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EVALUATION OF IMPACT OF INTERACTIVE LECTURES ON LEARNING IN TERMS OF COGNITIVE OUTCOMES AND STUDENT SATISFACTION

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ABSTRACT: **AIM:** To implement interactive activities in lecture and evaluate their impact on learning in terms of cognitive outcomes and student satisfaction. **MATERIAL AND METHODS:** In our study we compared interactive lectures with didactic lectures. We took an immediate post test and feedback forms from student after each lecture and compared the results. **RESULTS:** There was no significant difference in the post test results between the two lecture types. In the feedback forms significant number of student found the interactive lectures better in terms of attentiveness, learning and understanding at the end of the lecture. **CONCLUSIONS:** Use of interactive lectures can promote active learning, heighten attention and motivation, give feedback to the teacher and increase satisfaction for both.

KEYWORDS: Interactive lectures, Didactic lectures, Cognitive outcome, student satisfaction, post test, pre test, feedback form.

INTRODUCTION: Medical education is at a tipping point of major transformation. There is an increasing move to transcend from traditional teacher-focused didactic teaching to more student focused methods that actively engage students in the learning process. The reason for this move is in order to promote student success and produce graduates with transferable skills.^[1] Healey 2005,^[2] land and Gordon, 2008).

However, simultaneously there are also increasing student numbers and greater demands on academics time in terms of teaching. Thus it is important to develop and implement ways of teaching that can simultaneously serve large number of students while more actively engaging them in the learning process and one such method would include making large scale lectures more interactive.

CONTEXT OF THE STUDY: Lecturing is a time tested method to present large amount of content in classes of any size but may result in students who listen passively, addressing only the lower cognitive domains. It remains only in the short term memory. The lecturer gets no idea regarding how well the students have understood the topic. Interactive lectures allow the students to actively participate, promotes student learning and retention gives them practice in critical to assess how well the class is learning that day. Interactive lectures are classes in which the instructor breaks the lecture at least once per class to have students participate in an activity that lets them work directly with the material. In this study we have conducted interactive lectures and compared them with the didactic lectures to see whether it is beneficial in improving student understanding of the topic taught.

MATERIALS AND METHODS: This study was carried out over a period of six months for II MBBS Student in the Department of Obstetrics and Gynaecology, IMSR, Mayani.

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Permission from Dean, Head of the Department and Ethical Committee approval was taken. The OBGYN Department faculty were oriented and discussed. The concept of interactive lectures. Students were oriented and explained about the interactive lectures and interactive activities that would be taken during lecture. They were informed regarding the post test and the feedback forms that they would be given at the end of the lecture. All students willingly consented to participate in the study. With the consensus of all the OBGYN faculty two topics [Normal labour, Amenorrhoea] to be taught by didactic lectures and two topics to be taught by interactive lectures [Abnormal Labour, Menorrhagia] were chosen. The entire interactive lecture was planned with the interactive activities chalked out with the time to be allotted for it.

The post test for all the 4 lectures prepared and validated. The feedback forms to be taken after each of the four lectures were, framed and validated. First the obstetric lectures were taken [one didactic and next week interactive] and then the gynaecology topics were taken [again first the didactic and then interactive]. After each of the 4 lectures a post test was taken and feedback forms were taken from the students.

At the end of each lecture feedback was given using the scale below:

1) Poor 2) Fair 3) Average 4) Good 5) Excellent.

RESULTS: The table1 shows that attendance improved for the second interactive lecture.

The comparison of post tests taken after the lectures showed no significant difference in the average scores after didactic lectures and interactive lectures. (Table 2) On analysis of feedback forms varied responses were noted. The feedback regarding stating of objectives and the consistency of lecture contents with the objectives they found both interactive lectures and didactic lectures similar. The use of audio visual aids was also equally appreciated in both types of lectures. In terms of content knowledge and the length of lectures (Table 3) significantly larger percentage of students voted for interactive lectures as excellent.

(Table 4) Majority of the students found the interactive lectures in terms of relevance of interactive activity, length, of interactive activity, usefulness of interactive activity and overall quality of interactive activity good (Score 4).

Table 5 In terms of attentiveness throughout the lecture, learning at the end of the lecture, understanding at the end of lecture and overall quality of lecture significantly more number of students voted for interactive lectures as excellent.

CONCLUSION: The interactive lectures are a superior way to teach and encourage learning in comparison to the routine didactic lectures.

DISCUSSION: Medical education should be dynamic be relentless and there is a continued search for the best ways to impart knowledge to the student Traditional lectures also known as didactic lectures are still the primary methods of instruction in medical education.

