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Contrasting On-Line and Face-to-Face Clinical Communication Skills Training with Simulated Patients by Mixed Method Analysis

Simüle Hastalarla Yapılan İletişim Becerileri Eğitiminde Çevrimiçi ve Yüz Yüze Eğitim Ortamlarının Karma Yöntem ile Karşılaştırılması

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Abstract

Aim: Medical education had to adapt quickly by switching to online learning due to the pandemic lockdown. This paper compared face-to-face clinical communication skills (CCS) teaching to delivering the same course online.

Methods: During lockdown (2020-21), 175 medical students took the CCS course online, compared to 154 face-to-face trained students in the previous academic year. The CCS course aims to develop skills in history taking (2nd year) and motivational interviewing techniques (3rd year). Students participated in theoretical lectures and practical skills training sessions composed of SP encounters, followed by instant SP and tutor feed-back, all online. After the practical examination, multi-source feed-back was obtained. Multi-source feed back from the online course was qualitatively analyzed with hierarchical thematic coding of free text. Face-to-face and online teaching activities were compared in terms of attendance and course grades.

Results: Eighty-eight second and 87 third year students received online training, 73 second and 81 third year students trained face-to-face. Attendance rates did not differ, average course grades were higher in the online delivered courses for both years (year 2 history taking skills course face-to-face 81,29±20.323 vs. online 95,45±20.949, $p<0.001$; year 3 motivational interviewing skills course face-to-face 94,81±16.667 vs. online 99,08±4.213, $p=0.028$).

Students reported to have achieved learning outcomes despite training online. Trainers, initially concerned by uncertainty and extra workload, finally evaluated the whole process as successful. SPs were satisfied with the preparation for- and coordination of the course.

Conclusions: Online CCS training with SPs is feasible and effective, students benefit from online CCS training.

Keywords:
Clinical Communication Skills, Online Skills Training, Simulated Patients, Pandemic Lockdown

Anahtar Sözcükler:
Klinik İletişim Becerileri, Çevrim içi Beceri Eğitimi, Simule Hasta, Pandemi

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Özet

Amaç: *Tıp eğitiminde çevrimiçi eğitim ortamlarının kullanımı pandeminin de etkisiyle yaygınlaştı. Bu araştırmada simüle hastalar ile yapılan klinik iletişim becerileri (CCS) eğitiminde yüz yüze ile çevrimiçi eğitim ortamının karşılaştırılması amaçlandı.*

Yöntem: *CCS kursu, öykü alma becerileri (2. sınıf) ve motivasyonel görüşme teknikleri (3. sınıf) konusundaki becerileri geliştirmeyi amaçlar. Pandemi döneminde (2020-21), bu kursu toplam 175 tıp öğrencisi çevrimiçi aldı. Önceki akademik yılda bu kursu yüzyüze almış toplam 154 öğrenci vardı. Bu iki farklı eğitim ortamında yürütülen CCS kurs çıktıları karşılaştırıldı. Kursun çevrimiçi yürütüldüğü pandemi döneminde, öğrenciler, teorik derslere ve SP buluşmalarından oluşan pratik beceri eğitim oturumlarına online katıldılar, ardından anında SP ve eğitici geri bildirimleri aldılar. Çevrimiçi kursun geri bildirimi, serbest metinlerin hiyerarşik tematik kodlaması ile nitel olarak analiz edildi. Yüz yüze ve çevrimiçi öğretim faaliyetleri katılım ve ders notları açısından nicel olarak karşılaştırıldı.*

Bulgular*: Çevrimiçi eğitimde 88 dönem 2, 87 dönem 3 öğrencisi vardı. Yüz yüze eğitimde 73 dönem2, 81 dönem 3 öğrencisi vardı. Katılım oranları farklılık göstermedi, ortalama ders notları her iki yıl için de çevrimiçi yürütülen kurslarda daha yüksekti (2. sınıf öykü alma becerileri kursu yüz yüze 81,3±20,3 karşısında çevrimiçi 95,5±21, p<0,001; 3. sınıf motivasyonel görüşme becerileri kursu yüz yüze 94,8±16,7 karşısında çevrimiçi 99,1±4,2, p=0,028).*

Alınan geribildirimlerde öğrenciler, çevrimiçi eğitim almalarına rağmen öğrenme çıktılarına ulaştıklarını bildirdi. Başlangıçta belirsizlik ve ek iş yükü nedeniyle endişeli olan eğitmenler, uygulama sonrası süreci başarılı olarak değerlendirdiler. Simüle hastalar ise , kursun hazırlığı ve koordinasyonunu başarılı bulduklarını ifade ettiler.

