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Faculty as Simulated Patients (FSPs) in Assessing Medical Students' Clinical Reasoning Skills

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ABSTRACT

Context: At the University of Sharjah College of Medicine in the United Arab Emirates, clinical faculty are used as simulated patients (FSP) to assess students' communication, history taking and reasoning skills on summative Objective Structured Clinical Examinations (OSCEs).

Objectives: The aim of this study is to evaluate student and faculty perceptions of using a faculty member simultaneously as both the simulated patient and the assessor in OSCEs.

Methods: Two structured questionnaires were developed. The questionnaires measured, on a five-point Likert scale, the students' and faculty's agreement with statements related to the ability of the FSPs to convince students that they were real patients, to respond to students' questions, and to evaluate students' skills in questioning, communication and clinical reasoning. Responses to items were collapsed into three-point scales (3=Agree/Strongly Agree, 2=Neutral/Uncertain, 1=Disagree/Strongly Disagree). Students' and faculty's responses to the questionnaires' items were summarized and presented in frequencies, percentages and mean scores.

Findings: A total of 412 students and 28 FSPs responded to the questionnaires with response rates of 98% and 93%, respectively. The encounter with a FSP was generally found not to be stressful by students and faculty. Students were able to think of the FSP as a real patient and faculty generally felt they were able to assess the students' reasoning processes, communication skills and history taking. The percentage of students who agreed or strongly agreed with the various positively-worded questionnaire items ranged



from a lowest of 52% (mean = 2.32) to a highest of 78% (mean = 2.66) and among faculty ranged from a lowest of 61% (mean = 2.54) to a highest of 100% (mean=3.0).

Conclusion: Student and faculty perceptions about the simultaneous use of faculty as simulated patients and assessors were generally positive. The results of this study encouraged the program to continue using FSPs on formative and summative OSCE assessments. Further studies are needed to assess its generalizability and application in other contexts.

Keywords: Faculty Simulated Patient, authenticity of simulated patient, students' perceptions, faculty perceptions, OSCE, assessment

Introduction

Simulated and standardized or programmed patients have been used successfully in the training and assessment of health professionals' clinical skills since their first introduction in the 1960's (Barrows & Abrahamson, 1964).

Simulated patients (SPs) portray an encounter with a real patient. The authenticity of the simulated interaction depends to a great extent on the complexity of the skill or task to be evaluated and the training of the SPs. Proper training of the simulated patients and the assessors, and the reliability of the assessment instrument "Checklist" are key to successful simulation and assessment. A well-trained SP can be briefed on how to respond to some of the questions students might ask. On the other hand, it gets more complicated for the SP to assess students' ability to perform a hypothesis-driven history taking and physical examination. The advantages of using simulated patients are well documented (Adamo, 2003). However, concerns have been raised about the limitations and costs of the use of SPs for student training and assessment (Rethans et al., 1991).

The availability of simulated patients varies according to the culture and context of the learning and practice environment. In the West, professional actors or volunteers are available and trained through expensive structured training programs. In the Arab countries of the Gulf, professional actors and volunteers are not commonly available. This difficulty is compounded by the fact that the language of medical education is English, while the general population speaks Arabic, and the majority of the simulated patients are expatriates, many of whom speak neither Arabic nor English. This situation increases the challenge of finding enough simulated patients, particularly for the training and assessment of medical students' communication and history taking skills.

In several studies, medical and pharmacy students have been used as an alternative to externally hired simulated patients in the OSCE (Mavis et al., 2002; Sibbald, 2001). The positive results of these studies indicate that students are a readily accessible resource as SPs.

Whether actors, medical students with limited experience, or non-physicians used as simulated patients, they all have difficulty assessing medical students' clinical reasoning skills. Assessing clinical reasoning skills requires content expertise and an ability to evaluate the sensitivity and specificity of the questions asked and the logic of generated hypotheses in the light of the presented cues in the history or physical signs. These skills can only be assessed by a trained clinician.

At the College of Medicine, University of Sharjah, clinical faculty are used as simulated patients in order to assess students' communication, history taking and reasoning skills on summative Objective Structured Clinical Examinations (OSCEs) from year one through year four of the five-year integrated problem-based learning (PBL) curriculum. Non-physician simulated patients are



also used in the training and assessment of students, mainly to assess students' general communication and physical examination skills.

The aim of this study is to evaluate student and faculty perceptions of the use of a faculty member simultaneously as both the simulated patient and the assessor in OSCE examinations.

Study Context

In the United Arab Emirates, the University of Sharjah College of Medicine adopted a PBL integrated curriculum at its inception in 2004. Four main themes are integrated vertically and horizontally in the curriculum: personal and professional development, population health, foundations of medicine and clinical skills".

In the pre-clerkship phase of the curriculum, i.e. years 1, 2 and 3, students are introduced to communication, history taking and the physical examination of different body systems and procedural skills. Training is conducted in clinical skills laboratories using different types of simulators and simulated patients (SPs). The curriculum in years 4 and 5 is structured around a series of clerkship rotations.

