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Assessment in Medical Education: Evolving trends

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Abstract:
Assessment is an important part of the medical education. It influences learning of the students. Traditionally, assessment has been used to measure the achievements of students for certification. Now is increasing trend to stress on formative assessment to improve learning. Miller's Pyramid provides a good conceptual model to assess clinical competence by providing tiered levels of assessment. Assessment should be valid, reliable, acceptable, feasible and have positive educational impact. All validity is construct validity. There is much debate on validity and reliability but an assessment which is low on one can still be useful by virtue of its being high on other. Combination of tools is preferred to get a composite picture of student's attainment. Assessment of knowledge is by written assessment. The tests and questions should be contextual and concentrate on assessment of application of knowledge. Assessment of clinical skills is done by traditional methods such as long and short cases and newer methods such as mini-clinical evaluation exercises, objective structured clinical examinations, case-based discussion and portfolios. Training of faculty members is important to improve quality of assessment.

Keywords: Medical Education, Assessment.

Introduction:

Examination drives students learning is the strongest relationship in medical education (James, McInnis et al. 2002).(Marshall 2005). A well-designed assessment sets clear expectations and provides students opportunities to self-monitor and receive feedback. Poorly designed assessment can affect the quality of learning. The key components in medical education are learning objectives, teaching methodology and assessment.

Assessment is often the final consideration in curriculum planning. The primary outcomes are designing learning outcomes, teaching and learning strategies and then decision of assessment. For most students, the curriculum is literally defined by requirements of assessment.(Norcini 2001, Hays, Davies et al. 2002, Marshall 2005, Schuwirth, Van der Vleuten et al. 2018) Assessment provides students short term goals and clarifies the task to be learned and provides feedback of learning. Assessment trends students to learning outcomes, they can be used as tools for increasing the transfer and retention of learning.

Purpose of Assessment:

There are multiple purposes of assessment> Selection of candidates for educational opportunity, maintenance of standards, motivation of students to learn, provision of feedback to students and teachers and preparation of students for real life. Assessment is now also used as a tool for learning too.(DeLuca, LaPointe-McEwan et al. 2016, Earle 2021)

Evolution of assessment:

There has been great evolution in assessment in last 50 years. Initially, educational testing is focused on measurement alone, with emphasis on objectivity and reproducibility of results. The focus now shifted to reliability, validity and feasibility.

1. **Validity:** Assess the extent to which the assessment measure what it intends to measure This involves content validity, cognitive validity, structural validity, generalizability, external validity and consequential validity.(Messick 1995)
2. **Reliability:** The validity of an assessment is the extent to which a test really measures what it is supposed to measure. It is important to note that a test can be reliable, but not always valid.

(Gupta and Research 2023)

Clinical competence is defined as the ability to assume a combination of well-defined roles. In different programs, various instruments are used to obtain information about students' competence in each of those roles. The assessment of actual performance in practice is essential to quality management. This is what is referred as performance or work based assessment.(Shavelson, Baxter et al. 1993)

Effective Student Assessment

The following guidelines provide a general framework for effective student assessment

1. Effective assessment requires a clear concept of learning outcomes.
2. It requires an adequate sample of student performance.
3. It requires feedback to students about strength of their performance with improvement of weakness.
4. It must be supported by comprehensive grading and reporting system.(Shavelson, Baxter et al. 1993)

Attributes of good assessment

Five attributes of good assessment are Validity, Reliability, Educational impact, feasibility and Acceptability. The important thing is to carefully balance the compromise between these five criteria. This conceptual model helps to decide on the appropriate tool. A tool may be low on reliability but can be useful if it is high on another attribute as educational impact.

Assessing Clinical Competence

New defined clinical competence in terms of what a student or doctor should be able to do at an expected level of achievement and clinical performance as what a student or doctor actually does in clinical practice. Need to assess six areas of competence and some means of assessing them-

medical knowledge, patient care, professionalism, interpersonal and communication skills, practice-based learning and improvement.(La Chimea, Kanji et al. 2020)

Methods of Assessment:

All methods of assessment have strengths s well as limitations. Some commonly used methods of assessment in medical education with their strength and weakness are given below.

Written assessments

Written examination questions are typically classified according(Abdulrahman, Mennin et al. 2016)

to whether they are the selection type, e.g. multiple choice questions (MCQ) or the supply type, e.g. short answers or traditional essays. (Leahy, Burrows et al. 2015)

MCQs

The multiple choice test is a flexible assessment format that can be used to measure knowledge, abilities, values, thinking skills, etc. Such a test usually consists of a number of items that pose a question to which students must select an answer from among a number of choices. Items can also be statements to which students must find the best completion.

