

# Quiz versus Didactic Lecture on Undergraduate Students of BJ Medical College, Ahmedabad: A Cross-Sectional, Comparative, and Interventional Study

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## Abstract

**Introduction:** The vision 2015 document published by Medical Council of India expressed the policies and strategies of Government of India regarding medical education in coming years. There is an association between the methods used in lecture to deliver the contents and the knowledge gain by students. A surface learning suggests only superficial knowledge without understanding, but deep learning is means to be acquired skills to analyzed, synthesize, and cognitive skills to derive conclusion pertain to subject.

**Methodology:** The study was a cross-sectional, comparative, and interventional. The quiz on swine flu to enhance participation and interest of the students conducted in the seventh semester (III/I) during the month of February 2015 in the Department of Community Medicine, BJ Medical College, and Ahmedabad as an alternative to the conventional lecture (Topic-Reproductive and Child Health Services). The students were given notice 2 weeks prior for the preparation.

**Results:** In the pre-test, the majority of the students 57 (63%) scored <40%. Another 29 students (32%) had scores between 41% and 60%. In the post-test evaluation, 41 (46%) obtained 81-100% followed by 32 (35.55%) and the rest 17 (19%) below 40% score. The winning teams both Team B and Team A scored 75% and 55%, respectively.

**Conclusion:** There was an exceptional improvement in students' performance in post-test analysis of swine flu quiz, as compared to the didactic lecture on mother and child health. It was possible to adopt interactive teaching as a method in conventional curriculum despite associated challenges. So, instead of subjecting students to the lectures, we can use different interactive teaching methods to incorporate in the schedule to give them better insight on the subject and to save energy and time.

**Key words:** Comparative, Didactic lecture, Quiz, Swine flu

## INTRODUCTION

The medical council of India published the policies and strategies of medical education every year with the objective to improve quality and standards of medical education and training. It is also to make an Indian graduate medical

doctor skilled to maintain the standards in graduation complied according to strategies mentioned in vision 2015.<sup>1</sup>

Teaching and learning are the two important components of education. So, there were considerable changes in the education system at the medical workplace because of strong correlation between the methods used in delivering the information by the lecturers and the assimilation of that knowledge by the students. So we can change the way for teaching and learning the process in a better way to both how and what is taught. "Deep learning"<sup>2</sup> requires higher order cognitive skills such as analysis and synthesis, while "surface learning consists primarily of comprehension and reproducing knowledge." This requires the acquisition of

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four main domains of competencies defined by the Medical Council<sup>3</sup> as: (1) Knowledge, skills, and performance; (2) safety and quality; (3) communication, partnership, and teamwork; and (4) maintaining trust.

The MCI Vision 2015 states that lectures are not adequate as a method of teaching and training also a poor method of transferring or acquiring information.<sup>4</sup> The lectures have less impact at skill development and attitudes and competence-based education, and we encountered large classes, for example, 120 approximate per class. So, there is need of innovation in the form of active learning oppose to passive learning.<sup>5</sup>

The didactic lectures have certain drawbacks such as loss of interest or limited attention span, less retention of subject, passive learning. There is lack of development of any logical or analytical skills because the students are only listening and not actively participating during lecture. There is no active interaction or feedback from the students.<sup>6,7</sup>

The purpose of interactive teaching methods are generation of interest in the subject and acquirement of more knowledge in general, active and participatory learning, development of life-long learning habits and attitudes, acquire, retain and apply the knowledge, active involvement of students, thorough understanding of the subject, use of internet and other options at disposal for better understanding of matter, promote group learning, heightened motivation, and enthusiasm.<sup>8</sup> Active listening of opinions of others and asking questions.

The main purpose of the quiz competition was to introduce the scope of the subject to medical students and obtain their feedback on its conduct and utility as a teaching and learning method.

### Aims and Objectives

1. To ascertain the effectiveness of quiz as an interactive teaching technique in lectures
2. To implement various quizzing activities in lectures and evaluate their impact on learning.

