

Situational analysis of ‘Virtual evaluation,’ amidst the COVID-19 pandemic for future exploration! - An experience from a single-center study

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Introduction

It was 30th January 2020 when India reported its first COVID 19 in Kerala. Soon, the pandemic of SARS-CoV-2 was inevitably knocking at the doors of the small hilly state of Himachal Pradesh (HP). On 20th March 2020, HP reported its first two cases of SARS-CoV-2 in Kangra district. Since then, although the COVID-19 pandemic was ensuing in the state, the epidemic was well contained due to the extensive collective efforts of the health department and other stakeholders.

COVID 19 pandemic has emerged as a significant barrier, hampering all the regular activities and impacting all spheres of life. Particularly in HP, health care services were predominantly delivered through government services across the state. As program managers, post-graduates of Community Medicine are the critical stakeholders of health care delivery at the peripheral level and integral implementers of Flu-Clinic, Contact Tracing, Surveillance and field survey teams. Ensuing pandemic enforces the need for the early placement of trained workforce in the periphery for apt delivery of specialized services amongst the community.

From the time of Hippocrates, assessment of cognitive, affective, and psychomotor domains has formed the pillars of assessment goals (1). The examination process involves evaluating the level of knowledge, skill and competence by two or more external examiners

(depending upon the number of students) and the internal examiners. It is based upon various criteria laid upon by the respective medical universities and the regulatory body, i.e., the Medical Council of India (MCI), also now known as National Medical Council (NMC). NMC awards the much-awaited post-graduate degree in any specialty of medical or surgical branches after examination held at the end of the third academic year (2). In the critical time of the COVID-19 pandemic, there are geographical and time barriers to conducting the above-mentioned summative assessment of post-graduate doctors. Inevitable and forcible delay is demotivating and poses a question mark on future and academic growth (3). Intervening amidst this apprehension amongst examinees across India, NMC issued an advisory on using technology for external evaluators who were the most crucial link in these assessments on 22nd May 2020 as one-time relaxation (4).

In compliance with the MCI directive, the Department of Community Medicine, of Indira Gandhi Medical College, Shimla (HP), carried out the summative assessment process successfully. The option 2.B)(ii) as mentioned in the advisory, was exercised through the virtual presence of an external evaluator with digital mode and another external evaluator's physical presence, at the venue of examination.

Aim & Objectives

To identify barriers and facilitators of the situation (virtual evaluation) through application of SWOT analysis technique in the process. It also aimed at the future exploration of similar exercise for the conduct of various post-graduate exams in hybrid mode (virtual and onsite) through the lens of examiners.

Material & Methods

Examination Pattern and Strategy – Four eligible examinees were evaluated by two external and internal evaluators each. The exam was conducted successfully within two days as per planned schedule tabulated below in (Table 1).

Examinee evaluation sheets: One of the examiners (Online Examiner) was provided with password-protected answer sheets digitally in pdf format for evaluation and submission of awards. Other answer sheets were evaluated in person by three on spot examiners on the day of examination.

Day-I.

All the four post-graduate students were allotted families on a random basis, a day prior to the exam, and were directed to present the particular long & short cases within the allotted stipulated time. Subsequently, all the four residents gave their long and short case viva accordingly to both external examiners through direct and virtual mode as per their rotation. 'Free' Google meet platform was utilized for the online viva with the external examiner for uninterrupted conduct of the session for all four examinees [Figure 1]. **Epidemiological and Management Exercise:** Both the exercises were administered individually and evaluated separately by external examiners.

In the afternoon session, each examinee was randomly allotted four different public health experiments for, independent on spot evaluation and viva- voce by the onsite external examiner. At the end of the first day, various OSPE (objective structured practical examination), and OSCE (Objective Structured Clinical Examination) spotters were performed by students in the presence of internal examiners. For an independent evaluation of each action point in total, five stations were established.

Day-II:

On the First Day of the examination, i.e., 4th July 2020, all four post-graduate students were allotted health promotion exercises to be presented on the second day of the test after due preparation for the same at home. All examinees demonstrated pedagogical health promotion exercises on the spot to three examiners. At the same time, the online feed of the live activity was transmitted to the online external examiner of PGIMER Chandigarh through the 'google meet platform' for on-spot assessment cum question-and-answer session. [Figure-2]. **Self-appraisal-** Four examinees were directed to prepare self-appraisal through PowerPoint mode presentations,

reflecting all academic activities undertaken during the three-year tenure of post-graduation in the Department of Community Medicine. Self-appraisal was delivered through online and direct mode to all four examiners simultaneously for evaluation.

