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OVERVIEW OF ASSESSMENT IN ANATOMY

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ABSTRACT

Anatomy assessments promote deep learning which is crucial to prepare students for clinical practices. Anatomical knowledge can be measured by practical, written and oral assessments methods. Practical assessment and its clinical relevance provide the best opportunity to assess clinical application of the anatomical knowledge. Anatomy can be assessed using long or short essay questions, multiple choice questions, extended matching questions, multiple true- false questions, and short answer questions. Anatomists face some pressures due to shifting to modern curriculum of medical education and assessment. Furthermore, during the Covid-19 pandemic, new medical educational teaching and assessment strategies are developed. The purpose of this article is to highlight different anatomical assessment methods, relative limitations, benefits and how to deal with the assessment students results to modify instructional anatomy course for more improvements.

KEYWORDS: Anatomy, OSPE, Covid-19, Online, Assessment cycle.

INTRODUCTION

Anatomical knowledge is necessary for understanding radiological images, surgical procedures, and physical examination.[1,2] The assessment methods in anatomy helps medical students develop critical thinking and skills for future clinical practice. Student assessment is not only to assess students' success but also to develop educational perceptions which leads to evaluate and improve the teaching program. Assessment tools should be reliable, feasible and be able to assess different features of professional skills.[3] The assessment methods are still the subject of extensive consideration. Assessment methods include spotter examination, long or short essay questions, multiple choice questions, extended match questions, true and false questions, short answer questions, and oral such as viva examinations.[4]

Tag or Spotter Test

In Tag or spotter test, the students must pass several different stations with labelled bones, prosected or pre-dissected specimens and answer on an examination sheet or electronics devices equivalent. Time allowed is limited and each station last for 1-1.5 minutes and students require moving to the next station at a loud signal. Spotter test is used to assess remembering factual knowledge by the identification of marked structures and further question is added such as its function, development or clinical practices. Traditional spotter tests have limitation because this technique is based on testing a students' capability to recall information.[5]

OSPE

Spotter Anatomy questions can be stations in an Observed Structured Clinical Examination (OSCE) or, in an Observed Structured Practical Examination (OSPE) integrated into a broader practical assessment together with other disciplines. In OSPE exam, clinical skills used to assess a wide range of applied theoretical and practical skills concurrently.[6]

OSPE is a timetabled examination that measures structural and applied anatomy knowledge using cadaver and medical images. OSPE have moved away from the dissection room into an online OSPE-like assessments which are less labor intensive due to a lack of accessibility and availability of cadaveric resources.[7] Several advantages of computerized grading of the anatomy laboratory practical examination have been reported such as few grading errors, time saving for staff and faculty, and fast feedback for students.[8,9] Others suggested that online assessments cannot imitate information and 3D orientations accessible in cadaveric specimens that act as a retrieval cue for learning that offered during cadaveric session.[10]

Long or Short Essay Questions

Question's like long or short essay are easy to set, assess deep knowledge and the students build their own answer, but they are time consuming and linked with marking inconsistencies and discrepancies.[11]

Multiple Choice Questions

Traditional multiple choice questions (MCQs) necessitate students to select the best answer from list of options that are preselected by the assessor. The MCQ examination is widely used for many years in medical education due to its suitability for testing and grading large-numbers of students.[12] MCQ examines a great part of the curriculum; however, some reports are concerned and explained that ordinary MCQs assess basic knowledge, fine details in textbooks rather than deep understanding of the content or cognitive skills. Moreover, patients do not present with a list of five alternative diagnoses for the doctor to select from.[13] Others suggested that well written MCQ evaluate students' cognitive skills and these items require more skill than the basic- recall questions.[14,15]

Extended Match Questions

Extended match questions (EMQs) is an alternative to MCQs that are more consistent, monitor progress during a course, test a student's core knowledge and clinical reasoning in deep sense. The student selects the best answer from the list of options; each option may be used once, more than once, or not at all.[16]

Multiple True False Questions

Multiple true false questions (MTF) are used in anatomy assessments. Both MCQs and MTF consist of a question stem followed by options, but MCQs require students to select only one answer, while MTF questions enable students to assess each option whichever true or false. MTF questions have a greater ability to distinguish student thinking regarding the different response options.[17] Although, students take slightly longer time to answer MTF questions as compared with a similar MCQ but MTF format encourages students to discuss all the alternative options rather than trying to find one correct answer.[18]

Short Answers Questions

Short answers questions are considered a better alternative assessments method with several advantages. The examiner's while marking afford awareness into students' strengths and weakness and assist in feedback and teaching.[19]