Various formats of MCQs have been in use. The formats that ask the students to choose the best answer from a list of possible answers are most commonly used ('single or one best option' type). The other formats are 'true or false', 'multiple true or false', 'matching' and the 'extended matching' type questions.

MCQs can provide a large number of examination items that encompass many content areas, so a broad domain can be covered. They can be administered in a relatively short period, can be graded by a computer and have a high reliability per hour of testing time. MCQs that are rich in context (problem-based) are difficult to write but can become very effective tests for assessing higher levels of knowledge. The reliability of an MCQ test is a consequence of a wider sampling of content.(Inquiry and Smith 2004, Inquiry 2004)

Short answer' questions

A short answer question (SAQ) is similar to a well-stated MCQ without the alternatives. Here, the assessor is required to provide rather than select the answer. These open-ended questions are more flexible in that they can test issues that require creativity and spontaneity. However, these have a lower reliability.(Ludley 2019)

Because answering open-ended SAQs is much more time-consuming than answering MCQs, they are less suitable for broad sampling. A good open-ended question should include a detailed answer key for the person marking the paper.

Essay questions

Essays are ideal for assessing how well students can summarize, hypothesize, find relations and apply known procedures to new situations. These can provide insights into more complex cognitive processes, ability to process information, different aspects of the

ability to write and more contextualized answers.
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When constructing essay questions, it is essential to define the criteria on which the answers will be judged. Essay-type questions are time-consuming to grade and need more work to establish inter-rater reliability. As answering them is time-consuming, a long testing time is required to include a variety of domains. This may often result in a smaller sample, thereby limiting reliability. When clear grading guidelines are in place, structured essays can be psychometrically robust.
(Baig, Ali et al. 2014)
Mini-clinical evaluation exercise (mCEX)
In the mCEX, a faculty member observes a trainee–patient encounter in any healthcare setting.
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The encounters are intended to be short (about 15 minutes) and focused. The trainee is expected to conduct a focused history-taking and/or physical examination during this time and then provide the assessor with a diagnosis and treatment plan. The performance is scored using a structured form and thereafter educational feedback is provided. Trainees are expected to undertake at least six such encounters during the year, with a different assessor for each encounter representing a different clinical problem, appropriately sampled from a list of patient problems.(Batra, Batra et al. 2022)

References:

Abdulrahman, K. A. B., et al. (2016). Routledge international handbook of medical education, Routledge.

Baig, M., et al. (2014). "Evaluation of multiple choice and short essay question items in basic medical sciences." **30**(1): 3.

Batra, P., et al. (2022). "Mini clinical evaluation exercise (Mini-CEX): A tool for assessment of residents in department of surgery." **11**(1): 253.

DeLuca, C., et al. (2016). "Approaches to classroom assessment inventory: A new instrument to support teacher assessment literacy." **21**(4): 248-266.

Earle, S. J. I. (2021). "Principles and purposes of assessment in the classroom." **12**: 20-23.

Gupta, K. J. I. J. o. A. and B. M. Research (2023). Validity and Reliability of Students' Assessment: Case for Recognition as a Unified Concept of Valid Reliability, Medknow. **13:** 129-132.

Hays, R., et al. (2002). "Selecting performance assessment methods for experienced physicians." **36**(10): 910-917.

Inquiry, S. and D. J. Smith (2004). The Shipman Inquiry Fifth Report: Safeguarding Patients: Lessons from the Past-Proposals for the Future, Stationery Office.

Inquiry, S. J. S. I. (2004). "Fifth Report: Safeguarding Patients: Lessons from the Past—Proposals for the Future."

James, R., et al. (2002). Assessing learning in Australian universities: Ideas, strategies and resources for quality in student assessment, Deakin University.

La Chimea, T., et al. (2020). "Assessment of clinical competence in competency-based education." **54**(2): 83.

Leahy, D., et al. (2015). School health education in changing times: Curriculum, pedagogies and partnerships, Routledge.

Ludley, A. J. M. E. O. (2019). "Context-rich short answer questions (CR-SAQs) in assessment for learning in undergraduate medical education." **24**(1): 1674569.

Marshall, J. M. J. A. w. p. p. f. t. P. R. N. Y. T. P. R. (2005). "Formative assessment: Mapping the road to success."

Messick, S. J. A. p. (1995). "Validity of psychological assessment: Validation of inferences from persons' responses and performances as scientific inquiry into score meaning." **50**(9): 741.

Norcini, J. J. M. E. (2001). "Does observation add to the validity of the long case? Reply." **35**(12): 1132-1132.

Schuwirth, L. W., et al. (2018). "How to design a useful test: the principles of assessment." 275-289.

Shavelson, R. J., et al. (1993). "Sampling variability of performance assessments." **30**(3): 215-232.