

Students' attitude toward didactic lecture versus problem-based learning in pharmacology: a questionnaire based study

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ABSTRACT

Background: The study was conducted to assess student attitude toward learning by didactic lectures versus problem-based learning (PBL).

Methods: A questionnaire containing 11 statements was distributed to the students. Statements ranged from general information on lectures and PBL to benefits of lecture-based learning (LBL) over PBL and vice versa. The students were asked to score each individual statement. The median total scores and median with inter-quartile range of individual statements was calculated. A comparison between questions that support LBL or PBL was performed. Student t-test was employed to compare the mean scores of different groups.

Results: Two hundred and seven students participated in this questionnaire study. The individual median total score was 42 when compared with possible total score of 55. There was a statistically significant ($p < 0.05$) difference between the total score (mean \pm standard deviation) for the questions related to LBL (3.2391 ± 0.05120) and those related to PBL (4.0640 ± 0.05688).

Conclusion: The score for PBL was significantly higher than LBL showing that students liked PBL more than LBL.

Keywords: Teaching, Lectures, Problem-based learning

INTRODUCTION

Pharmacology is the study of drugs. In India, pharmacology is taught in the 2nd year of medical sciences course which is of 4½ years duration. Teaching in pharmacology uses a combination of lectures and practicals.^{1,2}

Lecture is a traditional and didactic method of teaching. It is the most common method of teaching. It helps to provide

information to a large number of students at a time (new-lecturing), but student involvement is minimal.³

The Medical Council of India in its recommendation for Graduate Medical Education, in 1997 has suggested the introduction of problem-based learning (PBL) in teaching. In PBL, a clinical problem is given to students without prior reading or lecture. The student analyses the problem through self-directed efforts, solves the given problem by

applying his knowledge and skills followed later by group discussions. The student not only acquires knowledge but also develops skills. An adequate infrastructure, trained faculty, well-equipped library and internet facility is required for PBL. A tutor is present throughout the session to facilitate the learning process.⁴

It is against this complex background, a questionnaire was distributed to know students opinion about relevance of lecture-based learning (LBL) versus PBL sessions in understanding a particular topic in pharmacology, correlating it with clinical conditions and the effect of these methods on their performance in the examination.

Aim

To assess student attitude toward learning by didactic lectures versus PBL.

METHODS

The study was approved by Institutional Ethics Committee and carried out among the fifth semester medical students at Kasturba Medical College, Manipal. Students were informed that their participation in the study was voluntary. The students were asked to complete a questionnaire^{5,6} that consisted of two parts. The questionnaire used in the study is shown in the Appendix. The first part of the questionnaire collected demographic data and other relevant information about the student’s respondents. The gender, nationality, and medium of instruction at school of the respondents were noted. Information was collected on whether the respondent was a self-financing or a government-sponsored student. The second part of the questionnaire consisted of 11 statements regarding student’s attitude toward LBL versus PBL exercises in pharmacology. Questions numbered: 1, 2, 3- were based on general information on lectures and PBL; 4, 5, 6, 7 - were based on benefits of lecture over PBL; 8, 9, 10, 11 - were based on benefits of PBL over lecture. The students were asked to score each individual statement using the following key: 1 - strongly disagree with the statement, 2 - disagree, 3 - neutral, 4 - agree and 5 - strongly agree with the statement. The students were instructed to use whole numbers only. Intra-class correlation coefficient (ICC) was used to assess the reliability of questionnaire. The questionnaire was pretested in undergraduate students of pharmacology where ICC value obtained was 0.9307.

Statistical analysis

The median total scores and median with inter-quartile range of individual statements was calculated. A comparison between questions that support LBL (questions 4-7) and PBL (questions 8-11) was performed; Student’s t-test was employed to compare the mean scores of different groups.

RESULTS

Two hundred and seven students participated in this questionnaire study. Of these, 56% were males when compared to 44% females. A majority of the participants were of Indian origin constituting around 87%, followed by Malaysians (5.3%) and the rest were from Canada, USA, etc. A majority had English as the medium of instruction at school.

The individual median total score was 42 when compared to possible total score of 55. Table 1 shows the median scores and interquartile range of individual statements. The total score (mean±standard deviation) for the questions numbered 4-7 related to LBL was 3.2391±0.05120, and that of the questions numbered 8-11 related to PBL was 4.0640±0.05688. This difference was found to be statistically significant (p<0.05).

DISCUSSION

Pharmacology is one of the core subjects in the medical curriculum. There have been great advances in the field of pharmacology over the past years. With the knowledge explosion, focus is currently on innovative methods of

Table 1: Median scores for individual statements.

