

ORIGINAL ARTICLE

EVALUATION OF INTERACTIVE LECTURES: AN INNOVATIVE APPROACH EMPLOYED IN A HYBRID TEACHING SYSTEM

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Background: Physiology teaching requires student to be an active participant in learning instead of a passive listener. Traditional didactic lectures are the most prevalent teaching tool in large group sessions due to massive class sizes in public sector medical colleges of Pakistan. The objective of this study was to introduce interactive lecturing and evaluate the effectiveness of lectures as well as the lecturer of thyroid physiology by analysing the perceptions of 2nd year MBBS students. **Methods:** A descriptive study was conducted on 255 students of 2nd year MBBS (39th Batch) at Rawalpindi Medical College in the Department of Medical Education in April 2013. A series of five interactive lectures on Thyroid Physiology were delivered and later on student's responses were obtained through a validated pre-tested questionnaire regarding the effectiveness of the lectures and lecturer. Data were analysed using SPSS-17, and descriptive statistics were applied. **Results:** Students agreed that frequent interaction, summarisation of key concepts, integration of lecture content, clear statement of objectives and proper organization of lecture was helpful in learning. Students also appreciated use of audiovisual aids, and interesting pictures, clip art, and animations during the lecture. Students agreed that the lecturer came to the class well prepared, encouraged active participation, and showed great enthusiasm to teach. **Conclusion:** The study supports faculty development to conduct structured interactive lectures in large class settings to boost the outcomes of a traditional lecture-based curriculum.

Keywords: Interactive lecturing, Active learning, Hybrid teaching, curriculum,

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INTRODUCTION

Physiology can be rightly defined as the 'art of living', as it encompasses all the intriguing mechanisms that are working to maintain homeostasis in human body. It has always been a major objective of Physiology teachers to make it more interesting for students. An engaging classroom setting where students are actively involved in learning is an ideal situation for teaching physiology concepts.¹

But in most of the medical colleges in Pakistan, the major means of teaching Physiology is through traditional didactic lectures. This has benefits for lecturer of providing a personalised overview of the course material, integrating information from multiple sources, and clarifying complex information.² On the other hand, the lecturer-centred classroom setting renders students merely passive listeners, not a participant in learning. The major objective of these lectures is to introduce the students to course material with no time for student-teacher interaction.³ This results in lack of students' attention and motivation resulting in poor grades and attendance in classes.^{4,5}

The key student behaviour required for active learning is 'involvement' or participation. This focuses on grasping students' attention during the lecture by promoting their engagement. Researchers consider that attention and motivation are more important in learning process and memory consolidation than intelligence. In

traditional lectures the attention span of students diminishes significantly after 20 minutes.⁶

Multiple teaching learning tools can be employed to keep the students engaged in large group settings like making buzz groups, asking questions, using audience response, using clinical cases, role plays and simulations, and showing videos etc. When used properly they can help to construct and impart subject knowledge successfully, as well as promote critical thinking and problem solving.⁷⁻⁹

The issue is proper selection of these tools to engage a large class and to cover the course content simultaneously. In Rawalpindi Medical College, like most of the public sector medical colleges of Pakistan¹⁰, the class size is of about 300 students or even larger. The aim of the present study was to introduce a method of lecturing which can be more fruitful than traditional didactic lectures keeping in view the large size of the class. The objectives of the present study were to evaluate the interactive lectures as well as the lecturer of thyroid Physiology through analysing the perceptions of 2nd year MBBS students.

METHODOLOGY

Rawalpindi Medical College admits 280-300 new students annually. Hybrid teaching system is followed here where Problem Based Learning (PBL) has been used as an adjunct to the conventional teaching system. This system relies heavily on traditional didactic lectures as a teaching/learning tool due to huge class

size and less number of faculty. The class has been divided into two sections, each section comprising of 150–200 students.

A series of 5 lectures on thyroid physiology was planned in the start of academic session of 2nd year MBBS class (39th batch), while didactic lectures were delivered in routine for rest of the topics of endocrine physiology. During these 5 lectures a modified version of the model given by Dee Unglaub Silverthorn¹¹ for teaching and learning in an interactive classroom was adopted. In the series of 5 lectures on thyroid physiology, the basic physiological concepts regarding thyroid hormones actions were covered in the first 2 lectures while the clinic-pathophysiological aspects were covered in last 3 lectures. The objectives of these lectures were clearly stated at the start of each of the 5 lectures. A clear lecture plan was designed by dividing the 45 minutes lecture into small segments. First 5 minutes were spent on brainstorming by making them recall their previous knowledge of thyroid gland asking the class to narrate any real life incidence in their family pertaining to thyroid abnormalities and its clinical presentation. Starting from 2nd lecture onwards, these 5 minutes were spent on brisk revision of key points of previous lecture. The next 15 minutes were for a small lecture comprising key concepts of thyroid physiology.

