

## **Attitude of medical students towards the use of audio visual aids during didactic lectures in Pharmacology in Gandhi Medical College, Bhopal, India**

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### **ABSTRACT**

**Background:** Students favthisteaching methods employing combination of audio visual aids and blackboard teaching over didactic lectures not using these aids. Different methods of lecture are-blackboard teaching, power point presentations (PPT) and mix of aids. This study was primarily done to know the students' attitude and preferences regarding the lectures using PowerPoint (PPT) presentations and the traditional 'black-board teaching' method with an aim to improve the quality of didactic lectures in pharmacology by their appropriate use in further teaching – learning process, with an aim to improve their use in didactic lectures.

**Methods:** A questionnaire-based observational study (annexure-1) observational study was conducted among all the medical students of 4th semester MBBS attending theory classes in the department of Pharmacology in Gandhi Medical College, Bhopal.

**Results:** In this study, as a whole Majority 68 % (42 students) of students preferred mix of aids as teaching method over blackboard and power point. Sixty two students participated in the study out of which 58% (36) were male and students 42% (26) were female. Students told that the lectures using mix of aids were well organized and the lecture contents were well informative. As far as matter of suggestions is concerned 46 (74.2 %) students gave suggestions to improve teaching methods. As compared to blackboard the lectures taken on PowerPoint were clearly visible and well audible to all the students of the classroom..

**Conclusions:** This study demonstrates that lectures delivered by using a mixture of audio visual aids are more appreciated by the students over blackboard teaching and power-point teaching individually. For further improving their lectures, if possible teachers should plan to implement feasible student suggestions by using a combination of audio visual aids.

**Keywords:** Audio visual aids, Blackboard teaching, Mix of aids, Power point

### **INTRODUCTION**

Like the culture and traditions of India, the system of education also has a rich history of its own. In the olden days, there was no formal education in India. A father passed on knowledge, primarily related to his occupation,

to his child. Though teaching in groups was common back then, students were also taught individually by their teachers based on their capabilities and aptitudes. However, Lectures have been the most common form of teaching and learning since introduction of formal education system.<sup>1</sup> It wouldn't be wrong to say that during

a lecture, both the visual and auditory senses are used to absorb information.<sup>2</sup>

Pharmacology, in the field of medical science, had always been an ever changing medical subject and requires continuous affords of varied teaching. In recent eras, pharmacology curriculum especially for the undergraduates has been drastically revolutionized with adoption of new methods of teaching, which includes computer assisted learning, use of audio visual aids, role plays, hands on practice over manikins and clinical pharmacology studies.

It is widely accepted that reviewing the teaching and evaluation methods by timely feedbacks from students and modification of methodologies accordingly is very important for the undergraduate medical teaching. Attempts have been made all over India to make the teaching of pharmacology more interesting and relevant.<sup>3</sup> The use of electronic media has now become a common practice in most of the medical colleges, at par with other colleges and universities.<sup>4</sup>

This study was primarily done to know the students' attitude and preferences regarding the lectures using PowerPoint (PPT) presentations and the traditional 'black-board teaching' method with an aim to improve the quality of didactic lectures in pharmacology by their appropriate use in further teaching-learning process.

## METHODS

After applying and obtaining approval from the Institutional Ethics Committee (IEC) of the college, a questionnaire-based (Annexure-1) observational study was conducted among all the medical students of 4th semester MBBS attending theory classes in the department of Pharmacology in Gandhi Medical College, Bhopal.

The students were first explained about the study, its aims and methodology. A duly signed informed consent was taken from the interested students about their willingness to participate in the study, following which they were asked to fill in the questionnaire about their assessment of the impact of the pharmacology lectures delivered by three different methods of lecture delivery, viz. Blackboard teaching, PowerPoint presentation (PPT) and mix of aids. The questionnaire included simple clear questions which were based on other studies.<sup>5</sup> For each of the lecture given by a different lecture delivery method, the students were asked to grade each of the following parameter out of a maximum mark of 5:

- How was the organization of lecture?
- Was the content of lecture well informative?
- Was the lecture properly audible?
- Was the visual content of lecture clear?
- Was it feasible to take notes in class?
- Did Diagrams and Flow charts (if any) help in better understanding of lecture?

- Did lecture help you understand the topic?
- Was lecture interesting enough for further reading?

Of all the students enrolled in college for 4<sup>th</sup> semester sixty two students gave their consent and successfully completed the study and their responses were analysed.

