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Original Research Paper

Pathology

ANALYSIS OF STUDENT'S FEEDBACK ON DIFFERENT FORMATS OF WRITTEN ASSESSMENT IN UNDERGRADUATE MEDICAL EDUCATION

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ABSTRACT

OBJECTIVE: To assess the undergraduate medical student's preference among different formats of written assessment.

MATERIAL AND METHOD: Cross sectional study was conducted on Phase I and phase II undergraduate medical students with prior information and consent. Lecture was delivered on a topic for both phases followed by a test with same question in different formats and a questionnaire on student's feedback on these formats.

RESULTS: Majority of students of both phases preferred Multiple choice questions over other three formats as it was easier to answer, time saving, enjoyable, can fetch more marks and free of evaluator bias. Other formats also had their advantages and drawbacks.

CONCLUSION: Assessment of any format of written assessments can usually assess any level of cognitive domain with properly framed questions and model answers although students may prefer a particular one.

KEYWORDS : Assessment, Cognitive domain, Multiple choice questions.

INTRODUCTION

Medical Education, the science and art behind medical teaching learning have become more rigorous and scientific in recent times. Extensive changes in the curriculum of Undergraduate medical education have been done in our country to improve the standard of medical education. Curricula have become more problem oriented, based on self-directed learning., Teachers have progressed to the role of the solution-provider from that of problem-identifier (Tabish, 2008). Teaching and assessment methodologies have evolved to achieve the intended goal in recent times. Reviewing the assessment and teaching methods at regular intervals, such as student's feedback will help the faculty to identify the strengths and weaknesses of their teaching and assessment methods (Norman, 2012) (Dube, Schinke, Strasser, Couper, & Lightfoot, 2015). Moreover, student's feedback, verbally or non-verbally is an inexpensive and indispensable tool to bridge communication gap between the students and teachers. It indeed improves the quality of medical education (Sehgal, Dhir, & Sawhney, 1998) (Rafique & Rafique, 2013).

At undergraduate level evaluation of three domains i.e. Cognitive, Affective and Psychomotor is done. Cognitive domain can be evaluated at different levels according to Bloom's levels of cognitive domain- Knowledge, Comprehension, Application, Analysis, Synthesis and Evaluation (Evaluation of Modified Essay questions (MEQ) and Multiple Choice Questions (MCQ) as a tool for assessing the Cognitive skills of Undergraduate Medical Students., 2011).

Written assessment methods are popular because they are easy to conduct and cost-effective when many students must be tested (Hift, Should essays and other open ended type questions retain a place in written summative assessment in clinical medicine?, 2014).

The various tools of written assessment are - a. Long essay questions, structured essay type questions, modified essay questions, b. short answer questions, c. Multiple choice questions and their variants. Researchers have shown that it is the content of the questions rather than the format which determines what the questions need to test (Singh & Anshu, Principles of assessment in medical education, 2022). Each question has its own advantages and disadvantages. The choice of questions depends on the a. purpose of assessment-high stake examinations or for formative assessment and b. testing time-with open ended questions, fewer question that means lesser content area can be covered. In a nutshell, with a bit of creativity and imagination in the questions teachers can test higher orders of knowledge instead of framing questions which test rote knowledge.

OBJECTIVE OF THE STUDY

To assess the preference of undergraduate medical students among the different formats of written assessment: Long essay question (LEQ), Structured essay question (SEQ), Modified essay question (MEQ) and Multiple Choice questions (MCQ).

METHODOLOGY

A cross sectional study was conducted among phase I and phase II undergraduate medical students in our institution. Informed consent was taken from the student and the purpose of the study was explained in detail to them. Those who were not present on the day of data collection were excluded from the study. One topic was selected for each of the phases for the study and a lecture on the selected topic was delivered to the whole class for the duration of 60 minutes by facilitator with the help of audio-visual aids.

For phase I students a lecture on selected topic "Stereoisomerism in Carbohydrate" was delivered to the whole class for duration of 60 minutes by facilitator with the help of audio-visual aids. It was a subtopic in "Carbohydrate Chemistry". For phase II question the selected topic was "Carcinoma of Uterine Cervix". Students were asked to complete an assignment on the same. The main objective of the lecture and assignment was to make students well prepared for the topic test. Test was conducted on the same topic next week for duration of 40 minutes. Same question was asked in 4 different formats: Long essay question, Structured essay question, Modified essay question and Multiple choice questions (MCQs). At the end of the test, a pretested and semi structured questionnaire was administered to the students to assess their perception, attitude as well as their preference among the four different formats. Each format of question was checked by three teachers and average done to avoid subjective bias as well as human errors. Data collected was analyzed using appropriate statistical methods.

