

Role of Effective Feed Back in Multiple Choice Questions (MCQs) Designing for Faculty Development

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Abstract

Background: To find out the type and frequency of errors in multiple choice questions (MCQs) designing by the faculty members and to obtain need assessment feedback for faculty development for MCQ designing.

Methods: In this study, all MCQs submitted by faculty members of Islamic International Medical College (IIMC) over a period of one year and three months from January 2009 to April 2010 were reviewed from time to time by the assessment committee. A total of 922 MCQs were reviewed. The reviews were compiled and analyzed to find out the frequency and types of errors made inadvertently in the structure and design of MCQs.

Results: During the study period, the faculty members submitted a total of 922 MCQs. Spectrum of errors in MCQs ranged from spellings to complex questions to question cues. A total of 40% items qualified for being included in final assessment

Conclusion: Review process is very important in improving the quality of items.

Keywords: Medical education, multiple choice questions, faculty development.

greater than that required to answer one.¹⁻⁴

Since the introduction of integrated curriculum at Islamic International Medical College, MCQ designing has been a regular feature of faculty members' routine activities. The curriculum is formatted in the form of organ based modular system. Summative assessments are done at the end of each module and at the end of every academic year. The process of assessment designing starts from submission of MCQs by the faculty members to the assessment committee of IIMC. These questions are reviewed thoroughly by the assessment committee for optimization regarding their validity and educational attributes. All the faculty members are issued a simple instruction sheet for designing of MCQs and a template is given to them for formatting of MCQs. Review of MCQs submitted by the faculty members reveals many errors and pitfalls in their designing which are to be removed before these MCQs are put in an assessment. Such a review not only helps in optimization of MCQs but also provides valuable information feedback for the faculty development program.

Introduction

Multiple choice questions (MCQs) are one of the most reliable, easily administrable and valid modalities of assessment used in the field of medical education. They have been a favoured method of assessment of knowledge and understanding for many years. A multiple choice question consists of a stem which may be a clinical vignette or a statement describing a scientific fact. It is followed by a variable number of options, each of which is related to the stem. However only one of them may be correct (one correct type MCQ) or the best (one best type of MCQ). The student is supposed to identify the best out of all options to be awarded marks. The construction of good MCQs is a difficult job and the knowledge required to effectively set a good quality MCQ is much

Materials and Methods

The MCQs submitted by the faculty members were placed in a common pool for the assessment committee for review. The three-member assessment committee reviewed them for their quality regarding their validity, relevance and structural integrity. As a result of this review the MCQs were placed in three categories. First were those that were correct in every respect and were approved for being included in the assessment. Second were those that had correctable errors and were returned to the faculty member for correction and improvement. Third were those that had uncorrectable errors, or were declared totally invalid for the students and were rejected. The first category MCQs were then administered in assessment

and according to the post examination analysis they were assigned educational attributes like difficulty index and were then approved to be sent to the MCQ bank.

All MCQs submitted by faculty members of IIMC over a period of one year from January 2009 to April 2010, were reviewed from time to time by the assessment committee. A total of 922 MCQs were reviewed. The reviews were compiled to find out the frequency and types of errors made inadvertently in the structure and design of MCQs. After the review process was over, feedback remarks were given to the MCQ designers to improve the quality of their items. This feedback helped remove the flaws from the items.

Results

During the study period the assessment committee reviewed a total of 922 MCQs. Twelve types of errors were found in the items presented to the assessment committee. A total of 560 errors (60%) were found in MCQs. A total of 40% items qualified for being included in the final assessment.

Table 1: Number and types of errors in MCQ construction.

Total number of MCQs submitted: 922

Error class	Error types	Number of errors	Percentage of errors
Stem	Wrong stem	86	15.3
	Unclear stem	15	2.7
	Negative MCQ	29	5.1
Options	Wrong options	43	7.7
	Heterogeneous options	25	4.5
	Extra long correct option	13	2.3
	Incorrect option-stem relationship	28	5
MCQ structure	Invalid questions	33	5.9
	Wrong format	83	14.8
	Cueing	37	6.6
General errors	Spelling	77	13.75
	Grammatical errors	51	9.11
Total errors		560	

The spectrum of types of these errors ranged

from simple spelling errors to complex question-to-question cues. Maximum errors were related to the structure of MCQs (153; 16.59%), followed by flaws in the stem or vignette of the MCQs (130 errors; 14.09%). Regarding individual errors, maximum errors were related to the phrasing of stem (86; 9.32%) and use of wrong format (83; 9.0%) (Table 1).

After review by the assessment committee, all items were handed back over to the faculty members with feedback remarks regarding the types of flaws found in the items and ways to improve them. After revision by faculty members of their items, all items resubmitted qualified to be included in the final assessments.

Discussion

Medical education in Southeast Asian countries is undergoing rapid changes, with the realignment of medical schools' curricula to meet national needs and priorities, the adoption of and experimentation with innovations and greater emphasis on staff development initiatives. Faculty development in medical education is crucial for developing and sustaining quality education in medical schools.⁵⁻⁷

The educational objectives for the construction of MCQs should target all levels of learning appropriate for the given content. Educational objectives, while designing MCQs, should be written in observable, behavioural terms that allow for an accurate assessment from simple recall to problem solving. Characteristics of effective MCQs can be described in terms of the overall item, the stem, and the options. Flawed MCQs interfere with accurate and meaningful interpretation of test scores and negatively affect student pass rates. Therefore, to develop reliable and valid tests, items must be constructed that are free of such flaws.⁸

Although students claim to know the content asked of in the multi-choice exam, they often get confused by the use of unknown vocabulary. Flawed items are more likely to affect the performance of students. The level of experience improves the structural flawlessness of MCQs.¹⁰⁻¹¹

Present study shows in detail the types of errors most commonly committed in the construction of MCQs. It emphasizes the need to thoroughly scrutinize the items prepared by the faculty members before they are put in an assessment. It also gives valuable guidelines for the training needs of the item

writers to prepare flawless items. The faculty members preparing these items were trained in a faculty development workshop but they had no previous experience in MCQ designing. This was a recognizable factor contributing to the high number of errors in their prepared items. Pertinent feedback regarding removal of errors gave good results in improving the quality of items prepared by the faculty members.

In Pakistan there seems to be some apprehensions among educators on the use of newer methods including Multiple Choice Questions (MCQs). After years of research MCQ has gained acceptance as a reliable method which can test higher intellectual domain. However one needs to understand that the quality of MCQ reflects the item writers understanding and experience rather than fault of the technique. More important is to work in a conducive environment where one can discuss with peers, give suggestions and make corrections if required even if an individual is a content expert and has many years of teaching experience.

Faculty development programs are especially important in adapting faculty members to their changing roles in initiating and setting the directions for curricular changes. These programs can be a powerful tool to constitute a positive institutional climate and can range from basic orientation programs for new faculty members to postgraduate medical education programs for health professionals. Overall, the aim of all these training programs is to support medical educators in adapting to changing missions of teaching and to enhance the efficiency and performance of their teaching skills while improving work satisfaction and teaching confidence by developing good teachers.¹² The present study is unique to reports flaws in designing MCQs and at the same time to test faculty needs assessment.

Conclusion

Experience and effective feedback are essential

in improving the results of quality MCQ designing.

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