Sonuç: *SP'lerle yapılan çevrimiçi CCS eğitimi uygulanabilir ve etkin bulunmuştur.*

INTRODUCTION

Clinical communication skills and patient centred approach are an integral part of good medical practice. To develop the related competency the state of the art educational method is practical skills training which traditionally is delivered face to face with experiential learning (1,2). Due to the pandemic lockdown, medical education had to adapt quickly by switching to online learning to avoid physical contact (3,4). Face-to-face skills training environment offers a high level of authenticity which might be compromised in a virtual teaching environment. This fact represents a challenge for online education especially for skills training purposes (5,6).

Communication skills training is a crucial part of the curriculum at Acibadem University since the very beginning in 2009. The theme of clinical communication skills is integrated into the curriculum by means of two mandatory courses.

The professionalism program entitled “Clinical medicine and professional skills” (CMPS) running throughout the first 3 years of undergraduate medical education features a clinical communication course (CCS). These courses include skills training in taking a patient history (CCS HT) and advanced communication skills (ACS) for initiating behavour change (motivational interviewing) (7). The courses include theory and practice sessions, the practical skills training part is organized via encounters with SPs. Training communication skills with SPs is known to be the state-of-the-art method due to its high level of authenticity (8-10). At Acibadem University, the Calgary Cambridge Guide framework (11-13) is used for communication skills training which, before the pandemic, used to take place face-to-face in the physical environment of the clinical skills center (13). However, during the pandemic also communication skills training had to be delivered by online methods.

The aim of this paper is to contrast the outcomes of two different delivery methods (face- to-face clinical communication skills training before the pandemic and online clinical

communication skills training during the pandemic) in terms of students' performance scores and evaluation of the online program through multisource feedback via standard forms. The research question is whether communication skills training with online SP encounters is as effective as that with face-to-face SP encounters.

METHODS

In this study we used a mixed-method approach. Quantitative analyses were used to compare face-to-face and online clinical communication courses in terms of student attendance and practical examination scores. The multi-source written feedback, which was collected after the online course, was evaluated in a qualitative manner.

Participants and Course Description

Face-to-Face Clinical Communication Skills Training

In the pre-pandemic academic year of 2019-2020, a total of 155 medical students (year two n=74; year three n= 81) were eligible for clinical communication courses face-to-face. The Clinical Communication course required each student to participate in a theoretical part delivered by interactive lectures in class (5 hours for CCS and ACS, each). Then, all students received invitations for three practical skills training appointments for simulated patient encounters in the simulation center (30 minutes, each). After completing the practical SP sessions, students made an appointment for tutor feedback (structured according to skills check-lists accessible on the institutional Learning Management System LMS) upon reflecting on their performance watching their SP encounter videos.

Online Clinical Communication Skills Training

A total of 175 medical students (from two different medical school entry cohorts, featuring years 2 and 3) were eligible for online clinical communications skills training during the academic year of 2020-21. The program aims featured taking a patient history in the "Clinical communication skills (CCS)" course for 2nd year medical students (n=88) and initiating behaviour change with motivational interviewing techniques in the "Advanced communication skills (ACS)" course for 3rd year medical students (n=87).