Grand Viva Voce: At the conclusion, the grand viva of all four examinees was conducted by all evaluators, simultaneously through spot and the virtual digital model of the google meet platform. The concluding session lasted for approximately two hours with uninterrupted and continuous question & answer session.

Discussion

The strategy devised for the conduct of the exam included an iterative process of repeated, long-duration digital connect with an external examiner and simultaneous on spot evaluation by other examiners on both days for various components of exam as tabulated in Table 1. Major portion of the examination conducted warranted the presence of both external examiners simultaneously. Therefore, at the end of the day's activity, we analytically observed the following points with SWOT as a tool. SWOT Analysis is an analysis method used to evaluate the 'strengths', 'weaknesses', 'opportunities' and 'threats' involved in an organization, a plan, a project, a person or a business activity (5,6). Although, SWOT analysis is considered primarily a business tool, but it does have clinical applicability for an organization (7). This post-graduate examination being a planned activity of department of Community Medicine under exceptional circumstances of ensuing pandemic for the first time, we analyzed the conduct of examination through use of SWOT tool. The observations/experiences were shared and documented at a common digital forum through co-ordination amongst examiners by one of the authors.

Strengths: First and foremost, it was one of the safest options during pandemic as there were fewer chances of infection of respiratory viral infections like COVID-19. Additionally, it also served the primary aim of social distancing. Contextually, in Himachal Pradesh, there was the strict implementation of quarantine norms for any outside traveler from the country during the current pandemic (8). Scanned copy of the theory papers was delivered online, and it was easy to check at leisure by the examiner. Copies could be zoomed for better clarity of content. Examiner's availability was increased substantially as they can easily dedicate this much time for evaluation from their schedule. It also provides the opportunity to conduct multiple summative assessments at frequent intervals to decrease the disadvantages of cross-sectional assessment. Conducting grand viva-voce was possible online, and it was like 'in-person meeting'. Assessing pedagogy exercise was also possible online due to availability of robust internet connection in the department, there was no problem in connecting and interacting with the examinees. Screen share was

possible, so student's work/presentations was easily visible during presentation to the examiner. From an examiner's point of view, online evaluation reduces the cost, time, and need of traveling, accommodation, paper, and printing (9). From the examinee point of view, it reduces the stress of the physical presence of an external evaluator for cross-checking the case findings of patients. New and better technology can, in the future reduce these uncertainties. It will also strengthen the confidence of all stakeholders.

Weaknesses: Key weakness noticed by authors that, students and examiners did not get a chance to visit the families to take and assess long family case. The clinical case presentations carry the maximum weightage in this process of evaluation. The examiner, in online mode, has to rely only on the examinee or someone else's findings of patients (cases for exams) as he/she cannot examine the patient virtually. The cases in community medicine are to be presented in the setting of patients' dwelling. The external evaluator has to be physically present to assess the environment of the case holistically, particularly applying community medicine in context and then awarding the examinee for responses. There was lack of real exposure and assessment of the PG student in the field settings in online mode due to pandemic restrictions. The online mode makes the cross-sectional view more tubular, decreasing the validity of the practical exams. The online method in summative assessment is not a final remedy, and downsides include its costs and its reliance on technology, which is sometimes unreliable (9). OSCE also was not applicable in a true sense as no real exposure and assessment of clinical cases could be done. Similarly, clinical skills could not be adequately assessed, and public health lab exercises could not be evaluated in real settings.

Opportunities: In future blended assessment, both online assessment and in-person assessment is foreseeable and feasible. This can also validate online assessment as compared with the physical evaluator. We can engage more online assessors to remove subjective bias. This will provide an opportune platform to derive the best average. During the SARS-1 outbreak, a similar attempt was made for viva-voce through teleconference (10).

Threats: The primary threat is a breach of confidentiality in the online transfer of data and evaluation of answer sheets. Digital signatures of the examiners may not be considered authentic unless validated by verifying authority. Online security is another issue in current and future times when sensitive information is subjected to theft (9). The reduction in input costs or incremental costs at the end will largely depend on the exact form of assessment provided and the technologies used in the future. The hardware, software, and power supply are still unreliable in many developing countries. This can be tackled with sophisticated cybersecurity, which will

require more expenditure from the government budget on information technology.