In our study we compared didactic lectures with interactive lectures, compared them in terms of cognitive outcomes and student satisfaction (Attentiveness, learning and understanding at the end of the lecture). Although the immediate cognitive outcomes did not show statistical difference the student satisfaction was much better in interactive lectures. We need to check the cognitive outcomes on a later date to comment on knowledge retention which we plan to do in future.

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Our study agreed with several studies on comparing the effectiveness of didactic lectures with those of interactive lectures which showed that student satisfaction, learning outcomes, deeper approach to learning and knowledge retention is better following interactive lectures.^(4,5,6) Capturing and maintaining the attention of students, active participation of students, instructor student questioning discussion and formative quizzes with immediate feedback characterize interactive lectures.^(7,8,9) Several studies have established that the human brains capacity for focused attention to a lecture is between 10-30 min with maximum concentration of not more than 20 minutes,^(10,11) In order to compensate for inattention and to offset ineffective learning different types of stimulation activities should be used during lectures. Such strategies could be a simple rest alternating the presenting medium and assigning students a short learning task,^(10,12,13) In terms with these studies in our study too we have broken the interactive lectures every 10-15 min with a 3-5 min interactive activity which has been appreciated by students in aiding them to maintain the attention span.

Different activities can help the student focus and re focus their attention to the topic,⁽¹⁴⁾

They can encourage active learning and deeper processing of material.⁽¹⁵⁾

They can provide immediate feedback to the lecturer on students comprehension of material.⁽¹⁶⁾

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	Attendance
Didactic lecture 1 [Normal Labour]	68
Interactive lecture [Abnormal Labour]	72
Didactic lecture -2 [Amenorrhoea]	66
Interactive lecture 2 [Menorrhagia]	81

Table 1: The Attendance in the Four Lectures

Post test – 1 (D1)	7.8	P < 0.05 Difference not significant
Post test – 2 (I1)	7.6	P < 0.05 Difference not significant
Post test – 3 (D2)	6.5	P < 0.05 Difference not significant
Post test – 4 (I2)	7.0	P < 0.05 Difference not significant

Table 2: Average Marks

Chart 1

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Table 3: Analysis of Feedback Forms:

a)	Whether Objectives Stated	1	2	3	4	5
	(D1) Didactic lecture -1	-	-	-	31	69
	(I1) Interactive lecture -1	-	-	-	24	76
	(D1) Didactic lecture -2	-	-	-	24	76
	(I2) Interactive lecture -2	-	-	-	22	78
b)	Consistency of Lecture Contents with Objectives					
	D1	-	5	8	65	22
	I1	-	2	3	63	32
	D2	-	3	9	72	16
	I2	-	2	2	68	28
c)	Contents Knowledge					
	D1	-	2	2	90	6
	I1	-	1	3	65	31
	D2	-	2	10	84	4
	I2	-	1	3 (5)	70	26
d)	Use of Audio Visual/Aids					
	D1	-	1	2	76	21
	I1	-	-	1	63	36
	D2	-	-	1	77	22
	I2	-	-	1	62	38
e)	Length of Lectures					
	D1	-	2	26	72	-
	I1	-	-	07	67	26
	D2	-	1	23	75	1
	I2	-	1	1	69	21
A) Feedback filled for all 4 lectures (Interactive as well as Didactic) (in %)						

1)	Relevance of Interactive Activity	1	2	3	4	5
	I1	-	-	6	79	15
	I2	-	-	5	72	23
2)	Length of Interactive Activity					
	I1	-	1	8	83	8
	I2	-	-	6	85	9
3)	Usefulness of Interactive Activity					
	I1	-	2	10	78	18
	I2	-	1	2	82	15
4)	Overall quality of Interactive Activity					
	I1	-	1	3	78	18
	I2	-	1	2	82	15
B) Feedback to be filled for Interactive Lectures Only						

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a)	Attentiveness Throughout the Lecture	1	2	3	4	5
	D1	-	10	62	28	-
	D2	1	12	55	31	1
	I1	-	2 (S)	10 (S)	56 (S)	32 (S)
	I2	-	1 (S)	9 (S)	55 (S)	35 (S)
b)	Learning at the end of Lecture					
	D1	-	1	13	76	10
	D2	-	-	20	69	11
	I1	-	-	10 (NS)	72	18 (S)
	I2	-	-	8 (S)	70	22 (S)
c)	Understanding at the end of Lecture					
	D1	-	-	10	75	15
	D2	-	1	06	72	12
	I1	-	-	4 (S)	70 (NS)	26 (S)
	I2	-	-	5 (S)	64 (NS)	31 (S)
d)	Overall Quality of Lecture					
	D1	-	1	15	69	16
	D2	-	-	22	66	12
	I1	-	-	2 (S)	70 (NS)	28 (S)
	I2	-	-	2 (S)	66 (NS)	32 (S)
C) Feedback to be filled for all lectures (Interactive as well as Didactic)						

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