Online communication skills courses consisted of a theoretical part with synchronized and asynchronized lectures via the institutional learning management system (LMS) and a practical part with online simulated patient encounter and feedback sessions for training, and an online standardized patient encounter session for assessment purposes. Except for the regular introduction to the course, all students and simulated patients were invited to an orientation session where the course plan, organization of- and requirements for online implementation were explained and discussed. The online history taking course required each student to participate in the theoretical part, first (5 hours for CCS and ACS, each) and then attend three online practical skills training sessions (30 minutes, each). These sessions were composed of a SP encounter, followed by instant SP and tutor feedback, both, structured according to the skills check-list previously introduced in the theoretical part of the course and accessible on the institutional LMS (Table 1).

Table 1. Clinical Communication Skills Training Session Characteristics by Delivery Method

	Face-to-Face		**Online**	
Course participants by year (n)	Year 2 CCS History taking skills (n=73)	Year 3 ACS Motivational interview (n=81)	Year 2 CCS History taking skills (n=88)	Year 3 ACS Motivational interview (n=87)
Lectures	5 hours	5 hours	5 hours	5 hours

	Face-to-Face	Online	Face-to-Face	Online
SP encounters	3x20 minutes/student	3x20 minutes/student	3x15 minutes/student	3x15 minutes/student
Feed-back	1x30 minutes/student	1x30 minutes/student	3x15 minutes/student	3x15 minutes/student
Practical examination	30 minutes/student	NA	30 minutes/student	NA

Abbreviations: CCS: clinical communication skills, ACS: advanced communication skills, SP: simulated patient, HT: history taking

Human Resources İnvolved in Running the Course

The team of the CCS course consisted of experts from different professions;

Communication Skills Program Coordinator: M.D Professor and Head of Department of Family Medicine, coordinator of CMPS and founding member and faculty of the CMPS Clinical Communication Skills Course

Simulated clinical program coordinator: M.D Assist Professor and Faculty member of the department of Medical Education, curriculum coordinator of simulation in medical education.

Tutors: Faculty of Departments of Medical Education (2), Family Medicine (3), Forensic Medicine (1). All tutors were medical doctors and experienced in simulation in medical education and faculty of the CMPS program.

Technical staff biomedical technician (1)

Administrative staff (2) secretaries

Simulated Patients (6) team of actors experienced in portraying simulated patients cooperating with CASE for the last seven years.

Assessment and Evaluation

All simulated patients and students gave their consent for recording sessions, to be used for student reflection, feedback and assessment purposes, respectively. Student performance scores (Table 4) were composed of participation in online SP training sessions (at least two of three sessions 80% of the participation score), as well as, participation in tutor feed-back sessions (20% of the participation score) for 3rd year students. The second year students' performance score was composed of participation (scoring see above as with 3rd year students) and a practical history taking (HT) examination score, accounting for 50% of the total course score, each. For the scores of the practical examination in history taking, the recordings of the online SP sessions were independently assessed by four trained raters via a standardized and scored skills check-list (Supplement 1 and Supplement 2). Student feedback about the course was obtained at the end of the course in a qualitative manner via an online standardized questionnaire with five open – ended questions (Table 2).

Simulated patients also gave written feed-back at the end of the course, as did the trainers and the course coordinators (Table 2: Course evaluation questions for coordinators and trainers, Table 3: Course evaluation questions for simulated patients).

The assessment plan for the face-to-face clinical communication skills courses was identical to the above described strategy for the course delivered online.

Because of the unexpected change to the new online training environment, multisource feed-back evaluation was obtained in the academic year 2020-2021.

Data Collection

Face-to-face and online teaching activities were compared quantitatively by performance scores in terms of attendance and course grades.

Qualitative feed-back about the online clinical communication course was collected via email in a multisource manner from students, course chairs, tutors and simulated patients by five standardized questions (Tables 2 and 3).

Table 2. Course Evaluation Questions for Students, Coordinators and Trainers

Item number	Item
1	How do you feel about skills training with Simulated Patients (SPs) being online?
2	Did you face any difficulties? If yes, which?
3	In your opinion what was the difference between online SP encounters and face-to-face SP encounters? Which method would you prefer? Why?
4	Is there anything you liked about the on-line skills training with SPs? If yes, what?
5	Do you have any suggestions for improvement for the online skills training program with SPs? If yes, which?