Clinical reasoning is integral to PBL and history taking skills. Students are trained in the techniques of how to establish rapport and ask closed and open-ended questions, with emphasis on the sensitivity and specificity of the questions and the concept of testing diagnostic hypotheses. In the PBL tutorial sessions and during student training on history taking skills, the importance of early hypothesis generation is stressed.

Due to the small number of English or Arabic speaking SPs, some faculty act as SPs for training or assessment of students' communication, history taking and clinical reasoning skills. For physical examinations, SPs are available in sufficient numbers. Summative assessment of clinical skills takes place using OSCEs. The history taking and reasoning skills stations are allocated 15 minutes for each student. All faculty involved in the students' training participate in these stations as SPs and simultaneously as assessors of the students' communication, history taking and reasoning skills.

Scenarios are prepared in advance and given to each examiner in order to ensure standardization of clinical cases between the examiners. The patients' scenarios are common presentations related to the organ systems studied in each of the three clinical years, such as chest pain, abdominal pain, cough, knee pain, diarrhea, and weight loss. In the clerkship phase, the scenarios relate to the common problems encountered in surgery, medicine, pediatrics and obstetrics. Faculty are trained to act as SPs prior to the OSCE. The training is conducted during a three-hour session. It mainly includes explanations of the rationale for the evaluation, role playing, and feedback.

During the first 10 minutes of the OSCE encounter, the faculty SPs (FSPs) act as patients in a clinical setting. The students' task is to take a focused history from the FSPs. When the history is completed, the faculty change roles to those of assessors. Students are asked to present the key features in the history and explain what could be wrong with the patient, thus generating a diagnostic hypothesis. The assessors use a checklist assessing students' communication skills, ability to ask questions relevant to the patients' problems, skills in presenting the findings in an organized way and generating logical diagnostic hypothesis.



Methods

This study is a descriptive cross-sectional survey. During the academic years 2006-2007 and 2008-2009, all students (n=420) in years 1-3 sitting for OSCE examination as well as all faculty members (n=30) used as simulated patients were invited to participate in the study.

Two structured, five-point Likert type questionnaires (Strongly Agree=5 to Strongly Disagree=1) were developed to measure student and faculty reactions to using faculty as simulated patients. The questionnaires were prepared in English, as it is the language of instruction. The items on the questionnaires measured students' and faculty's agreement with specific statements. The students' questionnaire included six statements measuring the perception of the students in relation to their encounter with FSPs: the students' ability to think of FSPs as real patients (authenticity), the ability of the FSPs to respond to students' questions, the ability of the FSPs to evaluate students' communication, history taking and reasoning skills, and the adequacy of time allocated for the history taking station. The faculty's perception of their role as SPs was assessed using an eight-item structured questionnaire addressing the faculty's role as simulated patients (3 items), the students' communication, questioning and reasoning skills (4 items), and time allocated to history taking skills station (1 item).

For the purpose of data analysis, Likert scale "Strongly disagree" and "Disagree" answers were merged into one category (1=Disagree/Strongly Disagree), the "Strongly Agree" and "Agree" answers were merged into the "3=Agree/Strongly Agree" category, and "Neutral/Uncertain" responses were recoded as "2". Accordingly, mean scores and percentages on the three answer categories were determined.

Cronbach's alpha coefficient was used to measure the reliability and internal consistency of the data collected. Students and faculty were engaged in a semi-formal discussion about the content of the questionnaires in order to assess the face validity of the questionnaires. The statistical software used for data analysis was SPSS 15.0. The study was submitted for ethical clearance and approved by the Institutional Review Board (IRB) at the University of Sharjah medical complex.

Findings

Four hundred and twelve students (response rate=98%) and twenty-eight faculty members (response rate=93%) responded to the questionnaire. Cronbach's alpha coefficients were 0.816 and 0.735 for the students' and faculty data collected, respectively.

Sixty-six percent (n=270, 3-point scale mean=2.46) of students agreed/strongly agreed that their encounter with the faculty-simulated patient was not stressful (Table 1). Among faculty, 74% (n=20, mean=2.63) were comfortable playing the role of simulated patient (Table 2). Fifty-five percent (n=224, mean=2.32) and 52% (n=211, mean=2.32) of students reported they were able to consider the FSP as a real patient and that the faculty convinced them that she/he was a real patient respectively, while 61% (n=17, mean=2.54) of the faculty felt that the students treated them as patients and not faculty.

