The Future Perspective of Online Assessment in Medical Education during and After COVID-19

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REVIEW

Abstract

COVID-19 pandemic has changed the process of medical education and produced a global impact. This situation demands acceptable, valid, reliable, feasible and fair assessment methods. This can be achieved by systematic transition to a comprehensive and staged process that would include current and prospective learners. It is important to consider the existing structure of assessment and then work backwards on design and process. An immediate step would be to add web-based formative assessment into the new approaches adopted for teaching/learning. Standard assessment formats in medical curriculum will need to be rethought and re-planned. It may now be time to consider shifting focus of assessment to attainment of competencies. This is a long-term process and can be executed in a phased manner. To begin with using low stakes assessment as part of assigning professional activities that are task directed and encompass domain of attitude, knowledge and skills. Introducing new modalities that accommodate distant engagement may need consideration, e.g., structured viva, virtual patients, e-portfolios and log books for assessment. Thus, a priority in assessment should be on using multimodal tools for formative and summative assessments that focus on mastery in problem solving, decision-making skills and clinical reasoning allowing adaptation to a competency-based curriculum. It is thus, an important task to create and monitor an online assessment program that would align to the provision of competency based medical education and is acceptable to all stakeholders including the regulatory bodies.

Keywords: Assessment, Competency Based Medical Education, COVID-19

I. INTRODUCTION

The COVID 19 pandemic has brought an unprecedented challenge globally; it is one of the most severe pandemics of the recent times, which has already affected almost all countries in the world. In India, since March 24th, the entire nation of a 1.3 billion people is in complete lockdown. Most universities had to cancel their examinations; the undergraduate and postgraduate examinations of medical institutes were postponed [1].

With the government's advisory on immediate closing of institutions, the student and education bodies both were faced with the challenge of provision of quality education via online platforms [2]. Medical colleges have accordingly adopted alternative ways of teaching and learning [3]. Adjustments in assessment are also evident [4]. However, a comprehensive strategy is required to measure not just the effectiveness of these new teaching/learning strategies but also to uphold the standards of medical education [5].

Assessment is an integral part of teaching and learning, as it establishes the achievement of course learning outcomes by the students. Whatever the method used, the assessment of student comprises of measuring knowledge, skills and attitude. The knowledge is usually assessed through multiple choice questions, short essay questions and long essay type questions. Skill is tested through objectively structured practical examination (OSPE), objectively structured clinical examination (OSCE), Practical, Viva-voce, Short and long cases [4]. Before COVID-19 pandemic, the domains of learning were assessed face to face [5]. With the arrival of pandemic, there has been a paradigm shift from traditional

teaching and learning to online technology enhanced learning [6].

As predicted this transformation in the educational environment will bring long-lasting effects on teaching and learning, assessment procedures and methods also require a change. This communication is aimed at describing different assessment options that can be used online taking into account the educational environment in a pandemic situation.

II. NEWER APPROACHES AND STRATEGIES IN REDESIGNING ASSESSMENT

So how do we proceed with the assessment redesign? One may hope that the disturbances seen with this pandemic does not affect the process of education including assessment and a calculated and staged plan is to be developed to attain the desired end results. While assessment is often the endpoint in a curriculum design, but certain immediate steps are required to be taken as this pandemic continues.

The redesigning of the assessment techniques should take into consideration the present learners as well as the prospective learners. This is also an opportunity to cautiously introduce new strategies in competency based medical education (CBME).

At the beginning, entrance exams may be abandoned and medical college admissions can be conducted on the high school performance and feedback based on a format similar to Medical Student Performance Evaluation (MSPE) from previous institutions [7]. Now it is the time to consider more uniform use of testing for attributes of resilience, problem solving and self-efficacy. With growing risk to the mental well-being of healthcare workers such attributes become essential to ascertain in future physicians. Gathering evidence of being socially responsive is another domain worth exploring [5, 8].

While considering the medical curriculum, the structure of assessment needs meticulous planning to ensure that basic principles of assessment are met. Assessments must continue to be valid, reliable and feasible [9]. Standard assessment formats in medical colleges will need to be re-designed and re-planned according to the current situation.

Most of the medical colleges currently use physical spaces for summative written examinations that often house large number of students. These assessments are conducted primarily to ensure integrity and security of examination. Institutions may have to consider creating larger venues that allow physical distancing or plan a greater number of venues to achieve the same goal. A recent article described the specifics of how an OSCE was conducted during the COVID-19 crisis [4].

At the beginning we may think of adding multiple formative assessments into smaller and larger teaching-learning activities. These opportunities can be created remotely using institutional learning management systems wherever available, to place activities that allow formative feedback. This regular and consistent e-feedback would give students more direction and assume responsibility of their own learning journeys [5].

Online, real-time assessments can be used to reproduce the traditional methods of assessment. To assess knowledge, multiple choice questions (single best, one correct, extended matching, etc.) can be given online to the students on a predetermined date and for fixed duration. They can assess low to high order cognitive thinking skills depending upon their construct [6].

Open book exams taken in real time can be used as a method of assessment to assess the ability of students to analyze and solve a problem, assess critical thinking and creativity [10].

Use of OSPE or OSCE's can be taken online using the 'essay' format in different Learning management systems (LMS). LMS provides the examiner to insert a picture or a video, on which questions can be asked from the candidate. Spotting questions in basic sciences can be done through image hot spots. Items can be embedded in videos on clinical methods or procedures to assess the clinical competency of the student [4, 6].

Introducing entrustable professional activities (EPAs) may allow (distant) monitoring of some pre-defined tasks, e.g., history taking [11]. Over-a-time as competency of a pre-defined task is achieved tools like Mini CEX could be used (done either face - to - face or remotely) for formative, ongoing and final assessment [12].

Use of e-portfolios has been limited, this tool can create opportunities for formative and summative assessment and reflection and greater faculty student engagement. Such portfolios can include activities like students adding videos, specific tasks performed as part of formative or ongoing assessment that is seen over time [13].

Some end of module assessment strategies can be converted to non-face to face without compromising integrity or feasibility of assessment. As an example, older modalities like viva-voce may need to be revisited. Using structured viva formats allows it to remain a reliable tool [14].

Another possible tool to consider is log books. Log books are currently used to monitor the spectrum of patients seen by students over time. Using a student's own patient log could be used for assessment via creation of structured questions on the particular disease/s seen by students to assess knowledge, critical thinking and clinical reasoning skills across the variety of patients seen by the individual student [5].

Virtual patients (VPs) have been used both for formative and summative purposes, with value for knowledge application across differing scenarios and clinical reasoning and as another practice tool that allows opportunities for mastery [15]. The value of using VPs now becomes more apparent than ever, as a modality to assess critical reasoning and decision-making skills. While lots of virtual patient programs exist, locally developed VPs that depict regional disease patterns would make learning and assessment more contextual. This could also lead to the development of virtual rounds, wards and virtual communities [5, 15].

Presently there are several online platforms available for assessment having unique advantages and limitations, e. g. large scale student assessment of MCQs can be done through Google Forms [6]. It can be timed, and students can get real time feedback on their responses. Institutions using LMS such as MOODLE can use advanced assessment settings for different question types, such as shuffling the items and their options, using sequential or free navigation, etc. [16]. To avoid unfair means in real-time exams, assessment software companies also offer technology-based invigilation. Though such advance features make online assessment more reliable in terms of preventing unfair means, the cost is much higher [6,17].

III. CONCLUSION

The pandemic has called for adapting new modalities of teaching-learning in medical education. This situation demands development and implementation of new assessment program that would align to the provision of competency based medical education.

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