Questionnaire collected relevant information about the student respondents which included demographic as well as other information like the gender and nationality of the respondents. The information also included whether the student had studied in a government/private school and medium of instruction at the school, questionnaire also consisted of 7 statements regarding audio visual aids. The students were asked to answer legibly and to tick mark the appropriate answers wherever required. No personal identifying information was obtained.

The comparison of the preferences of visual aids with respect to gender, schooling and the medium of instruction in the schools was done by using the Chi-square test and rest of the questions were analysed using one way ANOVA test. P values <0.05 were considered to be statistically significant. The data was analysed by using the Statistical Package for Social Sciences (SPSS).

## RESULTS

Sixty two students participated in the study out of which 58% (36) were male and students 42% (26) were female. All 62 students (100%) were from India. Out of 62 students' maximum students were from Madhya Pradesh (M.P.) i.e. students 92% (60 students), 2 students each from Delhi and Rajasthan while 1 each from Maharashtra And Uttarakhand.

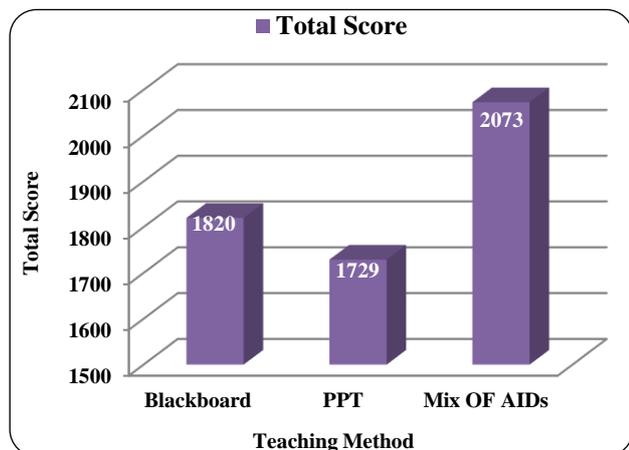
Of all the students, 61% (38) students studied in private schools and rest 39% (24) students went to the government school. Majority i.e. 68% (42) students reported medium of instruction at school as English, while rest 32% (20) reported as Hindi medium. The methodology which was predominantly used in the schools was chalk and board (95%).

In this study, as a whole, the respondents preferred a combination of audio visual aids during a didactic lecture (Table 1, Figure 1).

Students told that the lectures using mix of aids were well organized and the lecture contents were well informative when both blackboard as well as PowerPoint was used for as teaching methods. The perception of diagrams and flow charts was better with mix of aids and this method of teaching also stimulated their interest in further reading of topic taught in the lecture. Also, there was improved understanding of topic by the students when mix of aids were used as teaching method.

As compared to blackboard the lectures taken on PowerPoint were in par audible to all the students of the

classroom. however, it was comparatively more clearly visible.



**Figure 1: Visual aids preferred during didactic lectures.**

**Table 1: Students aspects for various aspects of learning.**

Parameters	Black board	PPT	Mix of AIDs
	Total Score	Total Score	Total Score
How was the organization of lecture?	218	213	263
Was the content of lecture well informative?	240	231	276
Was the lecture properly audible?	232	232	257
Was the visual content of lecture clear?	214	228	256
Was it feasible to take notes in class?	209	176	246
Did Diagrams and Flow charts (if any) help in better understanding of lecture?	238	252	274
Did lecture help you understand the topic?	244	206	256
Was lecture interesting enough for further reading?	225	191	245
Total score	1820	1729	2073

As far as the matter of taking notes in class is concerned students preferred mix of aids over blackboard and PowerPoint, if used as a teaching method alone.

For a full description of the individual statements, kindly refer to the questionnaire in the appendix (Annexure-1). Majority 66% (n=41) of the respondents were interested in taking notes during class, although 34%, (n=21) students preferred handouts, if available, over self-written notes.

Majority 68% (42 students) of students preferred mix of aids as teaching method over blackboard and power point. However, 19% students liked PowerPoint and remaining 13% preferred chalk and board over mix of aids for teaching purpose.

As far as schooling is concerned most of the students 61% (38 students) studied in private schools and only 39% (24 students) of students studied in government school.

Now, most of the students (61%) belonging to the private schools preferred mix of aids while 26% preferred PowerPoint and 13% preferred blackboard. While students belonging to government schools mostly preferred mix of aids (79%) while 10% student preferred PowerPoint and remaining 11% preferred chalk and board as teaching method.

Most of the students (87%) studied in the schools where medium of instruction at school was English and remaining (13%) belonged to Hindi medium schools. Now, 84% students belonging to Hindi medium schools preferred mix of aids as teaching method while 8% of students liked PowerPoint and remaining 8% preferred chalk and board. Similarly, 88% students of English medium schools preferred mix of aids while 8% students wanted PowerPoint as teaching media and 4% students liked chalk and board method.