### METHODOLOGY

This was a cross-sectional, comparative, and Interventional study. The quiz as a mode to enhance participation and interest was conducted for students studying in seventh semester (III/I) during the month of February 2015 in the Department of Community Medicine, BJ Medical College, and Ahmedabad as an alternative to the conventional lecture of Reproductive and Child Health (RCH) Services. The topic and schedule of the quiz was announced 2 weeks

in advance. Time frame and work schedule were mentioned according to grant chart. Figure 1 shows the flowchart for conduction of the quiz on swine flu. The collected data was fed using the statistical package using Microsoft Excel and analyzed.

The assessment tools for data collection was predesigned feedback questionnaire from students and for faculty as an observer's perception, pre- and post-test questionnaire - for didactic lecture, score system of multiple choice question (MCQ), short answer question and other rapid fire rounds of the quiz also power point presentations and videography to conduct quiz rounds, scores of pre- post-session MCQ tests for quiz. The questionnaire with a five point Likert's scale was also used where (5) was suggest very important/very good, and (1) represented least important/very poor, used as innovation in teaching-learning method, students and faculty perception in pre-tested and predesigned questionnaire.

### RESULTS

There were 121 students enrolled in the X batch, among them 82 (68%) students attended the didactic lecture on "RCH" while out of 121 students in Y batch, 90 (75%) students attended quiz on "swine flu outbreak." In total, this quiz was attended by 90 MBBS students, 30 residents of community medicine, 9 tutors, 4 APs, 2 associate professors, and 2 professors. All the 7 competencies viz. history taking, physical examination, data assessment, therapeutic management, doctor-patient relationship, professional behavior and work ethics, and oral presentations and written documentation for mini-CEX, were observed.

Table 1 shows that following aspects had covered in six rounds. They were concepts of disease, determinants related to health; genetic factors, lifestyle factors, environmental factors round, epidemiology and screening, preventive medicine, hospital case management, epidemic control, and health education of disease.

Table 2 gives the winning team and their score. The overall performance was encouraging. The winning teams both Team B and Team A scored 75% and 55%, respectively.

Table 3 gives the evaluation of students by pre-test and post-test. In the pre-test, the majority of the students 47 (52%) scored <40%. Another 29 students (36%) had scores between 41% and 60%. In the post-test evaluation, 41 (46%) obtained 81-100% followed by 32 (35.55%) and the rest 17 (19%) below 40% score. The difference between pre-test and post-test scores was found to be statistically

