BRIEF

Assessing Pharmacy Student Performance and Perceptions on Counseling Skills Through A Simulated Telehealth Encounter

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Objective. To describe implementation of a patient counseling roleplay assessment via teleconferencing platform in a newly-developed pharmacy communications course, assess student performance on the roleplay and compare it with other assessments, and measure student perceptions of and satisfaction with the experience.

Methods. Eighteen cases were developed, each belonging to one of three interactions in community pharmacy: new prescription, refill, or over-the-counter (OTC) medication request. A rubric was designed to evaluate each type of interaction. Student scores in various course assessments were tested using Spearman's rank-order. Student scores in the three cases were compared using Kruskal-Wallis *H*. Students evaluated their experience and satisfaction of the assessment and effectiveness of the course.

Results. Seventy-nine students completed the assessment with a mean score of 17.4/20 (87.0%). Student scores in counseling roleplay were similar among case types and positively correlated with other traditional assessments in the course. Despite internet connectivity issues, and heightened student anxiety, 71.0% agreed that the assessment did not affect the quality of their counseling, and 74.0% agreed that the experience was comparable to traditional assessments. The telehealth activity led to enhanced perceived student knowledge and confidence in interviewing and counseling patients.

Conclusion. Students attained high scores that were consistent with other assessments in the course. Students reported the assessment did not affect the quality of their counseling, and felt the setting and context were still authentic. The experience required dedicated preparation and organization, but was successful in demonstrating overall student satisfaction and positive perceptions.

Keywords: patient counseling, communication skills, roleplay, telehealth, telepharmacy

INTRODUCTION

Studies have recognized that patient counseling by community pharmacists could improve adherence and patient self-care behaviors, and decrease medical costs.¹⁻³ Counseling is 'a face-to-face interaction between the pharmacist and the patient or caregiver', although telephone, and social media and technology - based consultations have been used.²⁻⁴ Communication skills are integral to patient counseling, and pharmacists need to obtain, practice and apply communication skills to provide pharmaceutical care.

Telehealth is defined as "the use of electronic information and telecommunications technologies to support and promote long-distance clinical health care, patient and professional health-related education, public health and health administration."⁵ The term telehealth also includes e-health and mobile health (mHealth), and represents health services delivery through other means than face-to-face.⁶ There has been no universally-accepted definitions to telehealth terms, and these are likely to change over the next few years, but a proposed definition to e-health is "the intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through the Internet and related technologies."⁷ Mobile health is most commonly used in reference to "using mobile communication devices, such as mobile phones, tablet computers and personal digital assistants (PDAs), and wearable devices such as smart watches, for health services, information, and data collection."⁸ Telehealth tools have proven to be effective in providing care related to public health by pharmacists in various settings.⁹⁻¹³ Pharmacists have provided services related to diabetes, hypertension, lipid, anticoagulation, geriatric, human immunodeficiency virus, and hepatitis C using telehealth.¹⁴⁻¹⁶ Advantages to telehealth include convenience, access to routine care, decreased costs, and reduced exposure to disease.¹⁷ Yet, telehealth has not been implemented widely possibly due to lack of knowledge and training of both professionals and patients in the area, lack of face-to-face contact, health professional perceptions of negative impact on patient care, costs associated with resourcing the technology, technical and Internet problems encountered with use, confidentiality concerns, workload and organizational support, and the inability to seek compensation for these services.^{6,18} Nevertheless, restrictions on

human contact imposed by precautionary measures due to the global coronavirus disease (COVID-19) pandemic have greatly affected how health care is provided and have accelerated the adoption of telehealth. Much of this change is believed to be permanent, and for healthcare professionals including pharmacists to deliver services using telehealth they need to be educated and trained.¹⁹ Pharmacy organizations are calling for “appropriately trained and equipped pharmacists” to use telepharmacy (the use of telehealth tools in pharmacy).²⁰⁻²²

This growth of telehealth has prompted health profession education to provide virtual or e-learning experiences for students; confirming improved students' knowledge, perceived confidence and learning in a number of areas.²³⁻²⁷ As technology becomes increasingly integrated into the classroom, and with the growth of health professions programs with multiple campuses, the use of live streaming or video recordings to reach students of these campuses has increased, which addresses time and space limitations.^{25, 28-31} Telehealth has successfully been used in interprofessional education (IPE) whereby students obtained medication histories, provided clinical recommendations, and reported improved self-perception of interprofessional competence and attitudes toward interprofessional collaboration.³² A simulated Telehealth collaboration has been shown to reduce logistical difficulties associated with IPE integration of teams in Team-Based Learning (TBL) related to pharmacogenomics.³³ Skill-based assessments have also been conducted virtually, including formative and summative OSCE; students were found to perform comparably to those conducted in-person.³⁴⁻³⁵ Several studies have been conducted to compare study behaviors and grades of students in on and off campuses licensure examinations, and have found no significant differences in learning outcomes achievement between the two.³⁶⁻³⁸