As far as matter of suggestions is concerned 46 (74.2%) students gave suggestions to improve teaching methods.

For chalk and board method some of the following useful suggestions were given,

- Using different colour chalks.
- Making flow charts and diagrams if possible.
- Writing drug names and scientific terms on blackboard.
- Writing in bigger font preferably in capital letters.
- Adjust pace of teaching to facilitate taking of notes.
- Use of dust-free chalks.

For PowerPoint method some of the following useful suggestions were given,

- Shorter, compact, important notes should be displayed.
- More use of visual depiction of mechanisms by means of pictorials and videos.
- Audio of integrated video should be audible.
- Sharing of presentation post lecture.
- Integrated slides on clinical cases.
- Including pneumonic and MCQs in the end.
- Better quality overhead projectors.
- Timely breaks in teaching to facilitate taking of notes.
- Larger screen should be used.

## DISCUSSION

Pharmacology is a Para-clinical subject, taught to all the undergraduate students of MBBS divided in three semester namely 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup>, with each semester lasting for six months i.e. total study duration is for 18 months. Along with pharmacology students also study other Para-clinical subjects such as microbiology, pathology and forensic medicine & toxicology, integrated together for better understanding and learning. The broad goal of teaching pharmacology to undergraduate students is to inculcate in them a rational and scientific basis of therapeutics. During the study period of pharmacology, students learn from didactic theory lectures and problem based learning methods aided by various therapeutic problems and practical experiments.<sup>6</sup> Similar studies taken up in the past showed varied results. Anderson<sup>7</sup> noted that blackboards encourage note-taking and student-teacher interaction while a few other studies show preference of mix of aids as better modality for teaching.<sup>8,5</sup> Didactic lectures in this institution primarily involve use of various teaching methods such as blackboard, PowerPoint and mix of both aids. Timely evaluation about the various aspects of teaching and learning among the undergraduate medical students is routinely done with the help of questionnaires.<sup>9</sup>

In this study, questionnaires were distributed among students to study the students' opinion on the use of audio visual aids during didactic lectures in pharmacology.

Following eight questions were asked for each of the various teaching methods involving blackboard, PowerPoint and mix of aids.<sup>5</sup>

- How was the organization of lecture?
- Was the content of lecture well informative?
- Was the lecture properly audible?
- Was the visual content of lecture clear?
- Was it feasible to take notes in class?
- Did Diagrams and Flow charts (if any) help in better understanding of lecture?
- Did lecture help you understand the topic?
- Was lecture interesting enough for further reading?

In this study 62 students participated voluntarily, they were instructed to give marks to each question from 1 to 5 according to their preferences for all the three teaching methods with 1 being the lowest and 5 being the highest possible score. The evaluated feedback revealed that the respondents preferred a combination of audio visual aids during a didactic lecture. The students expressed the view that in such lectures, the elucidation of the concept was absolutely clear and that they were comparatively more inspired for further in-depth reading.

However, the major drawback of students receiving the teaching material passively via didactic lectures makes them feel bored and sleepy. To make the lectures interesting increased use of audio visual aids coupled up with diagrams and flow charts can be more effective.

In this study, students felt that the lectures of the teachers were well organised when they used both power point and blackboard as the teaching method as alone power point teaching method or alone chalk and board method made the lecture very boring and monotonous. The total score in mix of aids was 263 which was found significant ( $p < 0.0001$ ) as compared to the other two teaching methods.

In this study, students felt that the lectures of the teachers were well informative when they used both power point and blackboards i.e. mix of aids because some important diagrams and images could be displayed in presentation and further explained on blackboard. The total score in mix of aids was 276 which was found significant ( $p < 0.0001$ ) as compared to the other two teaching methods.

Participants in this study gave feedback that the lectures were well audible when PowerPoint alone was used as a teaching method because the teacher used the dais fitted with microphone all the time during the lecture. The total score was 257 which was found significant ( $p < 0.0001$ ) as compared to blackboard method, as in blackboard teaching the teacher was not able to use microphone fitted on dais all the time.

Participants in this study gave feedback that the lectures were well visible when power point alone as well as mix aids were used as a teaching method because of the proper lighting and clear fonts. In mix of aids the total score was 256 which was found significant ( $p < 0.0001$ ) as compared to blackboard method, because the content written on blackboard was not clearly visible due to poor lighting and improper cleaning of the blackboard and also sometimes the handwriting and font of the words by teacher is not well perceived by the students.

