

# Virtual OSCE examinations during COVID-19

## A 360 satisfaction assessment from examiners and candidates

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### ABSTRACT

**INTRODUCTION:** We sought to determine the satisfaction rates of examiners and candidates in a virtual Objective Structured Clinical Exam (OSCE) of graduating Canadian urology residents.

**METHODS:** An annual mock exam, aimed at simulating the licencing urology exam for Canadian graduates, was moved to an online format for the 2020 cohort. This exam consists of an OSCE, and a written multiple-choice exam. The Telemedicine Satisfaction Questionnaire (TSQ), a previously validated tool for clinical encounters with three sub-domains (quality of care provided, similarity to face-to-face encounter, and perception of the interaction) was modified for the purposes of evaluating the OSCE encounter. The TSQ was sent electronically to all examiners and candidates after the exam.

**RESULTS:** There were 14/16 responses from examiners (87.5%) and 24/39 responses from candidates (61.5%). Overall, the format was judged to be a good experience by 13/14 (92.9%) of examiners and 21/24 (87.5%) of candidates; however, when asked specifically if the virtual OSCE was an acceptable way to determine a candidate's competency to practice urology independently, only 8/14 (57.1%) of examiners and 15/24 (62.5%) of candidates agreed.

**CONCLUSIONS:** This study demonstrates an overall good satisfaction rate among both examiners and candidates when using a teleconference format for a mock OSCE.

### INTRODUCTION

Objective Structured Clinical Examinations (OSCEs) have been an integral part of summative assessments at the undergraduate and postgraduate levels.<sup>1</sup> They are thought to evaluate skills that are not easily demonstrated on written exams. One framework developed for clinical assessment is Miller's pyramid with knowledge at its base, but with more advanced skills, such as competence, performance, and action, layered progressively upon this base.<sup>2</sup> OSCEs serve as a cornerstone in a multipronged approach of a fulsome clinical assessment and have thus been a widely adopted tool; however, issues of reliability and validity are always important to address for any exam, particularly high-stakes ones.<sup>3</sup> Those issues are even more salient when the mode of delivery is modified.

There has been increasing interest in virtual OSCEs over the last few years. Initially, it was an innovative solution to allow remote and rural learners to participate in these assessments.<sup>4,5</sup> With the advent of the COVID-19 pandemic, there has been an increased interest in exploring virtual platforms to deliver OSCEs.<sup>6,7</sup> This is mostly driven by the public health restrictions and the inability to organize large indoor events. These same restrictions have also modified care delivery, with a marked increase in virtual care.<sup>8</sup> In fact, virtual OSCEs have been developed specifically to assess the skills required for telemedicine care;<sup>9</sup>

**Table 1. Mean TSQ Likert scores for candidates and examiners**

	Candidates		Examiners	
	Mean score	SD	Mean score	SD
<b>Quality of interaction</b>				
Overall, I am satisfied with the quality of the OSCE being provided virtually	4.1	0.6	4.1	0.8
I would like more virtual OSCEs to be provided in the future	3.7	0.5	3.7	0.6
I think that a virtual OSCE is an acceptable way to determine whether a candidate/I is/am fit to practice urology independently	3.8	1.0	3.3	1.2
I think OSCE exams provided virtually are consistent	3.8	0.9	4.0	0.6
I do not need assistance while using the system	4.7	0.6	4.1	1.0
I think virtual OSCE adequately assesses a candidate's/my fund of knowledge	4.1	0.7	3.9	0.7
I think a virtual OSCE adequately assesses a candidate's/my communication skill	3.9	1.0	3.4	0.6
I think OSCE exams provide a good assessment of a candidate's/my abilities	4.0	0.7	4.0	0.9
<b>Similarity to face-to-face encounter</b>				
I can easily talk to the examiner/candidate	4.6	0.7	4.5	0.5
I can hear the examiner/candidate clearly	4.3	0.8	4.6	0.5
I/The candidate am/is able to understand the questions	4.3	0.8	4.5	0.5
I can see the examiner/candidate as if we met in person	3.9	1.0	3.8	0.9
Virtual OSCE exams save me time on travel	4.5	0.9	4.4	0.8
<b>Perception of the interaction</b>				
I feel comfortable communicating with the examiner/candidate	4.5	0.5	4.4	0.6

OSCE: Objective Structured Clinical Exam; SD: standard deviation; TSQ: Telemedicine Satisfaction Questionnaire.

however, very little information exists about whether candidates and examiners are satisfied with these modes of delivery. While content may be comparable to an in-person OSCE, it is unclear whether candidates feel they are able to convey their abilities virtually. Examiners, in turn, may feel hamstrung in gauging the candidates' purported skills.