Sixty-seven percent of students (n=272, mean=2.54) agreed/strongly agreed that the FSPs were able to respond to their questions in a way similar to non-faculty simulated patients. Among the faculty simulated patients, 93% (n=26, mean=2.89) agreed/strongly agreed that having knowledge about the patient scenario allowed them to properly respond to the students' questions. Sixty-six percent (n=271, mean=2.54) of the students agreed/strongly agreed that FSPs were able to evaluate their history taking and



reasoning skills; while 100% (n=27, mean= 3.0) of the faculty agreed/strongly agreed that they were able to evaluate the students' reasoning processes. Moreover, among the FSPs, 89% (n=25, mean=2.89), 86% (n=24, mean=2.82) and 79% (n=22, mean=2.71) perceived students' communication skills, questioning skills and reasoning to be good respectively.

The adequacy of the time allocated for history taking interviews was agreed/strongly agreed upon by 78% (n=319, mean=2.66) of the students and by 92% (n=24, mean=2.88) of the faculty.

Table 1: Students' Perceptions of Faculty Simulated Patient in Assessing Medical Students Clinical Skills (n=412)

Description	Agree/Strongly Agree		Uncertain		Disagree/Strongly Disagree		Mean (sd)
	n	%	n	%	n	%	
My encounter / interview with FSP was not stressful	270	66	63	15	79	19	2.46 (0.796)
I was able to think of FSP as a real patient	224	55	92	23	92	22	2.32 (0.819)
FSP convinced me that s/he is a real patient	211	52	109	27	83	21	2.32 (0.794)
FSP was able to respond to my questions in a way similar to non-faculty simulated patient	272	67	83	20	53	13	2.54 (0.714)
FSP can evaluate me better as an examiner	271	66	88	22	50	12	2.54 (0.703)
Time allocated for the interview "15 minutes" was sufficient to take the history	319	78	46	11	46	11	2.66 (0.669)

Table 2: Faculty's Perceptions of Faculty Simulated Patient in Assessing Medical Students Clinical Skills (n=28)

Description	Agree/Strongly Agree		Uncertain		Disagree/Strongly Disagree		Mean (sd)
	n	%	n	%	n	%	
I was comfortable in playing the role of simulated patient	20	74	4	15	3	11	2.63 (0.688)
Having knowledge about the patient scenario allowed me to properly respond to the students' questions	26	93	1	3.5	1	3.5	2.89 (0.416)
I was able to evaluate the students' reasoning process	27	100	0	0	0	0	3 (0.0)
Students treated me as a patient, not as faculty	17	61	9	32	2	7	2.54 (0.637)
Time allocated for the interview "15 minutes" was sufficient to take the history	24	92	1	4	1	4	2.88 (0.431)
Students' communication skills were good	25	89	3	11	0	0	2.89 (0.315)
Students' questioning skills were good for this level	24	85.7	3	10.7	1	3.6	2.82 (0.476)
Students' reasoning was good	22	78.6	4	14.2	2	7.2	2.71 (0.600)



Discussion

The results of this study showed that students and faculty generally found that the encounter was not stressful. With regard to the authenticity of FSPs, more than half of the students thought of the FSP as a real patient while the majority of the FSPs felt that the students treated them as patients and not as faculty. Although students' agreement on some questionnaire items was just above fifty percent, disagreement was reported by only about one fifth of the students, while the rest were uncertain about their perception. Frequent use of FSPs in clinical skills training of medical students may increase their confidence in this approach.

What is of particular importance in this approach is the FSPs' perception that they are able to assess the complexity involved in students taking history from a patient and assess how students' questioning skills are linked to the students' reasoning process and their ability to generate diagnostic hypothesis. This complex task is difficult to assess by non-medical SPs. In addition, FSP are best able to respond to unpredictable questions raised by students during the simulated clinical encounters (Kneebone et al., 2007). Our results demonstrated that all FSPs felt that they were able to evaluate the students' reasoning process and respond to variations in the students' questions. This gave them a deeper understanding of the students' thought processes and enabled them to differentiate between students who were asking questions in a mechanical way and those who were using questions to test competing diagnostic hypotheses, as understood within "hypothesis driven history taking". The logical sequencing and cohesiveness of findings students presented in the history was another skill which FSPs believed that they were able to assess. This would have been difficult for non-medical SPs to assess.

One limitation of this study is its generalizability. Several issues were context-related, particularly the culture and language of the school where we tested the use of FSPs. The availability of clinical faculty willing to play the role of SPs was another limiting factor. We have started to use more junior faculty as SPs, such as clinical tutors, residents and senior students. Another limitation is that this study did not assess construct validity or generalizability of the generated scores of faculty's assessment of students' clinical reasoning skills. It assessed the perceptions of the participating students and faculty on its feasibility, acceptance and its educational impact. Following this study, the training in the skills lab using junior faculty "residents" as SPs followed by constructive feedback from the FSPs was introduced and well received by students.

Conclusions

The results of this study encouraged the program to increase the use of FSPs in formative and summative assessments of students. It has also allowed the program directors to identify weaknesses in the students' thought processes and identify how to improve them through modifications in students' training. Further studies are needed to investigate the validity and reliability of using FSPs in assessing medical students' clinical skills and its application to assessing other aspects of clinical competency in other domains such as patient safety, ethics and professionalism.

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