ORIGINAL ARTICLE

AN EFFICIENT, COST EFFECTIVE AND TIME SAVING METHOD OF EXAMINATION BASED ON PEER REVIEW AND MCQ DESIGN-INITIAL EXPERIENCE

Liaqat Ali, Sabina Nisar, Aisha Ghassan

ABSTRACT

OBJECTIVE: To evaluate the performance of 1st year MBBS students using peer reviewed MCQ examination method believed to be efficient, cost effective and time saving.

STUDY DESIGN: Experimental study

PLACE AND DURATION: Clinical Skill Lab (CSL), Foundation University Medical College Islamabad from Jan 2012 to June 2012

METHODOLOGY: 60 MCQs. (30 descriptive and 30 slides of 5 options type) covering all domains and MCQ based learning ability of students were administered at the end of SMS and Breast module. The time given to solve each question was 1 minute. Fake roll numbers for the examination were checked individually by an invigilator. Papers collected after 60 minutes from one side were redistributed to students on other side of the hall and each student had to check the paper again writing his true roll number. It was again cross checked by invigilators. In 60 minutes feedback session the correct answers out of 5 options were projected on the screen and reasons of correctness were also explained. The whole feedback session lasted 60 minutes. All papers were collected and checked by invigilators to authenticate the correctness of paper checking by students. All students were required to fill in feedback performa.

RESULT: Out of 150 student's papers with 300 components of each paper (Total of 45000 components) only 9 mistakes were picked up during rechecking of papers by invigilators. These 9 mistakes were labeled as genuine mistakes rather than intentional. This clearly speaks of authenticity of trust shown by first year students. The whole examination was completed in 3 hours, students given feedback on their performance and paper checking with result declaration completed within one hour of feedback session.

CONCLUSION: The new method of MCQ examination addresses examination methodology, peer paper checking, feedback issues more efficiently, swiftly and more accurately with positive feedback.

KEY WORDS: MCQs, Clinical Skill Lab, Feedback

INTRODUCTION

During the last 3000 years various developments that led to physical diagnosis, applied to medical education by William Osler at Johns Hopkins University Baltimore, Maryland, USA, revolutionized the medical education in America and Western world\textsuperscript{1}. Examination of theoretical component of knowledge has always been a challenging task for educationalists. Medical education is an ever evolving field where various aspects of knowledge are being examined by different methods. Daily new and innovative methods are being tried and experimented. Various models are preferentially being used and their results discussed at various forums. Main idea is to cover three domains namely cognition, skills and attitude. However when it comes to examination tools implementing three domains, there is lot of controversy. Each model has its own advantages and drawbacks. Knows component of cognition has always been assessed by false/true MCQs. Various tools used for knows how are extended match type MCQs, case presentation and essays type questions. However various inherent problems include MCQs design to cover cognitive aspect of history taking and physical examination, feedback and trained senior faculty to do the job. Another difficulty is MCQ papers checking. Although modern armory of scanning equipments have partly solved the problem but at places where such devices are not available paper checking has been a major problem. Present attempt to devise a new method integrating all difficult aspects of MCQ paper have gone to some extent to redress these issues.

Correspondence to:
Dr. Liaqat Ali
Assistant Professor of Physiology
Foundation University Medical College Islamabad
H. No. 15, Street 9 Sector-C, DHA Phase-I, Islamabad
E-mail: doc_liaquat@yahoo.com
In order to save precious time of first year MBBS students, it was decided to examine the students after teaching two modules. Skin, musculoskeletal system (SMS) and Breast modules were taught in first three months. After informed consent from all participants and approval by Ethical review committee, examination was conducted at FUMC auditorium that has the seating capacity for 500 students. Type A MCQs that vary in their difficulty and discrimination index were prepared, 30 each for SMS and Breast Modules. 30 MCQs were in the form of projected slides and 30 descriptive. One minute was allotted to solve one best out of five options MCQ. Students were allotted false roll numbers randomly for that day immediately before the examination. Assigned roll numbers written on answer sheaths were checked individually by invigilators. After 60 minutes all the answer sheaths were collected. Answer sheaths collected from one half of the auditorium were distributed to students sitting on other side and vice versa. A feedback session was conducted by a senior faculty member who made the paper. Reasoning of correct and false answers was given for each MCQ. Student checking the paper was supposed to write down his real roll number on the answer sheath cross checked individually by invigilators. Students marked the answer sheaths and aggregates of correct answers were calculated and pasted on the front page with signature. To validate the correctness of result, the papers were again checked by invigilators. MCQ paper and feedback session took two hours whereas the crosschecking by ten invigilators was completed in another hour. All students completed the feedback performa. Whole drill was over in three hours.