RESULTS:

In our study, 205 phase I and 189 phase II undergraduate medical students participated. Among the phase I students, 61% were male and 39% were female, for phase II students, 61.4% were males and 38.6% were females. Table No. 1

reveals the perception of undergraduate students towards four different modalities in written assessment. As evident from the table, majority of the phase I students preferred MCQs over other three formats as it was time saving (84%students opted such), easier to answer (55%), enjoyable (78%), can fetch more marks (63%) and free of evaluator bias (81%). For the phase II students, majority preferred MCQs over other three formats as it was time saving (93%students said so), easier to answer (70%), enjoyable (86%), can fetch more marks (80%) and free of evaluator bias (73%). MEQ was preferred by students for being the best method to assess problem solving skills (82%) and testing clinical reasoning ability (87%) in phase I students. MEQ was preferred by 80% phase II students for testing clinical reasoning ability, but for best method to assess problem solving skills MCQ (45%) and MEQ (48%) were preferred almost equally. With regard to a method to assess the answer presentation skills, most of the phase I students (67%) considered long essay question to be more appropriate followed by SEQ (19%). Similarly, LEQ was considered by more (84%) students of phase I to cover greater spectrum of content. With regard to a format easier to answer - SEQ was opted by 26% phase I students which comes after MCQ (55%). For phase II students, MEQ was opted by 26% students as a format easier to answer. All of the formats were preferred almost parallelly by phase I students for testing the knowledge of the topic. (LEQ-30%, SEQ-15%, MEQ-25%, MCQ-30%). For phase II students MEQ was preferred by 39% students for testing the knowledge of the topic.

Taking into consideration the interest of students in answering questions, it was found that, MCQs were preferred by most students- both phase I and phase II. In phase I, 75% students preferred MCQ followed by SEQ (11%). In phase II, 82% preferred MCQs followed by MEQs (14%).

Table- Preference % for the different written assessment formats among phase I and phase II students

SL no.	Questions	LEQ		SEQ		MEQ		MCQ	
		Phase I	Phase II	Phase I	Phase II	Phase I	Phase II	Phase I	Phase II
1	Which type of question do you think can test your problem solving skill?	5	5	8	2	82	48	5	45
2	Which type of question do you think is time saving?	5	0	6	2	5	5	84	93
3	Which type of question do you think can adequately test your answer presentation skill?	67	34	19	23	7	39	7	5
4	Which type of question do you think is easier to answer?	11	2	26	2	8	25	55	70
5	Which type of question do you think is better for testing your clinial reasoning ability?	5	7	6	0	87	80	2	14
6	Which type of question do you think test your knowledge of the topic?	30	23	15	7	25	39	30	32
7	Which type of question do you think can remove teacher/evaluator bias?	8	16	6	2	5	9	81	73
8	Which type of question do you think covers greater spectrum of content?	84	34	5	11	4	34	7	20
9	Which type of question do you enjoy answering?	5	0	6	2	11	11	78	86
10	Which type of question do you think can fetch more marks?	6	0	18	9	13	11	63	80
11	Which type of question do you prefer to answer?	5	2	11	2	9	14	75	82

DISCUSSION:

In our study, it was found that majority of the undergraduate students' preferred MCQs against MEQ, SEQ and LEQ for many reasons as mentioned in the results. Essay questions are used when candidates are required to process, summarise, evaluate, supply or apply information to new situations. Scoring is difficult to standardise due to inter-examiner variability. It is hard to remove examiner bias due to literary ability and handwriting of the student. They require much more time to answer than MCQs and, therefore, not quite as many questions can be used per hour of testing. Structuring (but not over structuring) the marking process and using a correction scheme with a well-constructed model answer or key can help (Schuwirth & van der Vleuten, 2005).

A comparative study between MCQs and SEQs done by Sharma HS et. al. found that the MCQ scores were significantly higher than SEQ scores (Sharma & Mutalik, 2014). A well written MEQ assesses the approach of students to solving a problem, their reasoning skills, and their understanding of concepts, rather than recall of factual knowledge (Al-Wardy, 2010). They also address the writing skills and even ethical, moral issues and attitudes. But they need to be carefully constructed with provision of model answers and training to avoid inter-rater variability (Felliti & Smith, Modified essay questions: are they worth the effort?, 1986) (Felliti, Reliability and validity studies on Modified essay questions, 1980). The MCQs are commonly used due to logistical advantage of being able to test large number of candidates in a short period of time and with minimal interventions. (Singh & Anshu, Principles of assessment in medical education, 2022). The MCQs thus has a clear advantage over open-ended formats in terms of reproducibility, efficiency and cost-effectiveness although open ended questions still widely used as it is believed that they test higher-order cognitive thinking in a manner that MCQ cannot (Hift, Should essays and other ? open-ended? - type questions retain a place in written summative assessment in clinical medicine?, 2014). But, appropriately constructed MCQs result in objective testing that can measure knowledge, comprehension, application, analysis and synthesis (Singh & Anshu, Principles of assessment in medical education, 2022).

Thus, all assessment formats should meet an adequate standard in terms of quality and fairness, as measured by a number of parameters; validity-measuring what is intended to be measured, reliability-obtaining same results under same circumstances, feasibility, acceptability and educational impact (Norcini, et al., 2011) (Singh & Anshu, Principles of assessment in medical education, 2022)

CONCLUSION

Assessment is the tail that wags the curriculum. However, assessment has pitfalls when improperly used. Students focus on learning what is asked in the examination. As teachers, if we exploit this and frame questions catering to higher cognitive levels, we can maximize the effect of assessment to improve learning.

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