The program at Ajman University, United Arab Emirates (UAE) offers a four-year, 160-credit hour Bachelor of Pharmacy degree. The Communication Skills in Pharmacy course is a newly-offered, two-credit hour course introduced in the second semester of the program delivered in two dedicated lectures per week. The course is aimed at introducing communications skills and their application in patient care, and patient counseling and advice giving on medication use. Assessments in the course consisted of pre-class assignments, a quiz, a midterm, a written assignment, patient counseling roleplay, and a comprehensive final exam. The pre-class assignments (5.0% weighting) aimed for students to practice gathering information about the medications covered in the course. The quiz (5.0% weighting) consisted of a multiple choice (MC) test of information gathered in pre-class assignments. The midterm (20.0% weighting), a mix of MC and text-type questions, covered various communication areas. The group assignment (20.0% weighting) was a five-page, student-scripted scenario focusing on pharmacist assertive behavior. The counseling roleplay (20.0% weighting) assessed student performance in counseling a simulated patient presenting a new or refill prescription or an OTC request. The MC final exam (30.0% weighting) was comprehensive covering general course content. In Spring semester, 2020, the course was offered for the first time. From January until March 15, 2020, the course was offered in-person, however, after the breakout of the COVID-19 pandemic, Ajman University adopted a complete online teaching and assessment strategy using Moodle as a learning management system (LMS). Hence, face-to-face roleplay sessions within the course were replaced with pre-selected videos of pharmacy interactions, and the patient counseling roleplay assessment was conducted using Zoom audio-visual teleconferencing (Zoom Video Communications, San Jose, CA) platform. Therefore, this project aimed to describe the implementation of a virtual patient counseling roleplay assessment in a first year Bachelor of Pharmacy communications course, to compare student performance in this and other course assessments, and to evaluate student experience with their first roleplay assignment using teleconferencing technology.

METHODS

Cases

As chronic disease management and provision of extended pharmacy services are limited in the UAE, interactions with patients mostly occur in community pharmacy.³⁹ Hence, a total of 18 case scenarios were developed, each belonging to one of three types of interactions that occur in community pharmacy: a new or refill prescription or over-the-counter (OTC) medication request. The course instructor teamed up with a research assistant and three community pharmacists to ensure the cases were correct and logical. In addition, to ascertain that the cases had similar difficulty, team members worked to individually assign a difficulty score from one to 10 to each case, considering the complexity of the patient and the amount of counseling required; if scores were discrepant, the cases were then refined until consensus was achieved. Students were divided into groups of 10, leading to eight sessions conducted on different days. Two different cases were used in each session to total 16 cases; the two remaining cases were kept for contingency. Each of the 16 cases was assigned a number (from one to 16), and students were assigned a case by assigning the numbers from one to 16 to the 79 students according to their sequence on the class roster obtained from the Registration Department at the University; after the 16th case was assigned, the same process was repeated until all students were assigned to a case. Students were not made aware of their case type allocation.

Evaluation Rubrics

For each of the three case types, an evaluation rubric was developed to suit the interaction.⁴⁰⁻⁻⁴² The rubric included items with variable weighting, related to *opening* an interaction totaling four points, *information gathering* totaling four points, *information giving* totaling six points, *closing* an interaction totaling three points, and *communication skills* totaling three points (Table 1). The items were graded based on the scale: (zero = not addressed; half the mark if partially completed; full mark if fully completed).

Student post assessment evaluation: On a five-point Likert-type scale of one = strongly disagree, to five = strongly agree, students evaluated the case content, their experience with the counseling roleplay assessment, and the logistics associated with it. They also rated their satisfaction with the assessment and the effectiveness of the course.

The patient counseling roleplay assessment

To help alleviate the anxiety and ambiguity surrounding a new assessment approach, several live sessions were led by the course instructor on the LMS to review expectations from students, the evaluation rubrics and student distributions to the sessions. Participation in all course activities and assessments was required from all students, however, participation in the surveys post the roleplay assessment was optional, and the students were well aware of that. In addition, a mock roleplay session covering each interaction type was conducted and recorded on Moodle for student convenient access and review.

