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# ORIGINAL ARTICLE

## Students' attitudes towards the use of audio visual aids during didactic lectures in pharmacology

LALIT MOHAN[1], RAVI SHANKAR P[2], ASHWIN KAMATH[3] , MANISH MS[4], EESHA BR[1]


### ABSTRACT

**Introduction**

Students favour teaching methods employing audiovisual aids over didactic lectures not using these aids. However, the optimum use of audiovisual aids is essential for deriving their benefits. This study was done to know the students' preference regarding the various audiovisual aids, with an aim to improve their use in didactic lectures.

**Methods**

Two hundred and fifty seven fifth semester medical students were invited to participate in a questionnaire based study. Two hundred and twenty four (87.2%) students completed the questionnaire and their responses were analyzed. The first part of the questionnaire included demographic and educational details. The second part consisted of 12 statements regarding the preference of audiovisual aids for various aspects of learning.

**Results**

41.1% were female students. 85.3% of the students preferred the use of audiovisual aids during didactic lectures. A mixture of audiovisual aids during didactic lectures was preferred (42.4%), especially for understanding a particular topic. Females were more likely to take notes during the class lecture ($p<0.001$). Males preferred handouts over self made notes ($p<0.001$). Students from government institutions preferred power point presentations for understanding the subject matter ($p=0.03$), while those from private schools preferred the blackboard ($p=0.04$).

**Conclusion**

Our study demonstrates that lectures delivered by using a mixture of audio visual aids are more appreciated by the students. Furthermore, the lecture should be constructed in a fashion so as to enable the students to gather factual information easily and in a concise manner. Teachers should note that the students preferred a combination of visual aids and were interested in taking notes during lectures.


**Keywords**

Audiovisual aids, lectures, medical students.

**Keypoints**

1. Studies have shown that visual materials are more important than verbal ones for an immediate recall of information by the students. Our study showed that the students preferred combining power point presentations with blackboard teaching.
2. Demographic differences are seen in certain aspects of the preferences of visual aids.

3. Lectures should be constructed in a fashion so as to enable the students to gather factual information easily and in a concise manner.

[1]Dept. of Pharmacology, Kasturba medical college, Manipal, Manipal University, India
[2]Dept. of Pharmacology, KIST medical college, Lalitpur, Nepal
[3]Dept. of Pharmacology, Kasturba medical college, Mangalore, Manipal University, India
[4]Dept of Surgery, Kasturba medical college, Manipal, Manipal University, India.
**Corresponding author:**
Dr. Ashwin Kamath
Assistant Professor, Department of Pharmacology
Kasturba Medical College, Light house hill road
Mangalore – 575001, Karnataka
INDIA
Telephone number: +919844262808
Email address: mailmaka@gmail.com

Lectures are the most traditional, old fashioned and didactic method of teaching. They may be interrupted by questions and perhaps even some discussion, but usually they are a one way delivery of information. They are powerful techniques for getting across a large amount of theoretical information and are especially useful when a large number of learners must be taught at one time. The other strength of lectures is the ability to support a complementary study of books or other material, by amplifying or explaining key points. Thus, a well organized lecture remains one of the most effective ways to integrate and organize information from multiple sources on complex topics [1].

Lectures are often supported by audio visual aids by emphasizing key points on a black board or white board, the projection of written or printed matter on transparencies via an over head projector (OHP) or increasingly nowadays via a computer based system, notably Microsoft power point application and of course, the distribution of preprinted support material and handouts. Although the maximum benefit of visual aids is obtained only in conjunction with a well structured lecture, comparison of the recall of visually and verbally presented lecture information has shown a clear superiority of visual information over verbal information for both immediate and long-term recall[2].[2]

Students favour teaching methods employing audiovisual aids over didactic lectures without using these aids [3]. However, the optimum use of audiovisual aids is essential for deriving their benefits [4]. This study was done to know the students' preferences regarding the various audiovisual aids, with an aim to improve their use in didactic lectures in pharmacology.

## Materials and methods

This study was approved by the institutional ethics committee and was carried out among the fifth semester medical students at Kasturba Medical College, Manipal, during the month of August 2009. Two hundred and fifty seven students were invited to participate in the study. Two hundred and twenty four (87%) students successfully completed the study and their responses were analyzed.

