



Medical Education

Web-based objective structured clinical examination with remote standardized patients and Skype: Resident experience

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ARTICLE INFO

Article history:

Received 4 January 2014

Received in revised form 5 April 2014

Accepted 28 April 2014

Keywords:

Web-based objective structured clinical examination

Communication

Formative assessment

e-Learning

Remote standardized patients

Online learning

Synchronous distance learning

ABSTRACT

Objective: Using Skype and remote standardized patients (RSPs), investigators sought to evaluate user acceptance of a web-based objective structured clinical examination (OSCE) among resident physicians. **Methods:** After participating in four web-based clinical encounters addressing pain with RSPs, 59 residents from different training programs, disciplines and geographic locations completed a 52-item questionnaire regarding their experience with Skype and RSPs. Open-ended responses were solicited as well.

Results: The majority of participants (97%) agreed or strongly agreed the web-based format was convenient and a practical learning exercise, and 90% agreed or strongly agreed the format was effective in teaching communication skills. Although 93% agreed or strongly agreed they could communicate easily with RSPs using Skype, 80% preferred traditional face-to-face clinical encounters, and 58% reported technical difficulties during the encounters. Open-ended written responses supported survey results. **Conclusion:** Findings from this study expose challenges with technology and human factors, but positive experiences support the continued investigation of web-based OSCEs as a synchronous e-learning initiative for teaching and assessing doctor–patient communication. Such educational programs are valuable but unlikely to replace face-to-face encounters with patients.

Practice implications: This web-based OSCE program provides physician learners with additional opportunity to improve doctor–patient communication.

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1. Introduction

Recent educational initiatives have expanded the scope of competency assessment of physicians to address the domains endorsed by the Accreditation Council on Graduate Medical Education (ACGME) and the American Osteopathic Association (AOA) [1,2]. Numerous studies have cited the importance of teaching and assessing competencies other than medical knowledge. In particular, doctor–patient communication skills have been identified as critical for physician work [3,4]. Consequently educational programs have expanded beyond the classroom to include real patients, standardized patients (SPs) and objective

structured clinical examinations (OSCEs) [5]. Unlike medical school training programs where SP-based programs are frequently utilized, only 12.3% of residency training programs utilize SP examinations, and only 14% utilize OSCEs [6]. SP-based examinations and OSCEs provide opportunities to evaluate doctor–patient communication skills, but they are costly and typically require face-to-face interaction, which may be prohibitive for residents and physicians who are geographically distributed across training sites.

Two pedagogical strategies have been used to overcome the challenge of teaching doctor–patient communication to medical students and residents at different geographic locations: asynchronous web-based learning modules and synchronous web-based OSCEs. For instance, The American Academy of Communication in Healthcare developed Doc.com, a web-based resource to assist in teaching communication skills with the use of asynchronous multimedia instruction [7]. Two studies have shown this program to be effective in teaching communication to internal medicine residents who completed the modules online

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[7,8]. On the other hand, synchronous web-based OSCEs have a number of advantages over other online educational programs with regard to teaching communication skills; they are interactive and address clinical skills in addition to medical knowledge. Two studies, limited to one institution and one proprietary software program, have shown web-based OSCEs to be valuable and well received by learners [8,9].

Few research studies have investigated the use of remote standardized patients (RSPs) who communicate with physicians via the internet rather than in person [8,9], and to our knowledge, no studies have investigated the use of RSPs with residents from multiple-training institutions with Skype. As a pilot, the National Board of Osteopathic Medical Examiners (NBOME) developed a formative four-station web-based OSCE using Skype and RSPs for physicians in residency training programs. Each of the four cases required residents to investigate issues related to pain and pain management, addressing an educational need for physicians to enhance their ability to treat pain in a responsible manner [10]. The web-based OSCE program was designed to increase educational opportunities for residents and practicing physicians by developing a web-based formative assessment of doctor–patient communication that is relevant, practical, and authentic. The purpose of the study is to evaluate the user experience and acceptance by analyzing survey responses from participating resident physicians.

2. Methods

Resident physicians participated in a web-based communication exercise with RSPs using Skype. Each resident participated in four 30-min online clinical encounters related to pain assessment and counseling. Opinions regarding the program's format, technologies, cases, assessment methods, and feedback were collected in the web-delivered physician post-exercise survey.