Table 3. Course Evaluation Questions for Simulated Patients

Item number	Item
1	What do you think worked well in the on-line SP encounter the session?
2	Did you need any further information in the SP brief?
3	What did not work well in the on-line SP encounter session?
4	What aspects of the role-secenario were challenging to play due to being online?
5	Did the students have any particular challenges in the on-line SP encounter?
6	Please give your comments or suggestions about any other aspect of the on-line skills training sessions?

Analysis of Mixed-Method Results

For quantitative data, frequencies are presented as n (number of students) and academic course performance scores are presented as mean±SD. Pre-pandemic face-to-face teaching and pandemic online teaching academic course performance scores are compared with Independent Samples Student-t-test.

The qualitative data collection consisted of written multisource feed-back, collecting views from students, educators and SPs. Qualitative content analyses of the written replies to open-ended questions were subject to iterative free text data-driven inductive thematic coding. Three independent raters extracted the codes from the written answers to the qualitative feed-back questions (Tables 2 and 3). Common themes emerging from the codes were organized for a more structured presentation in a hierarchical frame to identify relationships. This method involves categorizing data into a hierarchy of codes, ranging from broad themes to more specific subcategories. For the initial coding researchers read the free text to identify broad key concepts or themes. After that similar codes were summarized into categories to identify overarching themes.

The last step was to organize the categories into a hierarchical structure with more specific subthemes/codes. The themes were reviewed for duplications, generating a final list of themes in six iterative rounds (14, 15).

RESULT

Quantitative Results

In the pre-pandemic academic year of 2019-2020, one second year student did not attend the face to face course, thus, a total of 154 medical students (year two n=73; year three n= 81) attended clinical communication courses face-to-face.

During the pandemic the CCS course was implemented with 175 students attending.

Curriculum design, aims and learning outcomes were the same for both cohorts (face-to-face and on-line teaching).

All students completed the online courses. Mean CMPS course scores of online SP encounters (composed of participation to SP encounters, feed-back sessions and practical examination score for history taking skills in year 2, and, participation to SP encounters and feed-back sessions for motivational interviewing skills in year 3) were higher as compared to those of the pre-pandemic academic year with face-to-face SP experience (Table 4).

Table 4. Course Evaluation Parameters (Pre-Pandemic And During Pandemic)

CMPS courses	Year 2 CCS-HT	Year 3 ACS
Average grade* academic year 2019-2020 (pre-pandemic face to face teaching)	81,29±20.323	94,81±16.667
Average grade* academic year 2020-2021 (pandemic online teaching)	95,45±20.949	99,08±4.213
p-value	p<0.001	p=0.028
N/n (nr of students/participating students) academic year 2019-2020 (pre-pandemic face to face teaching)	74/73	81/81
N/n (nr of students/participating students) academic year 2020-2021 (pandemic online teaching)	88/88	87/87
p-value	NS	NS

**Average grades rounded up or down to the next full number by decimals.*

Qualitative Results

Qualitative analysis of free text from written multisource feedback revealed that the teamwork during the preparation and implementation phase between academic, technical administrative staff and SPs went well. Program organizers and students expressed concern about the adaptation process to the online training environment. The most challenging part in the organization was managing effective communication with all involved parties beforehand and during the course to ensure smooth cooperation and implementation. Archiving and disseminating the video recordings was reported to be work-intensive and technically challenging.

Trainers-tutors, although, initially stressed by uncertainty and extra workload, evaluated the whole process as successful. In their evaluation, some tutors anecdotally mentioned that students complained of diminished authenticity of the online training atmosphere (Tables 5,6).

Despite the online format, students were satisfied and reported to have achieved the learning outcomes in a well organized course (Table 5).

The simulated patients were satisfied with the preparation for- and coordination during the course and reported to have enjoyed interaction with students and faculty (Table 7).