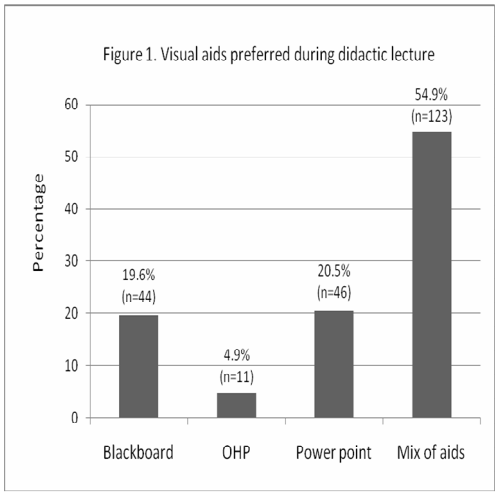
The students were asked to complete a questionnaire consisting of two parts (See appendix). The first part collected demographic and other relevant information about the student respondents. The gender and nationality of the respondents were noted. The information as to whether the student had studied in a government/private school and medium of instruction at the school were recorded. The questionnaire which was used in the study is shown in the Appendix. The second part of the questionnaire consisted of 12 statements regarding audio visual aids. The students were asked to answer legibly and to encircle the appropriate answers wherever required. No personal identifying information was obtained. The students were informed that

their participation in the study was voluntary. The questionnaire was pretested in undergraduate students of Pharmacology and intra class correlation coefficient was used to assess the reliability of the questionnaire. The responses of these students were not included in the final analysis. 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. P values < 0.05 were considered to be statistically significant. The data was analyzed by using the Statistical Package for Social Sciences (SPSS), version 11.

## Results

Two hundred and twenty-four students participated in the study. 41.1% were female students. 89.3% of the students were Indians and 25% of the respondents were from the state of Karnataka in India. 92.9% of the participants had schooled in English medium schools and the visual aid which was predominantly used in the schools, was a blackboard (70.1%).

In our study, the respondents preferred a combination of audiovisual aids during a didactic lecture (Figure 1). The perception of diagrams, flow charts and note taking was best accepted with a powerpoint presentation, while in understanding a particular topic, a combination of aids scored over the use of a particular visual aid alone (Table.2). In listening and understanding a particular topic, powerpoint presentation was the most preferred aid, with the blackboard being the second in line (Table.2). For a full description of the individual statements, kindly refer to the questionnaire in the appendix.




85.3% (n=191) of the respondents were stimulated for further reading if they attended a lecture which was augmented by the use of visual aids. About 89% (n=199) of the respondents were interested in taking notes during class, although a majority (73.7%, n=165) of the students preferred hand outs, if available, over self written notes. With regards to gender, female students were found to be significantly more interested in taking notes during a lecture ($p<0.001$), while male students preferred handouts over self written notes ($p<0.001$). With regards to the medium of instruction, students with English as their primary language preferred a combined use of visual aids during a lecture (57.2% versus 25%, $p=0.03$). Of the 224 students, 12.5% had schooled in government institutions. Students from private schools were more likely to prefer the blackboard (38.3% versus 7.1%, $p=0.002$), while those from government schools were more likely to prefer the powerpoint presentation as a

**(Table/Fig1) Visual aids preferred during didactic lectures**

**(Table/Fig2) Students preference of visual aids for various aspects of learning**

| Comments | Black Board% (n) | OHP% (n) | Power point %(n) | Combination of aids%(n) |
|---|---|---|---|---|
| **Better perception of diagrams** | 33.9(76) | 15.6(35) | 49.6(111) | 0.9(2) |
| **Better perception of flow charts** | 29.5(66) | 16.5(37) | 50.9(114) | 3.1(7) |
| **Understanding of topics is best with** | 24.1(54) | 4.5(10) | 29.0(65) | 42.4(95) |
| **Best aid for taking notes** | 20.1(45) | 12.5(28) | 46.9(105) | 20.5(46) |
| **Best aid for listening & understanding** | 43.3(97) | 5.8(13) | 44.6(100) | 6.3(14) |

media for diagrams (67.9% versus 46.6%, p=0.04). Similarly, private school students were more likely to prefer the blackboard for the understanding of topics (63.1% versus 42.9%, p=0.04), while government students were more likely to prefer powerpoint presentations (50% versus 29.2%, p=0.03).

## Discussion

At the undergraduate level, pharmacology is mainly taught to second year medical students in India and the subject is horizontally integrated with certain basic science subjects like microbiology, pathology and forensic medicine [5]. The training program in pharmacology uses a judicious mixture of didactic lectures with audio visual aids and problems based learning methods by using various clinical problems and practical experiments. Questionnaires are being used commonly as a tool to evaluate the various aspects of teaching and learning among the students [6]. In this study, the questionnaire was distributed to study the students' opinion on the audio visual aids used during didactic lectures in pharmacology. The participant feedback revealed that about 85.3% (n=191) of the students were stimulated for further reading if they attended lectures which were augmented by the use of audio visual aids. The students expressed the view that in such lectures, the elucidation of the concept was absolutely clear and that they were inspired for further in- depth reading.