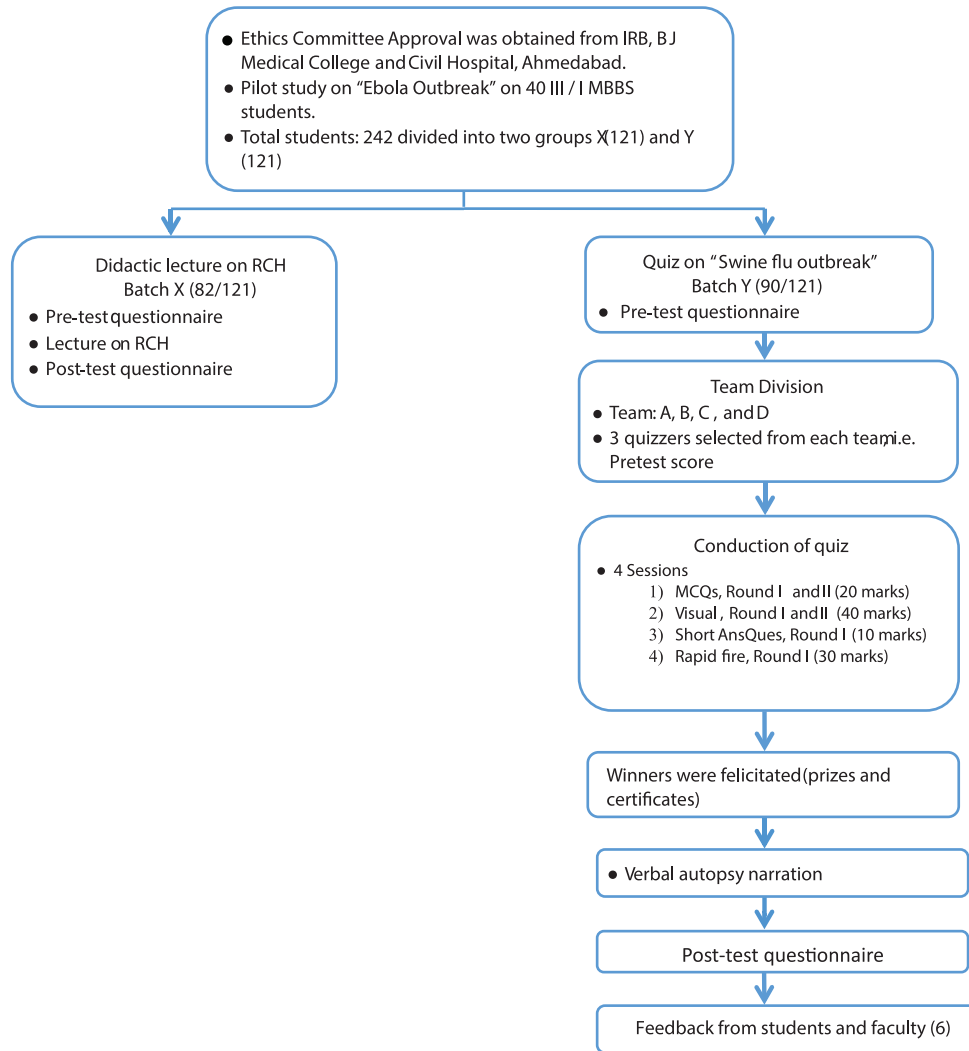



Figure 1: Flowchart for conduction of quiz on swine flu

Table 1: Details of contents of each round, time allotment, maximum marks, and examples

Category	Time	Marks	Examples
Session 1: MCQ round	1 min for each question	Two rounds with 10 marks each (max marks=20)	What is the period for swine flu vaccine to activate in a person's body? (1) 2 h, (2) 3 weeks, (3) 15 days, (4) 1 month
Session 2: Visual round	2 min for each question	Two rounds with 20 marks each (max marks=40)	Identify the district of Gujarat where maximum swine flu cases occurred during recent pandemic. Give account of total death and positive cases in that district?
			
Session 3: Short answer round	1 min for each question	One round with 10 marks each (max marks=10)	(1) Ahmedabad, (2) Jamnagar, (3) Rajkot, (4) Kutch Describe infection control measures at individual level and health facility level
Session 4: Rapid fire round	30 s for all questions	One round with 3 questions each carrying 10 marks (max marks=30)	Describe the antigenic shift, antigenic drift and the difference in all pandemics of swine flu till today

MCQ: Multiple choice question

highly significant. It also shows that previously it was 33% students had scores between 41% and 60% which converted into 49% in post-test lecture. There was an exceptional improvement in performance in the post-test analysis of swine flu quiz and lecture on MCH.

Table 4 gives the summary of feedback from the students regarding the quiz method. Table 4 shows that higher student satisfaction and retention during competition for subjects. They enjoyed the experience of a new mode of delivery through a quiz. Most of them asked for more quiz competition during different years; the responses were

**Table 2: Winning teams with their performance**

Session and round	Team A	Team B	Team C	Team D
Session I				
Round I	10	10	00	00
Round II	10	10	10	10
Session II				
Round I	20	20	00	10
Round II	20	20	10	00
Session III				
Round I	05	00	05	10
Session IV				
Round I	00	15	00	20
Total	55	75	25	50

**Table 3: Pre-test and post-test evaluation of traditional lecture and quiz on swine flu**

Score range	Number scored in pre-test lecture (%)	Number scored in pre-test quiz (%)	Number scored in post-test lecture (%)	Number scored in post-test quiz (%)
0-20	5 (6.10)	26 (20.98)	4 (4.87)	09 (9.00)
21-40	50 (60.90)	21 (25.92)	36 (43.90)	2 (2.46)
41-60	27 (33.00)	29 (35.80)	40 (48.78)	6 (7.40)
61-80	0 (0.00)	14 (17.28)	2 (2.43)	32 (39.50)
>80	0 (0.00)	0	0 (0.00)	41 (46.55)
Total	82 (100.00)	90 (100.00)	82 (100.00)	90 (100.00)

$\chi^2=5.7$ ,  $df=2$ ,  $P<0.05$ ;  $\chi^2=79.07$ ,  $df=3$ ,  $P<0.001$

**Table 4: Details of feedback given by students**

Feedback	Response
What factors facilitated learning?	Interesting, interactive, informative, innovative different from routine classes, helped them to come prepared, scope for active participation, building healthy competition, strong mode of teaching, more effective, playful education friendly
What factors hindered the learning?	Visual round required reference from outside (internet)
Which round was liked the most?	Rapid fire round, visual round, MCQs and short answer round in decreasing order
Suggestions for improvement?	Quiz method to be used to teach other topics in community medicine. They also suggested having more rounds in each session, especially in visual round

MCQ: Multiple choice question

encouraging. That method facilitate because it ensured active participation of the students, was Interesting, interactive, informative, strong mode of teaching, more effective, helped to build healthy competition among groups, friendly and playful method of education. The factors which hindered learning was that visual round required the reference from outside the source. Suggestions were given about improvement to organize more quiz session for other topics. To include more round in each and every session. Almost 48% of students liked the rapid fire round. 41 (29%) students liked the visual round while 27 (19%) of them preferred the MCQ round, only six students liked the short answer round.

Figure 2 shows that majority of students were satisfied with the new teaching tool and accepted it with ease as it was simple and fun and encouraged them to participate willingly, and there was improvement in their knowledge and practice.

Figure 3 shows that most of the faculty observed that there was active participation, quiz method was easy to understand and can be successfully used as an alternative to the traditional method.

## DISCUSSION

The development of innovative methods is important to improve student performance. The aim of this preliminary study was to ascertain the effectiveness of quiz as an interactive teaching technique in lectures and implement various quizzing activities and evaluate their impact on learning. This study highlights about teaching theories which proved useful in the development of interest of students in contrast to the traditional lecture method. The demographic data was collected in the two study groups to control for confounding factors. Participants were given 2-week period for the preparation before the lecture and implementing the quizzes.

The study covered all competences regarding the topic, and the quiz was arranged to include all aspect. This study suggested that the there was an exceptional improvement in students' performance in the post-test analysis of swine flu quiz and mini-CEX as compared to the didactic lecture on MCH. Similar findings were observed in the study done by Aljezawi and Albashtawy<sup>9</sup> that considerable achieve mentin post-test than retention test for the students in the quiz group, and they scored significantly better than those in the lecture group.

We had also obtained the summary of feedback from the students and faculties regarding the quiz method. They