After that there was a 5 minute break which was used for asking questions from students related to the material just taught. Different interactive strategies were used for this segment like asking direct questions at random, showing a slide of problem based question, giving them time to discuss with their next sitting classmate (think, pair and share exercise) and share with the class, or projecting 3–4 MCQs and taking their written response to be graded afterwards. The next 15 minute segment was allocated to another lecturing block pertaining to the next key concepts of thyroid physiology. During these two 15 minute lecturing blocks multimedia was used and aided the student's learning by displaying illustrations, pictures of patients with thyroid abnormalities (e.g., Grave's disease with exophthalmos, large endemic goitre and cretinism), and flow sheet diagrams of the key concepts. Throughout the sessions students were encouraged to ask questions wherever they needed so. The last 5 minutes were again used for summarising the key points by the lecturer or the students. In last two lectures the students made Buzz groups and discussed the key points. Two role plays were also included in two of the sessions by involving students, one played a doctor and the other played the role of a patient. These demonstrations were regarding assessment of fine tremors and regarding assessment of lid lag in a patient of hyperthyroidism. Students were made aware periodically that the assessment

would be matched with the learning objectives of the session.

At the end of series of 5 lectures, all students were given a pre-tested and validated questionnaire to be filled anonymously. Two questionnaires, one containing 15 close-ended questions regarding evaluation of lecture, and another comprising 15 close-ended questions regarding evaluation of lecturer were distributed among the students. Five point Likert scale of 1 to 5 was used to measure all close-ended questions where: 1=Strongly disagree, 2=Disagree, 3=Cannot comment, 4=Agree, and 5=Strongly agree.

Data were analysed using SPSS-17, and descriptive statistics were applied.

RESULTS

Completed response rate was 89% as incomplete questionnaires were not included in the study. Students who did not attend all the five lectures on thyroid physiology were not included in the study and students who were absent on the day of data collection but had attended all the five lectures were given the same Performa later on and got them filled. Frequencies and percentages for each response on individual survey question on given Likert scale were determined along with overall percentage for each of the five response categories, from 255 students (Table-1,2).

Eighty-two percent students were in agreement with the fact that frequent interaction was made during each lecture by the lecturer. Majority (70.3%) of the students opined that key concepts were summarised at specific intervals which helped them consolidate the points in their memory. Seventy four percent students were of the opinion that the lectures provided integration of Thyroid Physiology with other systems of human body. A vast majority (93%) of students agreed that the objectives of the sessions were clearly stated at the start of each lecture session. Students also appreciated effective provision of audiovisual aids, showing a relaxing slide at the end of the lecture and use of interesting pictures, clip art and animations during the lecture (Table-1).

Eighty-five percent of the class agreed that the lecture sessions were well organised, 94% of the students agreed that the lecturer came to the class well prepared, and 85.8% agreed that the lecturer showed great enthusiasm to teach the physiological concepts of thyroid. Sixty-seven percent students opined that the lecturer encouraged active participation of students in the class, and 78.5% of the students agreed that the lecturer was friendly towards diverse points of view by the students. However, 40% of the students were of the opinion that the presentation style remained consistent throughout all the lectures, and 30% couldn't comment on it (Table-2).

Table-1: Evaluation of lectures

Items responded	Strongly Disagree	Disagree	Cannot comment	Agree	Strongly agree
The topic was introduced appropriately	1.2	2.4	1.2	49.4	45.9
The objectives were stated at the start of each lecture	0.8	2.7	3.9	39.2	53.5
Rapport with students was established at beginning of each lecture	0.8	5.1	14.5	53.3	26.3
Brain storming was done by revising key points of previous lecture	2	3.5	10.6	44.3	39.6
Lectures were presented in a clear and organized fashion	0.8	3.9	10.2	45.9	39.2
Provided integration of Thyroid Physiology with other systems of human body	2	9.8	13.7	54.5	20
Provided periodic summaries of the material taught	2	7.5	13.7	57.3	19.6
Demonstrations were used during these lectures regarding clinical examination of Thyroid	0.8	3.5	6.3	40	49.4
Presentation style was different in each lecture	7.9	32.5	29	24.7	5.9
Audio Visual aids were appropriately made available	3.9	12.2	11	52.2	20.8
Used interesting pictures and clip arts at appropriate intervals during each lecture	2.7	10.2	9.8	48.6	28.6
Interaction with students was made frequently during each lecture	2	7.5	8.6	58	23.9
Summarized major principles and key points without introducing new materials at the end of each lecture	3.5	11.4	14.9	55.3	14.9
Further thoughts were stimulated at the end of series of five lectures	5.1	16.9	23.1	43.1	11.8
The end slide of each lecture was always relaxing	3.5	12.9	9.8	37.6	36.1