Critical Reflection: Himachal Pradesh (HP), as a hilly state, had its own geographical challenges of connectivity and accessibility. Online assessment must balance the requirements of technology, delivery, pedagogy, learning styles, and learning outcomes (11). As in past precedents, the majority of internal evaluators had relied upon those external examiners of the panel, which are readily available and easily accessible to the state within permissible government norms. Although the emergence of COVID-19, had put forth the challenge of conduct of examination without the physical involvement of an external evaluator, it was instrumental in putting forth opportunity and involvement of external evaluators even from far off premier institutes of India. Any further systematic and well-defined methodical progress on the pattern of online assessment can further break the natural barriers of knowledge dissemination, overcoming social and regional disparities. Novel, bi-partisan involvement of evaluators across the nation would lead to new channels of learning and exchange of ideas during assessment amongst various institutes. The recent change in the curriculum of MCI emphasizes on the development of competencies along with outcome-oriented curricula (12). Examination pattern based on virtual assessment can further pave the way to substantiate various competencies addressed as such and thereby, the learning outcomes.

Conclusion

The post-graduate exam of Community medicine was conducted, synchronized, and coordinated with an earnest attempt to maintain secrecy, transparency, sanctity, and confidentiality of the exam digitally along with another ethos. Unprecedented, the situation of COVID-19 had led examiners to think differently and innovate accordingly. The two-day process was completed successfully with minimal interruptions in the conduct of the exam. The positive attitude among examiners, along with viable solutions, led to the success of this pattern of examination. The virtual presence of an external examiner (online) devoid opportunity to understand the environmental and cultural setting of the place. Technological viable and feasible solutions about the validity of learning outcomes in the future can be a way forward to address that concern. To conclude, hybrid evaluation with an online external examiner being a virtual component for 'Post-graduate Summative evaluation' can further be subjected to the feasible, foreseeable reality of future assessment methods in different settings.

Recommendation

Amidst prevailing pandemic, virtual evaluation is a feasible tool to address operational constraints of the conduct of postgraduate examination of medical

graduates. It is recommended a standardized tool for valid learning outcomes may be developed for future explorations.

Limitation of the study

As this situational analysis of the experience of evaluation conducted pertains to a single center of evaluation, generalizability is limited. Additionally, documentation of strengths leads to subjective bias also by the authors about the situation.

Relevance of the study

A maiden attempt by authors to put forth analytically the operational feasibility and concerns of ‘Virtual evaluation’ for postgraduates in the field of the medical education.

Authors Contribution

Concept and Design: AG & GAS. Definition of intellectual content and literature search: AG, AB, MG, AP & GAS. Manuscript preparation, editing and submission: AG & GAS. Manuscript review: All authors.

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Tables

TABLE 1 SCHEMATIC PRESENTATION OF EXAM

Day 1		Day 2	
Long & Short Case discussion	External Examiner (Onsite and online)	Self-Appraisal	External Examiner (Onsite and online)
Epidemiological and Management Exercise	External Examiner (Onsite and online)	Health Promotion Exercise	External Examiner (Onsite and online)
Public health experiment	Onsite External Examiner	Grand Viva	External and Internal Examiners
OSPE and OSCE spotters	Internal Examiners		

Figures

FIGURE 1 ONLINE LONG & SHORT CASE VIVA

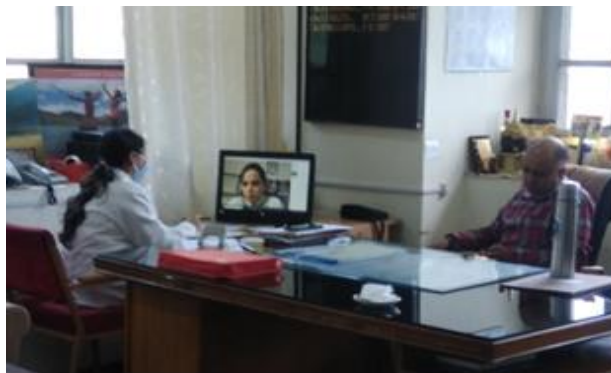


FIGURE 2 HEALTH PROMOTION EXERCISES