On the actual day of the assessment, students interacted on Zoom via high-speed internet using their own computer devices with a webcam. The following steps summarized the sequence of events on each day of assessment:

Step 1: A session on the LMS was started for communication with students outside zoom before and after role play.

Step 2: A Zoom session was initiated, and students were called in to join the session individually.

Step 3: The student was admitted to the session, and he/she conducted their interaction with the simulated patient (role played by a trained research assistant). Each student was allowed a maximum of 10 minutes to complete their interaction. The session was digitally recorded on Zoom.

Step 4: When finished, the student was asked to leave and, if agreeing, to go back to the LMS to complete a post assessment survey that was linked online to SurveyMonkey.

Step 5: The procedure was repeated for all eight assessment days until all students were evaluated.

Step 6: At the end of all sessions, the instructor conducted a group debriefing for students and gave feedback on the optimal management of the cases and on student performance.

Step 7: The instructor reviewed recordings of all sessions (which were also available to the students on their demand), and assigned grades by filling out the respective rubric for each student.

Data analysis

Stata Version 15 (StataCorp, College Station, Texas, USA) was used for data analysis. Continuous variables such as students' scores in various assessments were presented as means and standard deviations (SD), while ordinal variables such as post assessment evaluations were presented using counts and frequencies. Weighted means were also calculated for ordinal variables by assigning numerical values to response options and using their counts. Students' scores in various assessments were tested using the Shapiro-Wilk test and were found not to follow a normal distribution. The Kruskal-Wallis H was used to test differences in students' scores in the counseling cases. Spearman's rank-order correlation coefficient was used to test correlations between students' scores in the counseling roleplay and other assessments in the course. A p -value $< .05$ was considered statistically significant.

RESULTS

All 79 students completed the counseling roleplay assessment. Almost half of the students (36 (45.6%)) achieved a B (80.0-89.9%) while 22 (27.9%) and 15 (19.0%) achieved C (70.0-79.9%) and A ($\geq 90.0\%$), respectively. Mean scores in all course assessments are shown in Table 2.

No significant differences were found among students' scores in the three case types ($X^2=4.86$, $p=.089$). Notably, scores in the counseling roleplay were significantly associated with scores of patient counseling questions in the Final examination ($r_s=0.26$, $p=.020$) the overall Final examination scores ($r_s = 0.40$, $p<.001$) and the Midterm ($r_s = 0.25$, $p=.024$).

Fifty-four students (68.4%) completed the post assessment survey. The majority agreed that the cases assessed specific knowledge areas in communications, however, 50.0% of students agreed that it was more stressful than traditional written examinations (Table 3). Most students reported that the assessment was well administered, that they were well informed of what they needed to do, and that the time provided was adequate. Furthermore, 71.2% of students agreed or strongly agreed that use of a virtual assessment did not affect the quality of their counseling, 75.0% agreed or strongly agreed that the experience was comparable to traditional in-person assessments, and 70.6% felt the setting and context were still authentic (Table 3). Most students reported that they were satisfied with the counseling roleplay; two-thirds (66.1%) reported that they looked forward to doing more exercises virtually in the future (Table 3).

DISCUSSION

To our knowledge, this was one of early studies to describe the implementation of a patient counseling roleplay assessment using teleconferencing technology in pharmacy curriculum. Our findings support available evidence that assessed the effectiveness of e-learning in pharmacy education.²⁵ Recently, patient counseling and communication skills were assessed via virtual platforms whereby students and faculty considered the virtual assessment appropriate in assessing student communication skills, however, a strong preference for future virtual skills-based assessments was not observed.³⁵ In our study, despite reported anxiety with a new assessment, students were very satisfied and looked forward to undergoing similar assessments in the future. We think that the rigorous process adopted in developing the case scenarios and associated evaluation rubrics, in addition to student orientation and session piloting were instrumental in assuring student familiarity with the new assessment and the level of performance expected from them. Despite these positive outcomes on student learning and satisfaction, there is an overall paucity of research to demonstrate the true benefits of pharmacists' services utilizing telehealth. However, early evidence shows that telehealth may be an effective way to deliver pharmacist services and to improve patient care, including enhancing adherence to medications and achieving glycemic control in diabetes.⁴³⁻⁴⁵

The integrity of assessment, however, has been debated as one of the challenges with e-learning.⁴⁶ Integrity mechanisms for online delivery of assessment are being explored and evolve as our knowledge of the technology increases.³⁴ Of note in this assessment, student scores were similar and correlated well with other conventional assessments in the course. Integrity mechanisms used in this study included student awareness that a variety of cases were developed to reduce intentional broadcast of cases, using more than one case per session, random assignment of students to cases, limiting the examination administration time and feedback was withheld until all students had completed the assessment.

