MULTIPLE CHOICE QUESTIONS: AS FORMATIVE ASSESSMENT

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Abstract

The aims and objectives of the study was to assess the perceptions of 130 medical undergraduate students of first year MBBS about the most accepted written assessment method i.e multiple choice questions for formative assessment in the near future after vertical integration of teaching. Vertical integration module was followed for osteology classes in a medical college between orthopaedics and anatomy department. Thus after obtaining feedback from all the students, we concluded that multiple choice questions can be used for formative assessment and in near future it can be utilized for summative assessment too.

Keywords: Assessment, Multiple choice questions, Formative assessment

Introduction:

Assessment drives learning. Curriculum and assessment both are most relevant component of the learning process as they are highly interdependent. If assessments are properly planned and implemented they had tremendous impact on learning process ¹. Also while reforming the new curriculum, assessment methods needs to be more aligned with them. Approaches emphasizing horizontal, vertical, and spiral integration and/or a better balance between foundational sciences and practice have received extensive attention across health professions ². Role of assessment is not simply to assess a student on preset criteria and make a decision but also to facilitate his learning through

a continuous process of feedback and at the same time provide him/her the opportunity to improve which resulted in a shift of focus from summative assessment to continuous formative assessment ³. Gipps in his study explains formative assessment as “the process of appraising, judging or evaluating student’s work or performance and using this to shape and improve student’s competence.”⁴

For continuous students learning improvement, feedback plays a great key role and also determines the effectiveness of the formative assessment ^{5,6}.

By various studies, it is been proven that MCQs are one of the most accepted written assessment which used in medical field as formative

assessment. MCQs are formed with a stem – a question or scenario – and a set of responses. Responses can be in the form single best option, multiple true/ false questions and extended matching question. In single best option, a student chooses the best response from a range of 4-5 options available. While in Multiple true/false questions – a student has to assess a number of statements relating to the question as either being true or false and in extended matching questions – students answer a series of questions relating to a scenario by selecting responses from an extended list of options.⁹

Advantages of MCQs are that they are quick and easy to score, by hand or electronically, it test a wide range of higher-order thinking skills and simultaneously it covers a lots of content in single exam. However, designing valid questions and responses is a demanding skill that can be time consuming, and criticism has been made that it provide an opportunity for unprepared students to guess and that they do not assess higher analytic skills.¹⁰

Bradley and Mattick defined vertical integration as a “...combination of basic and clinical sciences in such a way that the traditional divide between preclinical and clinical studies is broken down⁷. Integration of basic sciences with clinical medicine was done during the first year because it helps to integrate theoretical knowledge with applied clinical utility⁸.

Thus this study was the need of an hour in which we integrated osteology of anatomy with orthopaedics and assessment was done via MCQs along with the feedback.

Materials and Methods

This study was conducted on 150 students of 1st year MBBS students from March to May’ 2018. Out of 150, 130 students appeared in this prospective educational study conducted by Department of Anatomy at LN Medical College & JK Hospital, Bhopal (M.P). Ethical approval was granted by Institutional Ethics Committee. This is for the 1st time we incorporated the culture of integrated teaching for the 1st year students.

Vertical Integration was done between Anatomy and Orthopedics department. Before conducting the final MCQ test integrated teaching was done. Initially in osteology classes only bones were covered. But now after integration, simultaneously all the clinical conditions related with that bone were also covered by orthopedics faculty by every possible means like discussing a case, showing a case , by sharing a video clip which can be downloaded one or by doing videography on real patient which doing examination and also by discussing radiographs along with various procedures . Once a region (Upper limb) is complete, part completion test were conducted. In this part completion test, we introduced MCQs as assessment method. A test of 30 MCQs were conducted in part completion test and immediately after that Feedback of students were conducted regarding this test. Blueprint of MCQs were formed. Face validity and Content validity was established of the question with the faculty of both anatomy and orthopedics department. Checklist of the answer key was prepared. Candidate instructions was concise and clear to choose only one option. The scores obtained by the students were informed to them but it was made clear that these scores would not be included for assessment. The feedback of perceptions of 130 students were assessed by collecting questionnaires. At the bottom of feedback form “ comments ” section is given so that everyone can freely express their opinion about the study.

Statistical analysis: Data was presented as frequency percentage.

Results:

Response of the students are tabulated in table 1.