Table 5. Student Feed-Back to the Online Course

Question Number	Themes	Codes
Q1 "How do you feel about skills training with Simulated Patients (SPs) being online?"	Acceptance	Better than face-to-face
		As good as face-to-face
	Rejection	Anxiety
		Stress
Q2 "Did you face any difficulties? If yes, which?"	Safety concerns	Confidentiality
	Uncertainty	Lack of prior experience
		Concentration problem
	Organizational/technical issues	Lockdown/pandemic
		Time management
		Internet problems
		Not clear if we knew beforehand
Q3 "In your opinion what was the difference between online SP encounters and face-to-face SP encounters? Which method would you prefer? Why?"	Low fidelity	Lower fidelity of on-line simulation
		Online as effective as face-to-face encounters
		Loss of communication microskills
Q4 "Is there anything you liked about the on-line skills training with SPs? If yes, what?"	Facilitated learning	Immediate feedbacks
		Possibility of iterative reflection
		Time management
Q5 "Do you have any suggestions for improvement for the online skills training program with SPs? If yes, which?"	Organizational issues	Time management
	Need for more resources	More feedback

Table 6. Coordinator and Trainer Feed-Back to the Online Course

Question Number	Themes	Codes
Q1 "How do you feel about skills training with Simulated Patients (SPs) being online?"	Successful crisis management	Concerns
		Satisfaction
Q2 "Did you face any difficulties? If yes, which?"	Increased workload	Organizational, technical, and infrastructural (HR) issues
Q3 "In your opinion what was the difference between online SP encounters and face-to-face SP encounters? Which method would you prefer? Why?"	Fidelity	Lack of communication microskills
	Effectiveness	Method specific benefits
Q4 "Is there anything you liked about the on-line skills training with SPs? If yes, what?"	New-future aspects of healthcare delivery	E-consultation
Q5 "Do you have any suggestions for improvement for the online skills training program with SPs? If yes, which?"	Improvement of technical infrastructure	Technical issues

Table 7. Simulated Patient Feed-Back to the Online Course 2020-2021

Question – item	Codes	Themes
1.What do you think worked well in the session?	Improved SP- student communication	Effectiveness of on-line edu
2.What did not work well in the session?	Low fidelity Internet Sound-video	Lack of work discipline of students Technical problems
3.Did you need any further information in the SP brief? **a. Yes / No** **b. If yes, please outline**	Effective preparation	Successfull organization
4.What aspects of the role were challenging to play?	Online environment	Low fidelity
5.Did the participants have any particular challenges in the scenario? **a. Yes / No** **b. If yes, please outline**	Low student performance in terms of theoretical knowledge (skills check-list) Student anxiety	Insufficient preparedness Uncertainty
6.Please make comments or suggestions about any other aspect of the session?	Sound-video interruptions Lack of infrastructure of personal SP setting Low performance Better face-to-face	Technical problems Students' lack of knowledge-preparedness Low fidelty (online)

Limitations

One limitation is the fact that the written evaluation from students, SPs and faculty has been obtained only during the online teaching period so there is no similar qualitative comperative data from the face-to-face teaching period. The second limitation is due to the fact that the reported qualitative data stem from thematic coding of free text obtained by open ended written feedback for evaluation purposes of the online teaching method, only.

DISCUSSION

In this study, mixed methods were used to contrast results of face-to-face and online clinical communication skills training with simulated patient encounters.

Quantitative analysis was based on course attendance rates and course performance grades. Online course attendance rates of second and third year students were high (100%) and –despite expecting the contrary- had not decreased during the pandemic. Furthermore, clinical communication skills course performance grades in year two and year three were significantly higher in the online delivered courses as compared to the previous year's cohort grades of the same course delivered face-to-face.

These findings are in accordance with the medical literature. In a systematic review contrasting online, blended and face-to-face clinical skills training outcomes, McCutcheon and colleagues found no inferiority in outcomes

of online skills training (16). Duffy et al. in their paper describing an online case-based teaching and assessment program on clinical history taking skills reported a high student success rate of 93%. In that study students who had less exposure to clinical attachments in that study were more likely to have higher attendance rates to online teaching activities, which in turn, was associated with higher grades (17). One possible reason for significantly higher student performance in history taking skills with online SP encounters in our study might be the structured instant feedback provided by simulated patients and educators. In the pre-pandemic face-to-face implementation of this course after their SP encounters, students had to make appointments for structured tutor feedback and simulated patients did not give any feed-back. Our assumption is supported by Kebritchi et al. who reported that providing immediate feedback was enforcing student engagement (18).

