registered in first and second-year MBBS classes who volunteered. A convenience sampling technique was used.

Tools/Instruments

A structured questionnaire made up of two sections was used. First section of the questionnaire collected background information of study participants like gender, pre-medical qualification, year of study, and residential status (day scholar or living in the hostel). The second part of the questionnaire was divided into four subscales and had 15 items that included closed-ended questions. The questions assessed four important sections regarding reaction (questions 1 & 2), behavior (questions 3-7), learning (questions 8-13), and feedback of the students (question 14 & 15) in small group discussions and lectures. Students' responses were quantitatively measured in relation to statements on the questionnaire using a five-point Likert scale ranging from, strongly disagree (1), disagree (2), neutral (3), agree (4), and strongly agree (5). After an extensive literature review, items of the questionnaire were developed followed by approval from a panel of six experts (physiologists and medical educators) to check content validity according to guidelines of the Association for Medical Education in Europe guide number 87 (AMEE) (17). Content Validity Index (CVI) was calculated for each item as I-CVI as well as the whole scale as S-CVI. The acceptable CVI value was 0.83 (18). The minimum and maximum values for I-CVI were 0.83 and 1, respectively. S-CVI had a value of 0.97. The minimum acceptable CVR for each item was 0.83 (19). The average CVR of the questionnaire was 0.95. A pilot study was done, and Cronbach's alpha test of reliability was used to check the internal consistency of the 15 items of the questionnaire (value 0.8). Total of three tests have been conducted at the time of data collection. Each test comprised both structured essay questions (SEQ) and multiple-choice questions (MCQ). Every student had to score fifty percent marks in both MCQs and SEQs to pass the test. The students who passed two out of three or three tests were high achievers, and those who failed two or more tests were taken as weak students.

Data collection methods

The questionnaire was distributed among the students of the entire class at the end of a lecture. All the students elaborated on the questions and were asked to answer the

whole questionnaire at once. It took about 15 minutes to complete the questionnaires. All the questions were written in simple language. Incomplete questionnaires were excluded.

Data analysis

Data was entered and analyzed using Statistical Package for Social Sciences (SPSS), version 20. Descriptive statistics were presented in terms of numbers, percentages, and mean scores. To check the association between categorical variables chi-square test was applied. The cut-off point for statistical significance was $p < 0.05$.

Results

Demographic information of the study participants is provided in Table 1. The distribution of the percentage of the students was calculated for both SGD and didactic lectures for each question, as shown in Figures 1 and 2 for first-year and second-year MBBS, respectively.

Table 1. Demographic information of the participants

Class	First Year MBBS N=138		Second Year MBBS N=130	
Age (Years) Median (IQR)	19 (17-21)		20 (19-22)	
Gender	Female 81	Male 57	Female 67	Male 63
Pre-medical qualification	F Sc 128	A levels 10	F Sc 115	A levels 15
Residential status	Hostelite 78	Day Scholar 60	Hostelite 54	Day Scholar 76
Academic Status	High achievers 125	Weak 13	High achievers 91	Weak 39

N = sample size, the data is presented as frequencies, IQR: inter quartile range.

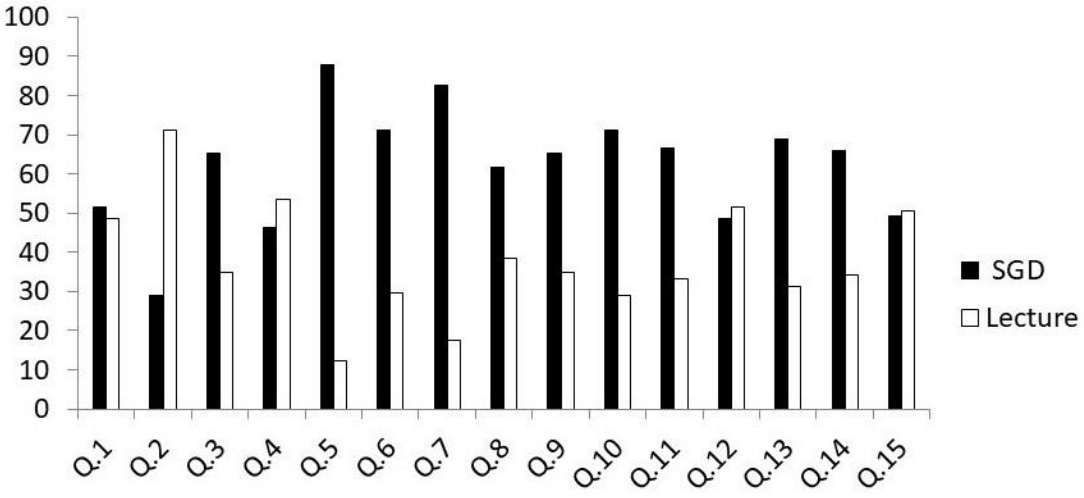

Figure 1. Preferences of students of First Year MBBS for SGD and Lectures in percentage

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[DOI: 10.52547/edcj.15.48.38]

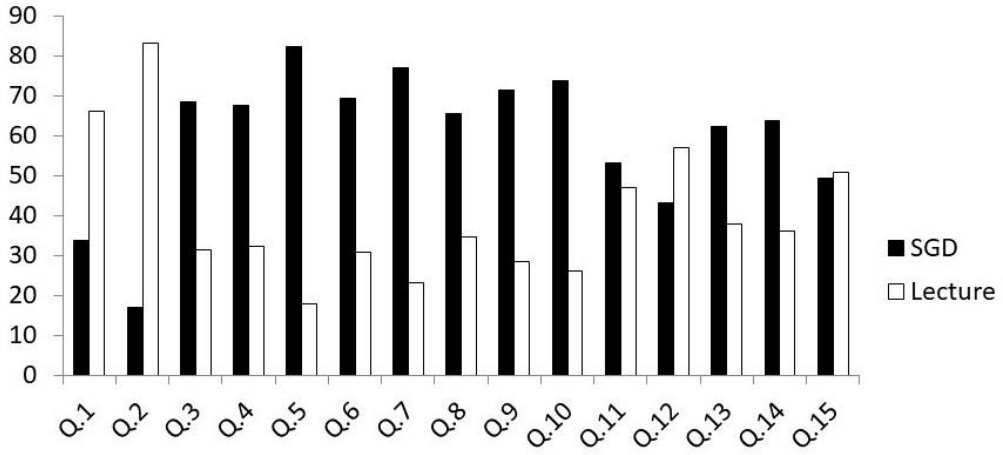

Figure 2. Preferences of students of 2nd Year MBBS for SGD and Lectures in percentage

Responses were calculated for the high achievers and weak students for the four sections, i.e., reaction, behavior, learning, and feedback (Table 2). As far as the reaction was concerned, both the high achievers and weak students felt predominantly comfortable in lectures. Regarding learning and behavior, both groups agreed SGDs were more useful in learning the topic and in developing different components of behavior like communication, analytical and reasoning skills. Regarding the feedback, high achievers preferred both teaching methods with a higher thinking, thinking and problem-solving (p-value < 0.05). Overall, 75% of the high achievers preferred SGDs while 25% were in favor of lectures. There was a significant association between the high achievers and SGDs at a level of p < 0.001 as analyzed by the chi-square test (Table 3).

Table 2. Responses of high achievers and weak students for reaction, behavior, learning and feedback

Academic Status	High achievers (%)			Weak students (%)		
	SGDs	Lectures	Both	SGDs	Lectures	Both
Reaction	19.44	43.06	37.50	8.51	74.47	17.02
Behavior	81.94	15.28	2.78	70.21	25.53	4.26
Learning	57.87	13.43	28.70	40.43	29.79	29.79
Feedback	37.04	16.20	46.76	29.79	42.55	27.66

Table 3. Association of academic status with teaching method

	SGDs N (%)	Lectures N (%)	P value	OR (CI)
High achievers	162 (75)	64(25)	<0.001*	9.00 (4.47-18.10)
Weak students	13 (25)	39 (75)		

A Chi square test was applied to calculate "P" value, Odds ratio (OR) and confidence interval (CI). N: sample size presented as frequencies and percentage. "P" value < 0.05 is statistically significant.

Discussion

Learning in medical education spans knowledge, skill, and attitude, and to cover all these aspects, teaching methodologies have evolved enormously with a grand transformation from teacher-centered to student-centered teaching. Lectures, tutorials, problem-based learning, and SGDs are the various methods used to cover preclinical subjects. It is important to note that most of these techniques are student-centered under the SPICES model recommended by Harden et al (20). It is very important that all these methods should be evaluated for their effectiveness and the preference of students by continuous and friendly communication with the students. Various studies have been conducted to check different methods and compare their effectiveness, but the results are equivocal. The current study checked the perception of students and their preference for lectures and SGDs and interestingly, both methods were

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appreciated by students as these covered different domains of learning. Lectures are the most common and economical teaching method that delivers knowledge to a large audience in limited resources. Participants of the present study felt comfortable in the environment and appreciated this teaching method to impart knowledge as we practice interactive lectures that allow the students to ask questions and help in meaningful learning in the lecture theater. The results are supported by the previous study by Basanta and colleagues (21). Using multimedia, animations, and different educational media changes this traditional technique, generating interest and encouraging students to establish their understanding of unfamiliar concepts delivered in lectures (22).

Learning approaches and styles vary across medical students, possibly because of their preferences and the conditions in which they learn. The deep approach to learning is the most appreciated and successful when compared to the two other basic approaches, i.e., surface and strategic approach. Here, the students are moved and stimulated by their interests. Although knowledge can be imparted in lectures, when it comes to developing and polishing analytical thinking and problem-solving skills, small-group strategies are far better than didactic lectures (23). Similar resulted from the present study, where both the high achievers and weak students agreed SGDs were more useful in learning the topic and in developing different components of behavior like communication, analytical, and reasoning skills. A significant association was found between high performance and SGDs regarding accountability in the session, communication skills, presentation skills, and analytical thinking, as well as problem-solving. The results are supported by the previous studies (24, 25). The focus of medical education in recent years has been the concept of producing a "seven-star doctor" and a basic and important quality of a seven-star doctor is to be a lifelong learner. SGDs enable medical students to be inquisitive and keep the attained knowledge for long time periods so that it can be retrieved at later stages while dealing with relevant clinical scenarios (25). Teamwork is the key to success when it comes to solving a medical problem. Medical students must learn to communicate with their peers and with faculty to improve the communication skills that enable them later to work efficiently in teams to face the challenges of practical life. The participants in the present study perceived that SGDs improved their communication skills. Overall, the high achievers preferred SGDs over lectures with a significant association between the two at $p < 0.001$.

Conclusion

The current study suggests the incorporation of SGDs as a compulsory method of teaching during tutorials as part of the curriculum for the first two years of MBBS. SGDs are associated with high performance regarding accountability in the session, communication skills, presentation skills, and analytical thinking, as well as problem-solving. Changing traditional lectures with the use of modern technology to interactive lectures can make this economic tool of teaching an effective method to deliver knowledge effectively to a large audience. Incorporation of SGDs in the curriculum will be helpful to the students for deeper learning. Continuous evaluation of the teaching methods is fundamental to improving medical education.

Ethical consideration

This study was approved by the Ethical Review Committee of Lahore Medical & Dental College (Ref: No.LM&DC/8167-68). The questionnaire was distributed among the participants after taking verbal consent and sufficient time was given to each student to properly comprehend and fill it. The students were not required to disclose their names and were assured about the confidentiality of the information they provided in the questionnaire.

Acknowledgments

The authors thank all the participants for their involvement in this study.

Conflicts of interest

None

Source of funding

None

Data availability statement

Data is available on request from the corresponding author.

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[DOR: 20.1001.1.29807670.2023.15.48.5.1]

[DOI: 10.52547/edcj.15.48.38]

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