Statement number	Median (inter-quartile range)
Lecture is essential before PBL for understanding particular topic	4 (4.5)
Number of lectures and PBL in the current curriculum is appropriate	3 (2.4)
Number of PBL should be increased more than the lecture classes	3 (2.4)
Lectures are more informative than PBL for particular topic	3 (2.4)
Lectures are more useful than PBL in solving MCQs	4 (3.4)
Lectures are more useful than PBL in writing essay questions	4 (3.4)
Lectures are more helpful than PBL in stimulating further reading of text books	2 (3.4)
PBL exercises make subject more understandable than lectures	4 (3.5)
Retaining ability is more in PBL exercises compared to lectures	4 (4.5)
Compared to lecture, PBL is more helpful in choosing rational drugs for prescription	4 (4.5)
PBL exercises are more useful than lectures in future clinical practice	4 (4.5)

PBL: Problem-based learning, MCQs: Multiple choice questions

teaching and learning in pharmacology such as PBL, problem solving, computer assisted learning, and integrated teaching session. The aim is to enable students to integrate their knowledge of pharmacology with clinical scenarios which will improve prescribing skills and help in better management of patients.⁷

In this study, a questionnaire was distributed to assess student's attitude toward LBL and PBL in pharmacology. The score for PBL was significantly higher than LBL showing that students liked PBL more than LBL. They agreed that PBL stimulated their interest, improved retention of knowledge and helped them in selecting drugs rationally. PBL involves clinical cases, which stimulates interest in the students. It helps students to apply their knowledge and understand its relevance to a clinical scenario, thus integrating basic with clinical science.⁸ Since PBL involves self-learning, followed by group discussion it instills a sense of responsibility, improves communication skills, facilitates teamwork and retention of knowledge as well.

Students were of the opinion that lectures do not stimulate further reading of textbooks when compared to PBL. Lectures have been considered to be a passive form of learning as they are teacher-centered and involve less of student's participation with not much focus on clinical application that could result in its failure to stimulate student's interest in a topic.

In our study, students felt that lectures were more useful than PBL in solving multiple choice questions (MCQs) and essays questions. This is possible as most of the MCQs in examinations is not based on clinical case, but related to knowledge acquired following LBL.³

However, the students were undecided on the issue pertaining to an increase in the number of PBL exercises or decreasing the number of lecture classes. The participants were not sure about the need to have lectures prior to PBL for understanding a particular topic.

The goal of medical curricula is to ensure that student's will be able to provide healthcare effectively.⁹ It is important for the faculty to identify the essential part from the vast information available and also the methods for its effective delivery. Though lectures are considered to be a passive form of learning, yet if well-organized it can serve as an

effective teaching tool for complex issues.⁷ Intense efforts are being made to implement PBL extensively in the medical curricula. It is seen as a method to acquire knowledge, skills, and attitude. To implement PBL, sufficient number of trained staff and adequate time is required. In some medical schools, education is implemented entirely through PBL, whereas in others it is combined with lectures and other methods of teaching-learning depending on the structure of the curriculum. Finally, whichever method is selected for teaching pharmacology, it should be student centered and integrate theoretical knowledge with practical skills.

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APPENDIX

Student's attitude toward didactic lecture versus problem based learning in pharmacology: a questionnaire based study

Participation depends on your willingness. No personal information should be written on the paper (name, registration number). Please answer legibly and write the appropriate no in boxes wherever required.

Sex: M/F

Nationality:

Medium of instruction at school: English/Vernacular

For the following statements score using the following key:

1 - strongly disagrees with the statement, 2 - disagree, 3 - neutral, 4 - agree, 5 - strongly agree

Question number: 1, 2, 3 - general information for lecture and PBL; 4, 5, 6, 7 - comparison of lecture with problem-based learning (PBL); 8, 9, 10, 11 - comparison of PBL with lecture.

1. Lecture is essential before PBL for understanding particular topic.
2. Number of lectures and PBL in the current curriculum is appropriate
3. Number of PBL should be increased more than the lecture classes.
4. Lectures are more informative than PBL for particular topic.
5. Lectures are more useful than PBL in solving multiple choice questions (MCQs)
6. Lectures are more useful than PBL in writing essay questions.
7. Lecture is more helpful than PBL in stimulating further reading of text books.
8. PBL exercises make subject more understandable than lectures.
9. Retaining ability is more in PBL exercises compared to lectures.
10. Compared to lectures PBL are more helpful in choosing rational drugs for prescription.
11. PBL exercises are more useful than lectures in future clinical practice.