The objectives of this study were to assess the level of satisfaction of candidates and examiners in a virtual urology OSCE by examining three critical aspects: 1) the quality of the delivered exam; 2) its similarity to a face-to-face encounter; and 3) the perception of the encounter.

**METHODS**

The Queen's Urology Exam Skills Training (QUEST) mock examination has been held annually since 1997 for graduating urology residents from across Canada. The exam aims to simulate the Royal College of

Physicians and Surgeons of Canada (RCPSC) certifying exam with written and OSCE components. Until the pandemic, residents travelled from across the country for this in-person event about three months prior to the RCPSC exam. Given the pandemic restrictions, the QUEST exam was moved to an online format for the December 2020 iteration. The OSCE component was offered on the ZOOM platform (Zoom Video Conferencing, San Jose, CA, U.S.), with each candidate examined for one hour over four clinical scenarios. Each clinical scenario was 15 minutes long and scored independently by two examiners. Each examiner conducted two clinical scenarios but scored all four.

An online survey was sent to all examiners (n=16) and candidates (n=39) following the OSCE component of the QUEST examination. Participation was voluntary and anonymous. The survey consisted of the Telemedicine Satisfaction Questionnaire (TSQ) for clinical encounters. The TSQ's content and construct have been validated for internal consistency and reliability.<sup>10,11</sup> It is composed of three subdomains (quality of care provided, similarity to face-to-face encounters, and perception of the interaction). For the purpose of assessing an exam, the questionnaire's wording was modified, with the three subdomains evaluated: TSQ-1 (quality of the interaction), TSQ-2 (similarity to face-to-face encounters), and TSQ-3 (perception of the encounter). The survey consists of 14 questions scored on a five-point Likert scale ranging from "Strongly disagree" (1) to "Strongly agree" (5). TSQ score varies from 14–70, TSQ1 from 8–40, TSQ2 from 5–25, and TSQ3 from 1–5. As per previous reports, a total TSQ score >56 was considered a good experience.<sup>12</sup>

**Statistics**

Descriptive statistics were used to analyze the data. Frequencies were tabulated, along with means and standard deviations. For the purposes of reporting the five-point Likert scale, agreement responses of 4 and 5 were grouped together, as were the disagreement responses of 1 and 2. We performed a paired t-test to evaluate differences between examiners and examinees for total TSQ scores, as well as the subdomains of the TSQ. A Fisher's exact test was used to calculate the difference between candidates and examiners reporting a good experience on the TSQ.

**RESULTS**

There were 14/16 responses from examiners (87.5%) and 24/39 responses from candidates (61.5%). Table 1 documents the responses to the 14 questions from

both examiners and candidates, as well as group means and standard deviations.

Overall, the mean TSQ scores were 58.2 for the candidates and 56.7 for the examiners ( $p=0.353$ ). A total TSQ score  $>56$  is considered a good experience; 71.2% of candidates and 66.7% of examiners reported a score  $>56$  ( $p=1$ ).

The first domain assessed the quality of the interaction with the TSQ-1 score. No difference was found between the candidates and the examiners for this score (Table 2). Overall, both candidates and examiners were fairly satisfied with the mechanics of a virtual OSCE; 87.5% of candidates and 93% of examiners agreed or strongly agreed with the quality of the virtual OSCE. In addition, a high agreement was found in both cohorts that they did not need assistance to participate in the virtual OSCE (95.8% of candidates and 85.7% of examiners). Somewhat lower agreement was found by both cohorts that the virtual OSCE properly evaluated a candidate's ability, with 79.2% of candidates and 78.6% of examiners agreeing or strongly agreeing with this statement. Agreement fell even further when asked if they would like to see more OSCEs administered virtually (58.3% of candidates and 64.3% of examiners) or if virtual OSCEs are a proper format to determine fitness to practice urology (62.5% of candidates and 57.1% of examiners).