The major limitation of lectures is that the listener passively receives the material and feels bored and sleepy. There are various techniques by which lectures can be made effective. One of them is the use of visual aids which should be clear and understandable [7]. In our study, the students showed a preference for the use of a combination of visual aids during the didactic lectures. The reason given by them was that, while the use of power point presentations alone made the lectures boring and monotonous, and made the students sleepy, the use of black board along with power point presentations made the students active participants. Certain concepts and diagrams were better perceived by using powerpoint presentations.

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 [8]. This study revealed that the understanding of topics is best possible with a combination of audio visual aids (including a blackboard/whiteboard), while the second best option was power point presentations. It was found that when the students did not prefer to take notes during lectures, but were only interested in listening and understanding a particular topic, powerpoint presentations and blackboard were similar preferences.

Our study supported the use of powerpoint presentations for a better perception of diagrams and flowcharts and was also helpful in taking notes. Students opined that in lectures using power point presentations, they did not miss any points which were related to the topic under discussion. They gave suggestions to improve the power point presentations by the use of more flow charts, diagrams, concise notes with necessary text and animation and wherever required, supplemented with narration carried out by

the lecturer. Thus, there is scope to improve the power point presentations than it is used today. The problem lies, not with the power point presentations, but with how we make use of it [4].

While using an OHP, it is easy to put much information on one page/slide. When a large volume of information is presented in this manner, the working memory capacity can become overloaded and useful note taking becomes difficult. This could be one of the reasons as to why the students did not prefer the use of an OHP during lectures. Students gave the feedback that in lectures by using an OHP, good illumination is needed for proper visualization and the use of different colours on the plastic transparency sheet and depiction of the main points with good hand writing is beneficial in the elucidation of the topic under discussion. If we can use proper tips and rules, the OHP presentation can become more effective [9].

The issue of gender in medical education and practice gains new momentum with the rapid increase in the enrollment of women in medical schools and gender could influence academic performance and research activity [10]. In this study, 58.9 % (n=132) of the students were males and 41.1 % (n=92) were females. Differences were seen in the attitude towards listening and understanding a particular topic. Female students preferred powerpoint presentations and taking notes during a lecture.

Our study demonstrated that lectures which were delivered by using a combination of audio visual aids was more appreciated by the students. Furthermore, the lecture should be constructed in a fashion so as to enable the students to gather factual information easily and in a concise manner. The gender differences in the learning behaviour, as revealed by our study, may serve as pointers towards the design of pharmacology lectures in medical colleges.

Our study had limitations. The opinions were collected only from a single batch of the fifth semester medical students. The responses were collected by using a questionnaire and were not triangulated with the information from other sources. Certain respondents did not give the reasons for particular preferences and demographic information was missing in some cases.

**Conclusion**

The students' opinion about the use of audiovisual aids during didactic lectures was favourable. Teachers should note that the students preferred a combination of visual aids of the black board and power point presentations and were interested in taking notes during lectures. We plan to implement feasible student suggestions for further improving the use of audiovisual aids during didactic lectures.

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## Appendix

**Student feedback on audio visual aids used during didactic lectures – a Questionnaire based study**

This questionnaire is designed to help us understand your preferences regarding the various audiovisuals aids used in lecture classes. Participation depends on your willingness. No personal information should be written on the paper (name, registration 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 school
   A. Black board B. Over head projector C. Power point D. Mix of aids
7. Which visual aid will you prefer for use during didactic lectures?
   A. Black board B. Over head projector C. Power point D. Mix of aids

Give reasons ----------
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8. Media preferred for better perception of diagrams
   A. Black board B. Over head projector C. Power point D. Mix of aids
9. Flow charts are better perceived while using
   A. Black board B. Over head projector C. Power point D. Mix of aids
10. Understanding of topics is best with
   A. Black board B. Over head projector C. Power point D. Mix of aids

Give reasons ----------
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11. Are you interested in making notes during class?
   A. Yes B. No
12. If yes, which teaching method do you find is the best for taking notes?
   A. Black board B. Over head projector C. Power point D. Mix of aids
13. If you do not prefer to take notes, which method do you find best for listening and understanding?
   A. Black board B. Over head projector C. Power point D. Mix of aids
14. Which methods stimulate further reading?
   A. only listening to lecture B. listening with visual aids
15. Do you prefer?
   A. Hand outs B. Notes taken by you during the lectures
16. Mention <u>THREE</u> important ways in which you think the use of OHP as a visual aid can be improved:
17. Mention <u>THREE</u> important ways in which you think the use of LCD projector as a visual aid can be improved: