



## RESEARCH ARTICLE

### INTRODUCTION OF MULTIPLE CHOICE QUESTIONS AT THE END OF LECTURE FOR MEDICAL UNDERGRADUATE STUDENTS- A PILOT STUDY

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#### ABSTRACT

**Background:** The graduate medical students often get less opportunity for clarifying their doubts and to reinforce their concepts after lecture classes. Students forget much of what they learn, therefore students could benefit from learning strategies that yield long-lasting knowledge. In this study we studied the value of multiple choice tests with no test (control) to determine their value as aids to retention learning.

##### Aims and objectives

- To assess if post lecture multiple choice question test helps retention learning.
- To compare the effect of post lecture MCQ tests with no test (control) on delayed retention learning.

**Method:** The study was conducted on 60 medical undergraduate students. 30 study group and 30 control group. The investigation involved initial testing at the end of the lecture (post instruction), followed by an unannounced delayed retention test on the same material three weeks later. The delayed test scores were statistically analyzed using SPSS (Version 16).

**Results:** Mean delayed retention score of MCQ group is 10.97 and the control group is 6.71. The MCQ group had a higher mean delayed retention score compared to control group.

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## INTRODUCTION

The medical students of India are taught subjects by means of didactic lectures, where the role of the student is passive. Further, continuous listening to lecture classes one after the other without active participation is a difficult experience for the students (Byrne *et al.*, 1976). Cognitive learning is best assessed with traditional classroom tests. Students remember information which has been tested more, than non-tested information. Different methods have been carried out in the past for revision with variable impacts. Previous studies, demonstrated small group discussion and formulation of short answer questions as effective modes of revision exercise for graduate medical students (Bobby *et al.*, 2004; Bobby *et al.*, 2007). The present study was designed to explore the usefulness of MCQs by graduate medical students as a revision exercise.

## Aims and objective

- Effect of delayed retention learning by introducing post instruction MCQs test.
- To compare the effect of post instruction MCQ and no tests on delayed retention learning.

## MATERIALS AND METHODS

After obtaining institutional ethical clearance, 60 volunteered medical undergraduates were selected. They were divided into study group (30) and control group (30) randomly. All instructional and testing procedures were done in the same room, by the same teacher. Only Study group were given MCQ test at end of lecture. The multiple-choice tests were a 10 item test and had four response alternatives. The control group was not given any test initially. An unannounced delayed test comprising of MCQs on the same material was given three weeks later to both the groups.

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## STATISTICAL ANALYSIS

The data are presented as mean and standard deviation. The comparison of the mean was carried out with t-test (SPSS 16). A p value <0.05 were considered as the level of significance for all the tests.

## RESULTS

The marks (Mean  $\pm$ SD) obtained by the students after three weeks of lecture are shown in Table I. Marks obtained after three weeks of lecture were significantly higher in study group when compared to control group( Fig 1). This illustrates that MCQ tests are useful revision exercises for all the students.

Table 1. Shows t test between the groups

GROUPS	MEAN $\pm$ SD	P VALUE
STUDY GROUP	8.60 $\pm$ 1.070	
CONTROL GROUP	3.87 $\pm$ 2.161	0.000**

\*\*highly significant

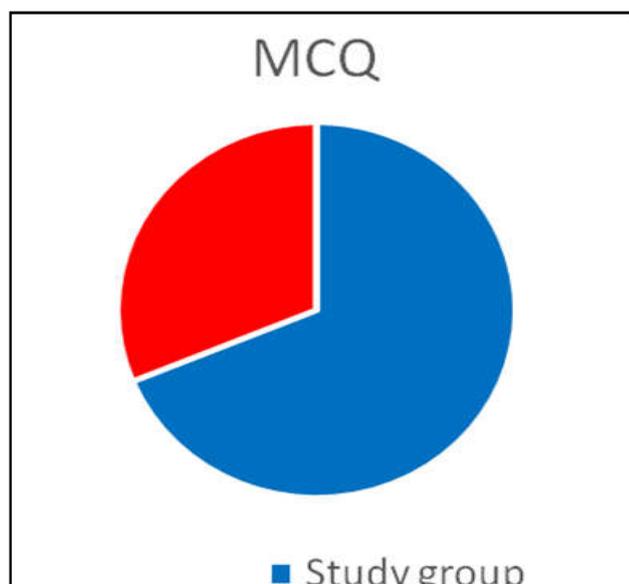


Fig 1. Shows the marks obtained in both the groups at the end of 3 weeks of lecture

## DISCUSSION

MCQs are very useful as an assessment tool, with a simple design, easy implementation (with appropriate staff development), and clarity of focus. There are many types of these questions: single best answer (A-types); matching questions (M-types); and multiple true/ false questions (X-types) or in another methodological way: the five choice completion, multiple completion, and assertion-reason types. Wood (2003) pointed out that (i) MCQs assessed "remembering isolated pieces of information" rather than "the ability to use knowledge" and (ii) they could be answered by 4 eliminating the incorrect options (distracters) (Wood, 2003). However, if staff are trained to design proper distracters, the problem of 'answering the question by a process of 5 elimination' can totally be avoided (Ray Harper, 2003). In schools, teacher-made tests are used for evaluation (Haynie, 1991; Haynie, 1983; Haynie, 1992). But teacher-made tests are important in the classroom for evaluation of taught material

(Mehrens, 1987). Teacher made tests are an important part of the educational system and should be researched (Anbar, 1991; Nnodim, 1992). MCQs are more efficient, reliable and valid. Considering that extended MCQs have their own set of disadvantages, one would still persist with the problem-solving type of questions which work at a cognitive level without perusing too much of vignettes for a non-English speaking population of students (Pepple *et al.*, 2010; Debasis, 2013; Davis *et al.*, 1999).

## Conclusion

Multiple-choice tests are good in promoting retention learning of the information actually contained in the immediate post-tests as compared to no tests because the correct answer to each item is provided along with the distracters in the multiple choice items. Teachers who find constructing multiple-choice items difficult could make do with short-answer items which are relatively easy to prepare. Their usefulness in the promotion of retention learning should be researched. Continued research must be conducted and the best ways to test sought so as to maximize retention of important learning in all disciplines.

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