2.1. Sample

Using NBOME's email database of examinees, an email invitation to participate was sent to all of those who successfully completed the Comprehensive Osteopathic Medical Licensing Examination Level 2-Performance Evaluation (COMLEX-USA Level 2-PE) and Level 2-Cognitive Evaluation (COMLEX-USA Level 2-CE) (therefore meeting graduation requirements) in the 2011–2012 ($n = 5004$), 2010–2011 ($n = 4757$), 2009–2010 ($n = 4061$), and 2008–2009 ($n = 4698$) testing cycles. Invited study participants were instructed they would receive a \$100 gift card and opportunity to participate in novel learning activity using Skype and RSPs. Among the invited respondents who completed the demographic survey within the first 48 h (412 residents), 60 were randomly selected to participate. Only physicians enrolled in residency training programs were selected for the study. Only one resident failed to complete the study. Because the invitation to participate was distributed to all eligible osteopathic resident physicians in the United States, the final sample of 59 included osteopathic physicians who varied in age, gender, ethnicity, school of graduation, location of current training and discipline. One participant reporting being less than 25 years of age and one being more than 50 years of age, while the majority (59.3%) gave their age as 29 years or younger. The sample included 56% women and 44% men. Participating residents reported being in residency or fellowship programs from 23 different states and reported graduating from 22 different colleges of osteopathic medicine (Table 1).

2.2. Web-based OSCE

Over the 8-week testing period (October to December 2012), 59 resident physicians completed 236 web-based clinical encounters.

Table 1

Distribution of race and ethnicity, training level and area of specialty for participant sample ($n = 59$).

Demographic	Total (%)
<i>Race/ethnicity</i>	
Hispanic	3 (5.1%)
Asian	9 (15.3%)
African American	4 (6.8%)
Caucasian	42 (71.2%)
More than one race	1 (1.7%)
Total	59 (100%)
<i>Training level</i>	
Intern/resident (1st year)	16 (27.1%)
Resident (2nd year)	24 (40.7%)
Resident (3rd year)	14 (23.7%)
Resident (4th year)	4 (6.8%)
Fellow	1 (1.7%)
Total	59 (100%)
<i>Primary specialty</i>	
Emergency medicine	5 (8.5%)
Family medicine	16 (27.1%)
Internal medicine	12 (20.3%)
OB/GYN	6 (10.2%)
Pediatrics	5 (8.5%)
Surgery	1 (1.7%)
Other ^a	14 (23.7%)
Total	59 (100%)

^a Responses to "Other" included the following: anesthesiology, internal medicine-pediatrics, neurological surgery, ophthalmology, orthopedic surgery, pathology, physical medicine and rehabilitation, psychiatry (5) and traditional rotating internship (2).

Encounters were scheduled at the convenience of the residents between the hours of 7:00 AM ET and 1:00 AM ET, allowing for daytime and evening participation in all time zones across the United States. Most encounters were conducted during weekday evening hours. All were conducted using Skype, with each RSP conducting the encounter from his or her home (Fig. 1).

Each resident participated in four encounters, starting with a 15-min doctor–patient communication task regarding the assessment and counseling of the patient's pain. Subsequently, there was a 5-min silent period when the RSP completed the pertinent rating forms, and the resident engaged in a self-assessment, completing a global assessment. The encounter ended with a 10-min debriefing session, which was led by the RSP. For each encounter, the RSP completed a global assessment form and key action checklist; the physician completed a self-assessment global rating form. The day following the encounter, each resident received the completed global assessment, key action checklist and self-assessment forms along with teaching points specific to the encounter. Written assessments were meant to enhance the learning experience by augmenting the verbal feedback received immediately after the encounter.

Content for the four doctor–patient communication clinical encounters was created by a 12-person case development workgroup comprised of medical education experts, standardized patient trainers, standardized patients, and physicians familiar with pain management. All had expertise in clinical skills testing, case development and psychometrics. Content was created, reviewed and endorsed for the following four clinical scenarios with each case addressing elements of pain and pain management, applicable to physicians across disciplines.

- 35 year old woman with 3 months of headache after a motor vehicle accident and neck soft tissue injury (referred pain).
- 48 year old woman with 4 weeks of left sided chest pain (non-cardiac).
- 45 year old man with long standing intermittent low back pain (opioid use/abuse).

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