Qualitative analyses were based on themes emerging from positive views and points open for improvement mentioned in the written free-text feedback from students, educators and SPs. The themes emerging from thematic coding were grouped in a hierarchical manner.

Student Feedback/Views Regarding Items to be Improved about Online SP Training

Items for improvement mentioned by the students were problems with internet connectivity, concerns about data safety, time management and insufficient prior information about operational and technical issues. This is in line with Kebritchi and colleagues who mentioned, among others, communication, technology and time management as critical success factors for online courses in higher education (18). The thematic coding of another study conducted with medical students doing online skills training in three South American countries reported "internet velocity dependence" and "new experience" as weakness themes (19).

Also in our study, students reported anxiety and stress due to perceived uncertainty because of lacking experience with online skills training, mirorring the findings of Diaz-Guio et al (19). Furthermore, this finding is in accordance with a study, where online learning was reported to be perceived as "stressful" and "anxiety provoking" by medical students (16). Also, Muilenburg et al. identified several factors impairing student learning like shyness or lack of confidence, anxiety about uncertainty regarding different learning methods used for online learning and fear of feeling isolated (20). The fidelity issue was raised by some students, noticing loss of communication micro-skills during online SP encounters, creating a "barrier for reading body language". The lack of possibility of experiencing and evaluating non-verbal communication clues like eye contact and full range of body language were reported to impair communication and the distraction of being in another physical environment than the SP was perceived as a barrier for concentration by the students. This is in accordance with literature findings identifying online learning as impersonal and lacking social context cues (21). A recent study investigating stress among medical students taking a patient history in different degrees of fidelity, reported varying levels of stress and anxiety according to performance setting (22). Overall, studies have reported the importance of non-verbal cues taken during face-to-face encounters and identified difficulty to do so in an online learning environment (23,24).

Student Feedback/Views Regarding Positive Sides of Online SP Training

Students mentioned the benefit of instant tutor feedback, time effectiveness and the advantage of iterated practice, which is echoed in the literature (21). Lack of timely feedback from the instructor has been reported as a barrier to the effectiveness of online learning (20) This finding is mirrored by the view of our students, preferring online communication skills teaching due to the opportunity of receiving instant feedback (as opposed to feed-back sessions by appointment with face-to-face teaching). Similar to our study, time effectiveness and the advantage of iterated practice were mentioned

as reasons for preferring online teaching. In the study of Diaz-Guio et al. student feedback identified real time interaction, debriefing and safe training environment as strengths of online skills training (19).

Educator Feed-Back/Views Regarding Items to be Improved about Online SP Training

When evaluating educator feedback, similar to the students, the fidelity of the remote online encounter environment was mentioned to be lower than that of face-to-face encounters. Furthermore, perceived uncertainty, increased workload and the need for improvement of the technical infrastructure were mentioned, which are themes echoed in the medical literature (18).

Educator Feed-Back/Views Regarding Positive Sides of Online SP Training

Despite perceived uncertainty, the implementation of the online SP course was thought to have functioned due to successful crisis management. Effective communication, collaboration and cooperation between all involved parties, course administrators, educators-SPs, technical staff and students ensured a proper operation.

Another theme identified by the feedback of educators was that online SP encounters were perceived as an effective method to train medical students in e-consultation techniques. Educator feedback in our study identified the experience with online SP training as an opportunity to enrich the aims and outcomes of the institutional medical curriculum. Due recent favourable evidence, teleconsultations have established themselves in clinical practice. Most tasks in primary care consultations for chronic diseases have been shown to be transferable to telehealth consultations (25) Furthermore, a comprehensive systematic review of studies about the effectiveness and safety of telehealth services during the COVID-19 pandemic concluded that telehealth services contributed to continuity of care and provided a safe environment for patients and health care professionals preventing infection transmission (26)

In a systematic review about teleconsultations in primary care, Carillo and colleagues reported teleconsultations as an effective alternative to face-to-face consultations for primary care patients because of time- and cost-effectiveness (27).