Students Feedback:

99% of the students felt that questions asked clear and relevant , 98 % said that they were able to understand the question , 95% MCQs helps to cover vast syllabus in a systematic way , 93 % said that MCQ based test after each topic is a good motivation for learning in depth, 94 % said

MCQs help to score better, 92 % said display of answer key to MCQ test immediately after the test helps to identify my strong and weak areas in the subject, 98% said that MCQs discussed in the following class are better than only displaying the answers after the test, 97% said MCQs as an assessment will help us to prepare for future entrance exams , 95 % said Department should continue this practice for

forthcoming batches and 94% said MCQs should be considered as a part of formative and summative assessment. 8 % said that display of answer key to MCQ test immediately after the test helps to identify my strong and weak areas in the subject and 7 % said MCQs based test after each topic is a good motivation for learning in depth.

Table 1: Feedback from students after conduction of MCQs test.

Sr. No.	STATEMENT	YES (%)	NO (%)
1	Questions asked were clear and relevant	99	1
2	Were they able to understand the questions	98	2
3	MCQs helps to cover vast syllabus in a systematic way	95	5
4	MCQ based test after each topic is a good motivation for learning in depth	93	7
5	MCQs help to score better	94	6
6	Display of answer key to MCQ test immediately after the test helps to identify strong and weak areas in the subject	92	8
7	MCQs discussed in the following class are better than only displaying the answers after the test	98	2
8	MCQs as an assessment will help us to prepare for future entrance exams	97	3
9	Department should continue this practice for forthcoming batches	95	5
10	MCQs should be considered as a part of formative and summative assessment	94	6

DISCUSSION:

Medical education is tremendously changing, with more than half of the American schools being engaged in curricular reforms. Many of these modifications focus on implementing horizontal or vertical curricular integration.¹²

Little attention has been given to teach applied anatomy to medical students. For which vertical integration can do wonders because it combines basic sciences knowledge and clinical bedside teaching in a synergy that deepens understanding of the basic science in the context of the clinical problem and stimulates intellectual curiosity. It makes learning holistic and more meaningful¹¹. Integration should promote

retention of knowledge and acquisition of skills through repetitive and progressive development of concepts and their applications. For integration to be useful these three areas needed to be worked on promptly i.e ensuring synchronous presentation of material, avoiding the tendency to diminish the importance of the basic sciences, and using unified definitions. Vertical integration of anatomy is useful with surgery, orthopedics and radiology. Comprehensive knowledge of Anatomy plays a vital role in proper understanding of clinical disciplines like Radiology and Surgery.

In the present study, integrated teaching was perceived to be useful by majority of the

students with regards to an improvement in the appreciation and application of basic science knowledge¹³. It generates interest and deep understanding for osteology section of anatomy when collaborated with orthopedics department. Assessment was done by conduction of MCQs test after conducting osteology classes and immediately after that a feedback form was given to each and every study to obtain their perception regarding the conduction of MCQs.

In the study done by Singh R at Bareilly, the MCQs came out as best assessment tool so it is a good sign of improvement in various competencies and various other studies also concluded that multiple-choice questions (MCQs) test the attitudes, skills, knowledge, and competency in medical school. Also Vertical Integration of teaching is the best method of Teaching¹⁴.

In the present study 99% of the students said that questions asked were clear and relevant, 98 % said that they were able to understand the question, 95% MCQs helps to cover vast syllabus in a systematic way, 93 % said that MCQ based test after each topic is a good motivation for learning in depth, 94 % MCQs help to score better, 92 % said display of answer key to MCQ test immediately after the test helps to identify my strong and weak areas in the subject, 98% said that MCQs discussed in the following class are better than only displaying the answers after the test, 97% said MCQs as an assessment will help us to prepare for future entrance exams, 95 % said Department should continue this practice for forthcoming batches and 94% said MCQs should be considered as a part of formative and summative assessment. This study has shown a strong positive perception towards MCQs to be considered for formative assessment by maximum students.

CONCLUSION:

Vertical integration of basic science in first year was beneficial and resulted in increasing the depth of knowledge gain and improved in scoring. The classes were found to be useful,

interesting and thought to help in clinical care and application by majority of students. Thus by all the positive feedback from the students we concluded that MCQs can be used for formative assessment in the near future and further its scope can be extended to be used for summative assessment too.

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