Table-2: Evaluation of lecturer

Items to be responded	Strongly disagree	Disagree	Cannot comment	Agree	Strongly agree
The lecturer came well prepared for each class session	1.6	1.6	2.4	44.3	50.2
Class sessions were well organized	1.6	6.3	7.1	58	27
The lecturer spoke clearly	1.6	2.4	2	47.5	46.7
The lecturer provided clear explanations	1.2	4.7	6.7	47.1	40.4
Assessment requirements were made clear	2	9.4	15.7	55.3	17.6
The lecturer had an enthusiasm for teaching this subject	2.4	3.1	8.2	38	47.8
The lecturer provoked my interest in this subject	5.9	8.6	20.8	36.5	28.2
The lecturer encouraged students to produce high quality work output	2.4	9.8	13.3	48.6	25.9
The lecturer encouraged students to ask questions	5.1	16.1	25.1	41.6	12.2
The lecturer encouraged participation of students during each lecture	5.9	12.2	14.9	49	18
The lecturer encouraged self directed learning among students	3.5	14.1	18.4	45.1	18.8
The lecturer was friendly towards diverse points of view by the students	2	6.3	12.9	52.5	26.3
The lecturer seemed willing to offer individual help to students	2.4	9	9	48.8	33.7
The lecturer seemed sensitive to and concerned about individual progress of students	4.7	14.9	17.3	39.2	23.9
The lecturer appreciated and encouraged the students for revising key points of previous lecture	2	1.6	3.5	43.9	49.0

DISCUSSION

Learning is a vibrant process requiring the vigorous participation by the students.¹² Traditional lecturing has been a method of teaching since long.^{13,14}

It was widely respected in the past, but in recent years, lectures have come under increasing criticism as a technique of teaching and transferring knowledge.^{15,16} Critics give arguments that lectures are less successful than other methods when instructional objectives involve the application of knowledge, the growth of thinking skills, or the refinement of attitudes.^{17,18} Much has been written about effectual lecturing and presentation skills in medical education for medical teachers but little has been written about the advantages and strategies of interactive lecturing skills.¹⁹

A survey done at University Medical College, University of Lahore²⁰ upon 123 students of various classes of MBBS course to assess their perceptions regarding characteristics of effective lectures shows that 58.6% of the students considered it to be very important to interact during the lecture. This is supported by our results as 82% (58% agreed and 23.9% strongly agreed) of the students were in agreement with the fact that frequent interaction with students was made during each

lecture by the lecturer. Our finding is also supported by another study carried out at BP Koirala Institute of Health Sciences, Dharan²¹ which is following a hybrid teaching system and has shown positive effects upon outcomes of a large group lecture by increasing interaction with students. In another study which used Audience Response System (ARS) in their lectures to interact with students it was found that it enhanced the educational experience of students.²²

Another important finding of our study is that 77% students appreciated the verbal summarisation of key concepts at specific interval during the lecture which helped them consolidate the key points in their memory. This finding is strongly supported by Lahore study in which summarisation of key points was done with the help of short videos in addition to photographs, charts, models and graphs. Our study shows that class sessions were well organised (58% of students agreed and 27% strongly agreed), this finding is also supported by Lahore study²⁰ which showed that 76.5% students believed the same.

Majority (85.5%) of the students agreed/strongly agreed that the lecturer showed great enthusiasm to teach the physiological concepts of

thyroid. The same result is shown by Lahore University researchers²⁰ who showed quite high level of enthusiasm (74.8%) by the teacher during interactive lectures. The higher trends in the results of outcomes of interactive lectures in Lahore study compare to our study may be due to the fact that theirs was a survey not an interventional study done in a private sector college with less strength of students.

Forty-nine percent students agreed and 18% strongly agreed that the lecturer encouraged active participation of students in the class and this finding is in support with Dharan²¹ study (94.5%) and this huge percent of Dharan study may be due to less number of students (n=40) and probably more time for the lecture.

Twenty-six percent students strongly agreed while 52.5% of the students agreed that the lecturer was friendly towards diverse points of view by the students which are also acknowledged by the students of Lahore University Medical College²⁰ as 58.6% admitted the significance of developing individual rapport with students. Fifty-two percent students appreciated effective provision of audiovisual aids during the lectures which are nearer to Dharan²¹ study (64.8%).

Certain unique findings of our study (not confirmed by other studies) in interactive large class settings were strong appreciation of mentioning the objectives of the sessions at the start of each lecture session (92.7%), and integration of thyroid physiology with other systems of human body (74.5%).

CONCLUSION

The students appreciate well-organised lectures with frequent student-teacher interaction, summarising the key points, and proper preparation, enthusiasm and encouragement at the part of the lecturer. The clarity of objectives and interactive lecturing helps students to integrate their knowledge. It also is a proponent of faculty development to conduct structured interactive lectures in large class settings to boost the outcomes of a traditional lecture based curriculum.

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