Zoom offered a feasible option to conduct the roleplay assessment given its various functionalities, ease of use, familiarity of users with the technology and its free-of-charge availability to the faculty and students.⁴⁷⁻⁴⁹ As it is already used by our university, no additional costs were incurred to use this tool. Clearly, there are other free or low-cost video/chat applications available to academic departments if a teleconferencing system cannot be afforded. The rapid spread of the COVID-19 outbreak imposed sudden changes in almost all aspects of modern life, including higher education. This rapid transition to distance e-learning raised questions about the ability of faculty to efficiently use technologies in teaching and assessment.⁵⁰ This study demonstrated that the faculty can efficiently and effectively adapt to e-learning modalities with adequate preparation; students were very satisfied with their experience in the course.

Limitations

Although a rigorous process was used to develop and pilot the rubrics, they have not undergone psychometric testing and validation. This novel experience required ample faculty and student preparation, smoothening of logistics and great organization. Several students needed to access additional devices with quality video and audio capabilities to undergo the assessment. Despite that internet connectivity problems were predominantly addressed before the actual assessment, some were still for a minority of students.

CONCLUSION

Students attained high scores in all components of the communication skills and counseling virtual assessment. Student scores in counseling roleplay were correlated with similar traditional assessments in the course. Students reported the assessment did not affect the quality of their counseling, that the experience was comparable to traditional in-person assessments; they felt the setting and context were still authentic. Students reported improved knowledge, communication skill and confidence in counseling patients. Despite some anxiety, most students evaluated their experience positively and looked forward to undergoing similar assessments conducted virtually in the future.

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Table 1. Evaluation Rubrics for Patient Counseling Roleplay

New Prescription		OTC Request		Refill Prescription	
Item	Score	Item	Score	Item	Score
Opening		Opening		Opening	
Introduce yourself	2	Introduce yourself	2	Introduce yourself	2
State purpose of counseling	2	Any previous consult with Dr	2	State the purpose of counseling	2
Information Gathering		Information Gathering		Information Gathering	
Assess present knowledge about medication and condition	2	Check for previous treatment	1	Check for compliance	2
Assess patient allergies	2	Check for onset	1	Check for side effects	2
		Check for symptoms	1		
		Check for other associated factors	1		
Information Giving		Information Giving		Information Giving	
Name and group of medications it belongs to	1	Name and group of medications it belongs to	1	Side effect handling	2
How medication works	1	How medication works	1		
How to take medication	1	How to take medication	2	Compliance counseling-finishing	2
Most common side effects	1	Most common side effects	1	antibiotic	
Side effect handling	1	Side effect handling	1	Emphasizing how to take	2
Compliance counseling	1				
Closing		Closing		Closing	
Recap	1	Recap	1	Recap	1
Encourage questions	1	Encourage questions	1	Encourage questions	1
Monitoring and revisit	1	Monitoring and revisit	1	Monitoring and revisit	1
Communication		Communication		Communication	
Place, tone, and volume	1	Place, tone, and volume	1	Place, tone, and volume	1
Appropriate language	1	Appropriate language	1	Appropriate language	1
Eye contact	1	Eye contact	1	Eye contact	1

Table 2. Students' Assessment Scores in Communication Skills in Pharmacy Course (N=79)

Assessments	Mean (%) $\pm$ SD
First quiz and midterm (30 points)	25.9 (86.3) $\pm$ 2.4
Counseling roleplay via Zoom teleconference (20 points)	17.4 (87) $\pm$ 2.1
Opening (four points)	3.6 (90) $\pm$ 0.7
Information gathering (four points)	3.2 (80) $\pm$ 1.1
Information giving (six points)	4.7 (78.3) $\pm$ 1.2
Closing (three points)	2.8 (93.3) $\pm$ 0.5
Overall communication skills (three points)	2.9 (96.7) $\pm$ 0.4
Assignment on assertive behavior (20 points)	17.8 (89) $\pm$ 1.8
Final examination (30 points)	21.8 (72.7) $\pm$ 4.6

