



EVALUATION OF EXISTING TEACHING METHODS USED FOR LECTURE CLASSES IN PHARMACOLOGY

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ABSTRACT

To evaluate the existing teaching methods in pharmacology viz. classes using overhead projector and transparencies, classes using chalkboard, and classes utilizing PowerPoint presentations. A questionnaire was designed and provided to second year medical students at a medical college. They were asked to fill the questionnaire and to evaluate different teaching methods used in pharmacology and also they were free to make suggestions and write their own opinion. The results were compared to find out the best method for understanding the subject according to students' opinion. As per the subjective assessment of the teaching methods, students preferred computer and PowerPoint presentations the most. Many students also suggested use of chalkboard for explaining the topic & use of PowerPoint presentations for explaining diagrams & flowcharts. According to students' opinion, the best method for understanding and retaining the subject is PowerPoint presentations.

KEYWORDS : *Medical education, lecture, pharmacology, PowerPoint*



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INTRODUCTION

Medical education enables students to gain knowledge and apply it in therapeutics. The methodology of teaching a topic will influence the students in the comprehension of the subject and in the management of clinical conditions. There are various challenges faced by the teachers like differences in learners, differences in their perception and interpretation, variation in the content taught and differences across learning settings.¹ Pharmacology, like any other branch of medical science is ever-changing and challenging branch where lots of drugs are been poured in our armamentarium everyday changing the strategies for a given clinical condition. Undergraduate training in pharmacology has been developing with the use of new methods of teaching including use of audiovisual aids, group discussion, role plays, clinical pharmacology studies, and computer assisted learning.² To make the lectures of pharmacology more interesting and understanding, one has to review the teaching program at regular intervals. It is agreed that the modifications in methodologies of providing basic knowledge about drugs and drug therapies is need of the hour.^{3, 4} Moreover, inclusion of clinical oriented teaching or problem based learning is gaining popularity amongst the teachers and students of pharmacology. An enhanced education of clinical pharmacology & therapeutics is necessary to ensure an effective and safe drug therapy.⁵ How one should best acquire and imbibe biomedical information has led to carry out instructional and evaluative studies that best enhance students' learning.¹ Many eminent pharmacologists in India are trying their level best to improve teaching and make it more interesting, understanding and retaining. The best way to assess and improve the teaching methodology is through the students' feedback. The most expert teachers emerge from years of experience with a variety of teaching methods.^{1,3} Even learning by teachers is and should be a continuous

process. To date, the most common methods used for teaching pharmacology in the lecture classes include lectures using overhead projector (OHP) and transparencies, PowerPoint presentations, and traditional 'chalk and talk' method.⁴ Various studies have been conducted to know the best method from these available teaching methods and some of these studies have even ended inconclusively. To mention, some studies like Garg et al have observed that there should be an inclusion of audio-visual aids and group discussions in the teaching³ while Dudley et al stated that the method of lecture delivery has no significant impact on learning outcomes.⁶ Seth et al have concluded that traditional chalkboard and PowerPoint teaching was far better than OHP & transparencies in improving students' performance.⁴ On other hand, other studies have recommended need of clinical orientation to the pharmacology teaching and case based learning at the undergraduate level.^{7, 8} So, in a view to improvise & modify our teaching methodology, we conducted this study to evaluate the effectiveness of currently used teaching methods in pharmacology lecture classes for the undergraduates.

OBJECTIVES

1. To evaluate different teaching methods used for lecture classes in pharmacology.
2. To find out the best method for understanding and retaining the subject according to students' point of view.

MATERIALS AND METHODS

A questionnaire (annexure) was designed and provided to second year medical students at a Medical College. Fifty four students participated in the study. They were supposed to fill the questionnaire and evaluate different teaching methods utilized in pharmacology for delivering lecture classes. Three classes on different pharmacology topics were conducted using

chalkboard, OHP, and PowerPoint presentations respectively. Students were asked to evaluate each of the following parameters (out of maximum mark of five).