The second domain of the survey examined the similarity to face-to-face interactions with the TSQ-2 scores. Here again, no difference was found between the candidates and the examiners (Table 2). There was a high agreement that participants can easily talk (91.7% for candidates, 100% for examiners), easily hear (87.5% for candidates, 100% for examiners), and understand questions (87.5% for candidates, 100% for examiners). In addition, participants felt they could see as if they met in person, with 75% agreement for candidates and 78.6% for examiners.

The third domain, perception of the interaction, includes only one question pertaining the comfort level with the exchange. Here, 13/14 (92.8%) of examiners and 24/24 (100%) of candidates agreed or strongly agreed that they felt comfortable communicating via the teleconference medium. No difference was seen between the two cohorts.

## DISCUSSION

This cross-sectional survey revealed that both examiners and candidates had a positive experience with the virtual delivery of the OSCE component of this mock examination. Despite this, agreement scores were

**Table 2. Total and subdomain scores of the TSQ**

	Candidates	Examiners	p
TSQ-1 (Quality of interaction)	32.1	30.5	0.353
TSQ-2 (Similarity to face-to-face interaction)	21.6	21.8	0.897
TSQ-3 (Perception of the interaction)	4.5	4.4	0.552
TSQ (Total score)	58.2	56.7	0.532
% TSQ $>56$ (n)	66.7% (16)	71.4% (10)	1

TSQ: Telemedicine Satisfaction Questionnaire.

lower when participants were asked if they would want more virtual OSCEs in the future and if this method was an acceptable way to determine if an individual is fit to practice urology independently. The similar responses between both examiners and candidates indicates a comparable experience for both groups. This would indicate that participants are reluctant to have high-stakes examinations conducted virtually. An area of future research would be to explore the concordance between performance on a virtual and a live OSCE. The examiner cohort, who on average was older, did not seem to have any difficulty with the technology. It seems that by this point in the pandemic, familiarity with the Zoom platform was quite high.

There have been several reports about high satisfaction rates and feasibility of virtual OSCEs in different specialties, including emergency medicine, general surgery, vascular surgery, and radiation oncology;<sup>13-16</sup> however, doubt persists about whether virtual OSCEs are equivalent or as desirable as in-person OSCEs, with some expressing an inability to express confidence in the virtual assessments.<sup>16</sup> This doubt will need to be overcome if virtual OSCEs become the mainstay of high-stakes exams, such as the licensing Royal College exam. One report of a pediatric OSCE described similar performance of participants of a virtual OSCE to historical cohorts of in-person OSCEs.<sup>6</sup> More data such as this will be needed to allay concerns about the suitability of a virtual OSCE in high-stakes exams.

While some uncertainty remains on whether virtual OSCEs can miss certain imponderables of competence, there are several advantages. Virtual OSCEs are much less expensive to arrange and thus allow for more frequent low-stakes assessments, increasing the trainees' familiarity with these types of exams. Virtual OSCEs are easy to record. Watching the recordings can provide unique feedback for trainees and examiners alike. Video

recordings can also be used for quality control in high-stakes exams. Finally, for multi-institutional high-stakes exams, virtual OSCEs can save substantial time and travel, and are therefore a greener option.

Finally, given the lower barrier for organizing these virtual OSCEs, consideration can be given to have sessions where single cases are presented to the entire national graduating cohort, allowing candidates to learn from their peers and to have an opportunity for real-time feedback. This concept is behind the national virtual sessions known as CURES (Canadian Urology Residents Exam Study), organized by faculty at Queen's University and the University of British Columbia, and featuring faculty from across Canada.

This study is a proof-of-concept of virtual OSCEs and is the first to examine satisfaction with this mode of delivery in a urology context; however, it is limited by the small sample size and single-event format, which may affect its generalizability. Future areas of research should explore whether candidates' performance or assessment of competence are impacted by the delivery medium.

## CONCLUSIONS

This study demonstrates a high satisfaction rate among both examiners and candidates with a virtual OSCE aimed at simulating a high-stakes exam; however, participants are less certain if a virtual method is an acceptable way to determine competence. Future directions include an evaluation of the reliability of virtual OSCEs and finding optimal ways for their delivery.

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