Oral Examination

Oral examination or Viva, this type of examination is susceptible to biases and is integrally unreliable with inconsistency in marking.[20,21] However, other reports suggested that the well-structured oral examination can reach virtuous reliability and identify the learner's capabilities in higher-order cognitive skills by well-trained examiners using a blueprint for briefed specific topic, and grading is on a marking template.[22]

Online Assessments

Due to COVID-19 pandemic, many medical schools all over the world have effectively changed their teaching and learning setting to emergency remote online learning, having the challenge to change the assessment strategies to examine preclinical and clinical students and completed an online summative and formative examinations.[23] The new approaches in anatomy assessments include the computer-based testing and digital images.[24] Study on online assessment of applied anatomy knowledge was conducted and the effects of images on medical students were reported. Significantly, Students scored better on questions with inclusion of images compared to questions without images and on questions relating to bones than to the soft tissue.[25] New challenges in the anatomy assessment methods are being developed based upon financial resources, technical skills, and expertise of instructors.[26] Training and preparation of online assessments for several online platforms has been a struggle for faculty staff and students. Most of the educators are concerned due to unprotecting online assessments which may encourage few students for cheating and plagiarism.[27] This will seriously affect future doctors and then the quality of the healthcare.[28] Recent study used brief exam of 30 min with a timer set for each individual question and for whole exam to minimise the chance of cheating or unauthorised peer collaboration.[29]

Recent study conducted short online practical assessment with restricted digital resources. Importantly, 228 student's feedback forms submitted about their opinion on online practical examinations. Significantly, More than 50% of students preferred practical online anatomy spotter examinations. Only 32.8% were comfortable with soft parts discussion using images because sudden transition of students from physical feeling of cadaver trained whole year to 2 dimensional images, made it very problematic to recognize the specific structure, relations, and its vascular supply.[30]

Anatomists are under the pressures of the changing methods of medical education and assessment, with limited funds to teach hugely different group of students and few teaching hours.[31] It is recommended to encourage E- learning staff units in universities to monitor and update technical skills and expertise of instructors. Training online sessions for various techniques of virtual teaching, learning and online assessments should be organised for staff, supporting staff and students. Optimal evaluation strategies of student grades might be revised by faculty scientific committee and the supervisors of the relevant department. Online assessments should include sufficient time for each examination, reliable network and compatible online platforms that work well in faculty, staff, students, and institutional policies to monitor and protect the online assessments. The feedback of teachers and students are very important to adjust online anatomy education and assessments.[31,32]

Assessment Program and Results

The assessment program is a measurement tool to estimate the development in knowledge, skills, activities,

and the student's attitude. A successful assessment program is based on instructional objectives, activities, and well-designed assessment methods. Some reports on assessment methods in anatomy focuses on assessment utility indices such as validity, reliability, and educational effect.[33] The assessment results may be used as a method for curriculum evaluation, modification, revision, accreditation, and employment. The report of assessment results should be clear and comprehensive to prevent misinterpretation to students, parents, and educational expert and allow scientific committee and institutional authority to assess and revise the instructional course efficiently for more improvement. There are two methods for interpreting the results of students. The norm-referenced method provides a relative ranking of students while the criterion-referenced explains learning tasks that students can and cannot perform.[34] Using assessment results to notify educational authority to modify or improve program is the most difficult final step in the assessment cycle (Fig 1).

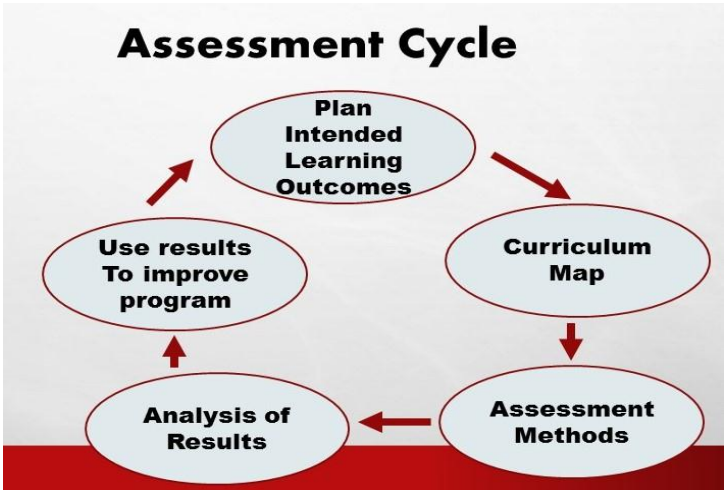

Figure 1. Schematic Representation of Assessment Cycle to Show Role of Using Students Results to Improve the Program.

CONCLUSION

Assessment in anatomy is a very important challenge, for establishing the assessment strategy, methods of assessment, major type of tests, analysis of results, and interpretation of results. Using information from students' results are perhaps very important to change or improve student learning outcomes.

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Conflicts of interest

There are no conflicts of interest.

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