Participants in this study gave feedback that they were able to take notes in class more effectively when both power point and blackboard i.e. mix of aids were used as teaching method because students are able to match the pace of teacher when he or she is using the blackboard for writing and since power point is used only to display the images and show some animated videos related with the topic. In black board-based teaching, the students are active participants and are better able to cope with the teaching speed of the teacher. It motivates an interest in learning and helps in holding attention in the class.<sup>10</sup> Baxi et al. observed that an equal number of students preferred blackboard-based or multimedia-based lectures and insisted to consider the need of using multimedia modalities to present lectures to students<sup>10</sup> as found in this study however, in mix of aids the total score was 246 which was found significant ( $p < 0.0001$ ) as compared to the other two teaching methods.

In this study, again students felt that the diagrams and flow charts were better perceived in lecture when both power point and blackboard i.e. mix of aids were used as teaching method. In mix of aids the total score was 274 which was

found significant ( $p < 0.0001$ ) as compared to the other two teaching methods.

In this study, students felt that the lectures of the teachers were well understood when they used both power point and blackboard i.e. mix of aids because the animated videos and images shown during the lecture made the topic more interesting and easily understandable. In mix of aids the total score was 256 which was found significant ( $p < 0.0001$ ) as compared to the other two teaching methods.

Participants in this study gave feedback that the lectures stimulated their interest in further reading when teacher used both power point and blackboard as the teaching method, In mix of aids The total score was 245 which was found significant ( $p < 0.0001$ ) as compared to the other two teaching methods.

The issue of gender in medical education and practice gains new momentum with the rapid increase in the enrolment of girls in medical schools and gender could influence academic performance and research activity.<sup>11</sup> In this study, 36 students (58%) were male and 26 students (42%) were female.

## CONCLUSION

This study demonstrates that lectures delivered by using a mixture of audio visual aids are more appreciated by the students over blackboard teaching and power-point teaching individually. For further improving their lectures, if possible teachers should plan to implement feasible student suggestions by using a combination of audio visual aids.

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**ANNEXURE 1**

**Proforma Questionnaire**

This questionnaire is designed to help us understand your preferences regarding the various audio-visual's aids used in lecture classes. Participation depends on your willingness. No personal information should be written on the paper (name, roll number).

Please answer legibly and encircle the appropriate answers wherever required. Wherever answer is mix of aids please specify combination of aids.

Questions:

1. Country:
2. State:
3. Gender:
4. Medium of instruction at school:
5. Govt. school/ Private school:
6. Visual aids used in medical college:

- A. Black board                      B. Power point (PPT)                      C. Black board + Power point (PPT)
- .....

7. Which visual aid will you prefer for use during didactic lectures in medical college? Please give marks (1 to 5) according to following parameters for chalk and board method.

Parameters	Marks				
	1	2	3	4	5
How was the organization of lecture?					
Was the content of lecture well informative?					
Was the lecture properly audible?					
Was the visual content of lecture clear?					
Was it feasible to take notes in class?					
Did Diagrams and Flow charts (if any) helped in better understanding of lecture?					
Did lecture help you understand the topic?					
Was lecture interesting enough for further reading?					

8. Which visual aid will you prefer for use during didactic lectures in medical college? Please give marks (1 to 5) according to following parameters for Power point (PPT).

Parameters	Marks				
	1	2	3	4	5
How was the organization of lecture?					
Was the content of lecture well informative?					
Was the lecture properly audible?					
Was the visual content of lecture clear?					
Was it feasible to take notes in class?					
Did Diagrams and Flow charts (if any) helped in better understanding of lecture?					
Did lecture help you understand the topic?					
Was lecture interesting enough for further reading?					

9. Which visual aid will you prefer for use during didactic lectures in medical college? Please give marks (1 to 5) according to following parameters for mix of aids chalk and board + Power point (PPT).

Parameters	Marks				
	1	2	3	4	5
How was the organization of lecture?					
Was the content of lecture well informative?					
Was the lecture properly audible?					
Was the visual content of lecture clear?					
Was it feasible to take notes in class?					
Did Diagrams and Flow charts (if any) helped in better understanding of lecture?					
Did lecture help you understand the topic?					
Was lecture interesting enough for further reading?					

10. Do you prefer? A. Handouts B. Notes taken by you during the lectures

11. Mention THREE important ways in which you think the use of chalk and blackboard as a visual aid can be improved:

- 1
- 2
- 3

12. Mention THREE important ways in which you think the use of LCD projector as a visual aid can be improved:

- 1
- 2
- 3