1. Whether the lecture was well organized.
2. Whether the lecture was well understandable.
3. Clarity of board work and/or visual aids.
4. Whether the lecture stimulated my interest
5. Whether the lecture advanced my knowledge
6. Whether the lecture was clearly audible

The assessment was done by totaling the above six items out of maximum mark of thirty. The average of the marks in each three lecture delivery methods was taken to find the final assessment score. Also students were free to make suggestions and write their own opinion. The results were compared to find out the best method for understanding and retaining the subject according to the students' opinion.

STATISTICAL ANALYSIS

The data was analyzed by using one way ANOVA & post ANOVA pair-wise comparison was done by applying Tukey HSD test

RESULTS

Fifty four students participated in the study. The assessment of marks was done according to questionnaire filled by students (Table 1) and

(Figure 1). The average scores given by the students to lectures using OHP were 22.7219, using blackboard were 23.6480 and using PowerPoint were 27.9627 out of maximum score of 30 (Figure 2). There was statistically significant difference between average scores of all the three teaching methods according to one way ANOVA test. Tukey HSD test for group wise comparison stated that there was statistically significant difference between OHP compared to PowerPoint ($P < 0.01$) and chalk & talk compared to PowerPoint ($P < 0.01$). Whereas, there was no statistical significant difference between OHP compared to chalk & talk. Therefore, it can be said that students preferred lectures utilizing PowerPoint presentations as it was rated with the highest average score.

Most of the students commented (in comments & suggestions) that the effectiveness of any lecture depends upon the teacher, whatever may be the method used. According to 90% students' most effective method was combination of traditional 'chalk and talk' and PowerPoint presentations whenever necessary e.g. for explaining diagrams, animations for explanation, charts and / or drug classifications. Majority of students suggested incorporation of more interactive sessions, case study, small group discussions in regular teaching. Students also recommended introduction of training of clinical pharmacology and problem based learning.

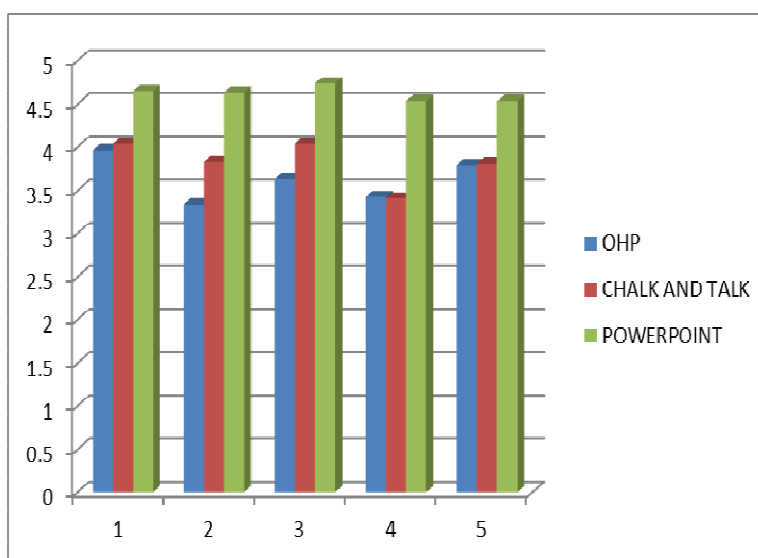
Table 1
Evaluation of teaching methods used for lecture classes

PARAMETER (MARKS)	OHP	CHALK AND TALK	POWERPOINT
1. The lecture was well organized (5)	3.9629	4.0370	4.6481
2. The lecture was well understandable (5)	3.3333	3.8333	4.6296
3. The board work and /or audiovisual aids were clear (5)	3.6296	4.0370	4.7407
4. The lecture stimulated my interest (5)	3.4259	3.4074	4.5370
5. The lecture advanced my knowledge (5)	3.7962	3.8148	4.5370
6. The lecture was audible (5)	4.5740	4.5185	4.8703
Total (30)	22.7219	23.6480	27.9627