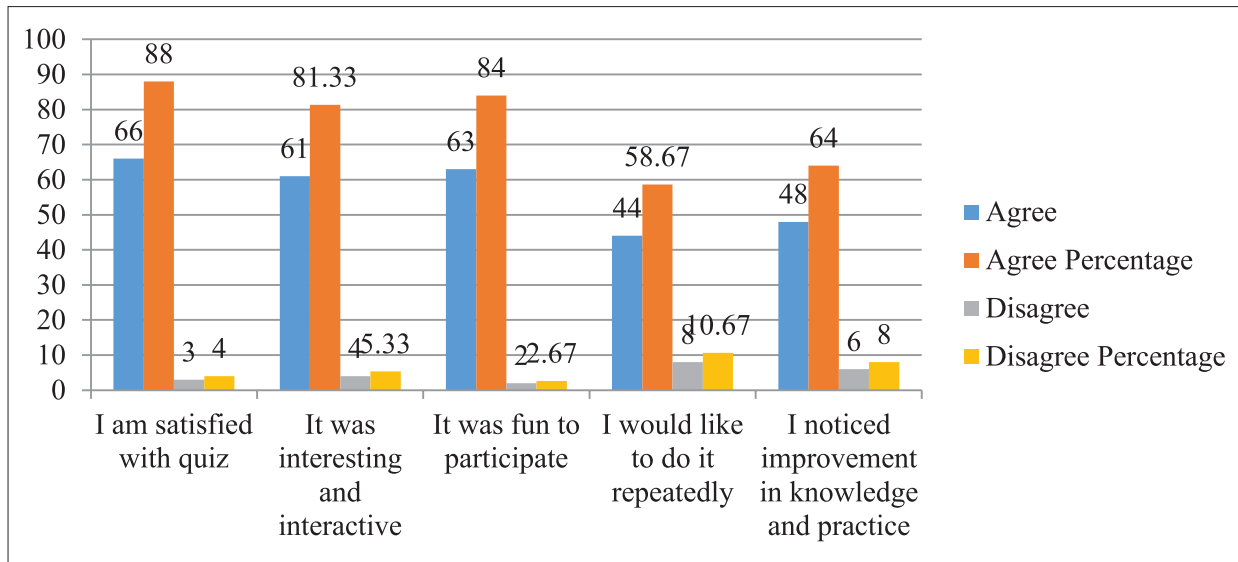


Figure 2: Students perception as per the Likert's scale

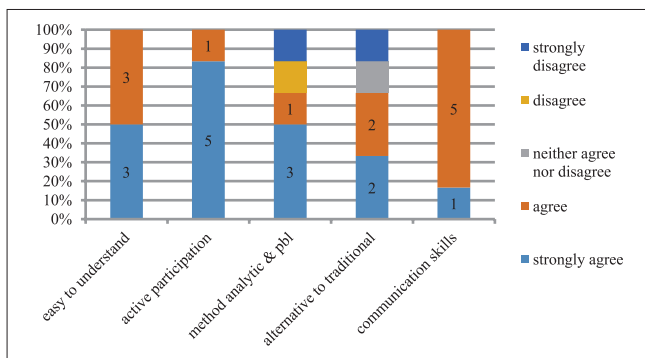


Figure 3: Faculty perception on quiz competition

enjoyed the experience of a new mode of delivery than the traditional method through the quiz. The students response were encouraging, and they asked for the more quiz during different years. The new innovative method of learning had ensured active participation of the students, interesting, interactive, informative, strong mode of teaching, more effective, helped to build healthy competition among groups, friendly and playful method of education. The findings of the study done by Karaksha *et al.*, shown that addition of embedded-animations, as supplement to the traditional didactic lectures, might have a positive impact on student learning, in particular for students who have low grade point average and are challenged by courses that are heavy for the theoretical aspects.<sup>10</sup>

So, it is feasible to adopt interactive teaching in a conventional curriculum in spite of all the challenges like large batches and need to allocate additional teaching hours. However, it needs the proper arrangement of the time frame to complete the due course in time. Moreover, the quiz method allows students to use the internet and other methods for topic preparation in addition to the book.

## CONCLUSION

Quiz is an interactive method of teaching and learning, which gives an opportunity to students for active and student-centered learning. It is feasible to adopt interactive teaching in a conventional curriculum in spite of all the challenges like large batches and need to allocate additional teaching hours. The students find the quiz method to be an interesting and useful learning tool. Students referred optional sources like the internet for preparation. Visual rounds and rapid fire round favored analytical thinking. Quiz nurtures team and competitive spirit. Implementing such interactive techniques requires leadership and team building skills and overcoming logistic barriers.

## LIMITATIONS

Equality of opportunity is less as all the students cannot act as participants in quiz another drawback was that the competition was very much time consuming. Much of the time was spend mainly for framing the questions in the quiz. Hence, this method cannot be organized too frequently.

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