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DISCUSSION

Out of innumerable MCQ models, considering our circumstances, manpower, existing resources and inherent difficulties of each model we opted for five options model. Validity, reliability, cost effectiveness and other standard parameters could not be applied to this model during first year of establishment of Clinical Skill Lab. Main objective of trying new method of examination at CSL was to design and test an assessment and learning tool that is easy to construct, measurable and less time consumable. Another objective was to give students feedback on contents of the examination immediately after the examination so that mistakes committed could be corrected when the memory of the contents is fresh. Such an exercise has a more profound and long lasting impact. MCQ has been a useful assessment and learning tool already tried in almost all specialties including radiology and CME. Although three option MCQs are less time/space consuming, easy to prepare and administer with increased sample content, type A MCQs which comprise a stem and 5 option are the easiest to construct and students feel more confident in answering such MCQs because of the fact that 1 in 5 options MCQs are the most familiar and frequently used in our routine practice. Flawed MCQs affect accurate test scores interpretation and have a negative impact on student pass rate. Flawless constructed MCQs improve reliability and validity. MCQs with item flaws violate evidence based and established principals of effective item writing. Items flaws introduce various errors including construct irrelevant variance to assessment thereby penalizing examinee for no fault of theirs and decrease the validity of examination. We in our designed system tried our level best not to allow flawed MCQs to influence the rating of our system. Our team specially carried out several mock tests on small batches of students so as to be able to prepare flawless MCQs. We succeeded in our effort as during the examination only 50 queries were made by the students. 12 were related to some spelling mistakes, punctuation or wording of the stem or items. 30 were related to already descriptive items like time for each MCQ, passing marks and overall impact on examination including practical and viva. Eight queries were raised by those students who completed the paper before time asking to leave the hall early. None of query was related to content, course or out of course questions, difficulty or easiness of correct answers or other observations commonly noticed during essay type questions or other examination tools. Free response format and MCQ format, two types of examinations, though show significant correlation even with high level Bloom’s taxonomy questions, provide enough evidence that MCQ format is a valid method that can safely be used as an alternative to traditional free format steeplechase examination. At CSL we preferred single best answer type questions as they have a better discriminating index between knowledgeable and unknowledgeable candidates than tradition true/false type MCQs. This format has been made a standard assessment tool in final FRCR Clinical Oncology examination.

Any MCQ examination is not only an assessment tool but also takes into account modern strategy of keeping a balance between contents covering three pillars of knowledge. However in the era of evidence based medicine (EBM), the absence of any clear cut guidelines for MCQs designs of evidence based medicine and clinical decision making (CDM), strategy for EBM/CDM MCQ database development was successful and samples taken from this database can be used to assess different EBM/CDM knowledge domains and three levels of EBM/CDM learners. At Foundation University Medical College, CSL was given an additional task of integrating basic sciences knowledge with clinical sciences keeping in view the module being taught in Anatomy and Physiology. CSL has designed structured debriefing and feedback on debriefing sessions to cover clinical skills domains that were tested in OSCE. However debriefing at the end of MCQ examination was done as a strategy to cover the cognitive domain. With certain learning objectives in mind, pediatric resuscitation specialists designed two MCQ exams to evaluate the successful achievement of PALS based learning objectives. This MCQ examination successfully achieved all its objectives and is being used internationally for further pediatric resuscitation models.

Our new method of examination designed to achieve various objectives is a series of experiments carried out to enhance learner’s learning capabilities. In order to assess learner’s clinical reasoning, Script concordance examination is also used. A learner is given a clinical scenario and asked if further additional information could point to a clinical diagnosis later on compared with an answer of panel experts for concordance. This method is more valid than MCQ examination and is more reliable when administered to house officers. Encouraged by the results of new method of MCQ examination; our next step would be to use script concordance strategy in the form of some sort of MCQ examination to enhance our student’s learning capabilities. Based on results of this MCQ examination in the next phase we have also designed a pre and post test MCQ examination to scientifically
check the van der Vleuten criteria related to validity, reliability, impact, cost effectiveness and accountability. Although contents taught in SMS and breast module were also related to geriatric diseases, none of the MCQ was primarily designed to cover this particular aspect as geriatric medicine was not taught to our students as separate block.

CONCLUSION

The new method of MCQ examination addresses examination methodology, peer paper checking, feedback issues in a short span more efficiently, swiftly and more accurately with positive feedback.

REFERENCES

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