Annexure

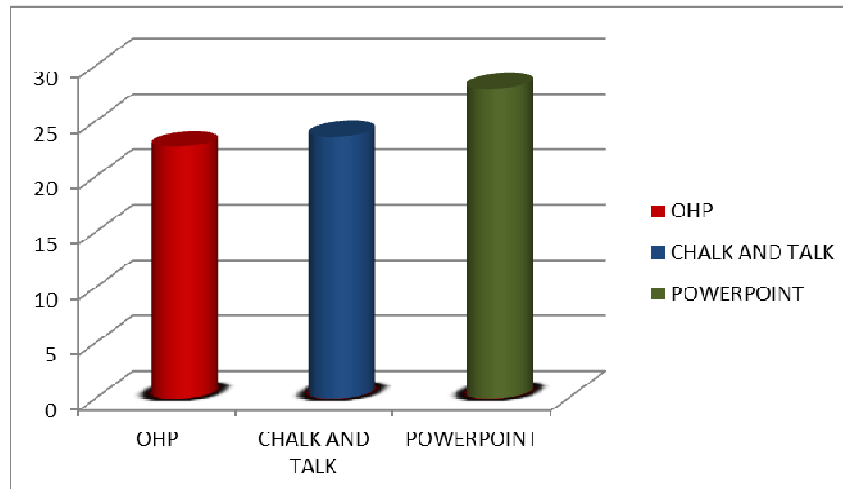
Sl. No.	Parameter	Marks				
1.	The lecture was well organized	1	2	3	4	5
2.	The lecture was well understandable	1	2	3	4	5
3.	The board work and/or visual aids were clear	1	2	3	4	5
4.	The lecture stimulated my interest	1	2	3	4	5
5.	The lecture advanced my knowledge	1	2	3	4	5
6.	The lecture was audible	1	2	3	4	5

Figure 1
Assessment by the students for each parameter for three different lecture classes.



1. The lecture was well organized
2. The lecture was well understandable
3. The board work and/or visual aids were clear
4. The lecture stimulated my interest
5. The lecture advanced my knowledge
6. The lecture was audible

Figure 2
Average scores for three different lecture delivery methods



DISCUSSION

The present study was undertaken to evaluate different existing teaching methods in pharmacology including overhead projector, PowerPoint presentations and traditional blackboard method and to find out the best method amongst them. As far as superiority of particular method is concerned, students preferred PowerPoint than blackboard and blackboard than OHP. This finding is in accordance with previous study conducted by Vikas Seth et al⁴ where majority of students preferred PowerPoint presentations. Although earlier studies have inferred that traditional chalk and talk method is superior method than other two methods, a study has pointed out that in PowerPoint presentations the ability to integrate the text and the pictures and images is a great advantage and improves the educative value of the subject.⁹ It is also suggested that although PowerPoint has some advantages, it reduces the interactive discussion between teacher and students.³ However, this method avoided the issue of poor handwriting and dirty blackboard. According to J. Thirunavukkarasu et al, interactive lecture classes have more role in gaining knowledge than tutorials and small

group discussions¹⁰ which suggests that inclusion of interactive classes in teaching the subject is necessary. In the present study, students gave lot of suggestions and recommendations like inclusion of interactive lecture classes, training of clinical pharmacology and case based learning. These findings are in accordance with previous studies.^{2,3,7,8,9} So, frequent feedbacks from the students will definitely help teachers to modify the curriculum and improvise themselves in teaching.

CONCLUSION

According to subjective analysis of students the best method for teaching is PowerPoint presentation. Also maximum number of students in their comments & suggestion recommended combination of blackboard and PowerPoint presentations whenever necessary. Students' comments and suggestions also pointed out permutations and combinations of the teaching methods and that the effectiveness of any method finally depends on the orator.

CONFLICT OF INTEREST

Conflict of interest declared none.

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