Table 3. Students' Experience and Satisfaction with In-class and Online Learning and Counseling Roleplay via Zoom (n=54)

Survey items	Response Distribution n (%)										Weighted Mean
	Strongly disagree		Disagree		Undecided		Agree		Strongly Agree		
Case content											
The cases assessed specific knowledge areas	1	(1.8)	1	(1.8)	1	(1.8)	26	(48.2)	25	(46.3)	4.4
The cases highlighted my areas of weakness	2	(3.7)	3	(5.6)	9	(16.7)	17	(31.5)	23	(42.6)	4.0
The cases covered a range of counseling skills	1	(1.8)	0	(0.0)	3	(5.6)	22	(40.7)	28	(51.8)	4.4
The case scenario given to me was sufficient for the required task	2	(3.7)	0	(0.0)	7	(13.0)	19	(35.2)	26	(48.2)	4.2
The cases provided me with opportunities to enhance my knowledge & confidence	1	(1.8)	0	(0.0)	2	(3.7)	24	(44.4)	27	(50.0)	4.4
Assessment											
The counseling roleplay evaluated my knowledge	1	(1.8)	1	(1.8)	6	(11.1)	17	(31.5)	29	(53.7)	4.3
The counseling roleplay evaluated my communication skills	1	(1.9)	0	(0.0)	2	(3.8)	21	(40.4)	28	(53.8)	4.4
The counseling roleplay being worth 20% was appropriate	1	(1.8)	1	(1.8)	12	(22.2)	21	(38.9)	19	(35.2)	4.0
The counseling roleplay gave me a chance to enhance my counseling skills	2	(3.7)	1	(1.8)	8	(14.8)	23	(42.6)	20	(37.0)	4.1
The counseling roleplay assessment was fair	2	(3.8)	3	(5.7)	6	(11.3)	25	(47.2)	17	(32.1)	4.0
The counseling roleplay was more stressful than written examinations	5	(9.3)	14	(25.9)	8	(14.8)	19	(35.2)	8	(14.8)	3.2
Logistics											
The counseling roleplay was well administered	1	(1.9)	1	(1.9)	2	(3.8)	27	(51.9)	21	(40.4)	4.3
I was made aware of what I needed to do during counseling roleplay	1	(1.9)	2	(3.8)	3	(5.8)	20	(38.5)	26	(50.0)	4.4
The time provided to me was adequate	1	(1.9)	1	(1.9)	3	(5.8)	20	(38.5)	27	(51.9)	4.4
The timetable of roleplay was available to me in advance	1	(1.9)	1	(1.9)	6	(11.5)	17	(32.7)	27	(51.9)	4.3
Use of Zoom teleconferencing did not affect the quality of my counseling	3	(5.8)	3	(5.8)	9	(17.3)	17	(32.7)	20	(38.5)	3.9
The quality of internet connection during roleplay through Zoom was adequate	1	(1.9)	3	(5.8)	5	(9.6)	24	(46.2)	19	(36.5)	4.1
The experience of roleplay was comparable to traditional in-room assessments	3	(5.8)	3	(5.8)	7	(13.5)	23	(44.2)	16	(30.8)	3.9
I felt the setting and context were still authentic using Zoom in this assessment	2	(3.9)	3	(5.9)	10	(19.6)	21	(41.2)	15	(29.4)	3.9
Having video recording option in Zoom was preferred to review my performance	2	(3.8)	2	(3.8)	12	(23.1)	20	(38.5)	16	(30.8)	3.9
Satisfaction with counseling roleplay via Zoom											
I am satisfied with online counseling roleplay via Zoom	2	(3.8)	2	(3.8)	9	(17.0)	22	(41.5)	18	(34.0)	4.0
Counseling roleplay via Zoom was stimulating	2	(3.8)	2	(3.8)	6	(11.3)	24	(45.3)	19	(35.8)	4.0
I enjoyed being assessed using counseling roleplay via Zoom	2	(3.8)	2	(3.8)	6	(11.3)	24	(45.3)	19	(35.8)	4.0
The counseling roleplay via Zoom was worth my time	2	(3.8)	2	(3.8)	7	(13.2)	23	(43.4)	19	(35.8)	4.0
I look forward to doing more roleplay via Zoom in the future	2	(3.8)	5	(9.4)	11	(20.8)	17	(32.1)	18	(34.0)	3.8