SP Feed-Back/Views Regarding Online SP Training

Similar to students and educators' views, simulated patients found the online SP encounter method effective, despite perceived lower fidelity.

The study of Laughey et al. investigating the views of SPs in communication skills training, identified information flow, human connection, listening and empathy as three global themes defining communication (28). The low fidelty issue in our online communications skills course reflected an increased chance of missing non-verbal clues like eye contact, nodding, leaning forward or open posture, which are indicators of active listening and empathy. Also advantages of physically being in the same room like handshakes, orientation about the environment were lacking due to online connection. However, most of the components of the communication triad defined in the study of Laughey at al. were achieved also during online SP encounters. Thus, online consultation was evaluated as an effective training method for clinical communication skills by the SPs of our course.

Simulated patients initially reported feeling stressed due to uncertainty, however, they evaluated the preparation phase and organisation of the course as successful. Apart from technical problems, issues mentioned by SPs were unpreparedness of some students. The feeling of isolation caused by sudden imperative onset of online learning with the pandemic might have weakened learners' identity and they might have felt disconnected. McInnery and Roberts in their paper discussing social interaction in online learning environments argue that online courses inevitably lead to isolation and that creating an online sense of "self" to alleviate the feeling of isolation requires time (29).

Problems with IT and technical infrastructure mentioned by SPs were also one of the main factors to be solved for determining the success of online education in terms of enhancing its effectiveness according to the review of Kebritchi et al. (18).

CONCLUSIONS

Overall, the experience with online clinical communication skills training using SP encounters was positive and inspiring. Initial stress and anxiety due to uncertainty was a common feedback trait for students, educators and simulated patients. Nevertheless, despite occasional technical difficulties and some loss of fidelity, student scores were higher after online training than they had been in the face-to-face course, validating the effectiveness of the online approach. The programme coordinators consider the online SP encounter method as beneficial for training medical students in e-consultation skills which is planned to be kept in the curriculum independent of the pandemic.

Data Availability

Data are available at the following institutional open access link https://openaccess.acibadem.edu.tr/items/fc00c165-b692-4563-8001-31fcd19e47da

Ethical approval was obtained from the local ethical committee of Acibadem Mehmet Ali Aydinlar University (ATADEK) and all methods were performed in accordance with the Declaration of Helsinki.

This paper does not report any experiments on humans and/or the use of human tissue samples. Informed consent was obtained from all students (to use their feed-back and academic grades for program evaluation).

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Appendix

Supplement 1. Skills Check-List for History Taking

CMPS-VI CMP Practical Examination
Scoring sheet for taking a medical history (maximum 50 points)

Student Name: Date:
Tutor:

History taking	**Score**
1. Set the Stage (2 points, for 2 of 3 below) ○ **Welcome the patient** - ensure comfort and privacy ○ Know and use the **patient's name** - **introduce and identify yourself**	
2. Set the Agenda (5 points) ○ Use **open-ended questions** initially (2) ○ **Chief complaint(s) and other concerns (3)**	
3. Elicit the Patient's Story (5 points) ○ **Open-ended questions** directed at the major problem(s) (3) ○ Focus by **paraphrasing and summarizing (2)**	
4. Use patient-centered approach (5 points, yes/no) ○ **Encourage patients to share thoughts and feelings** (with silence, non-verbal and verbal cues)	
5. Make the Transition (3 points) ○ **Summarize the interview up to that point** ○ **Verbalize your intention to make a transition to the physician-centered interview (2)** ○ **Move from open ended to closed Qs to identify subjective and objective data (1)**	
6. History of present illness (max. 10 points, one for each characteristic below) • Primary history – identify **chief complaint** 1. Location 2. Radiation 3. Quality 4. Quantity 5. Duration 6. Frequency 7. Aggravating Factors 8. Relieving Factors 9. Associated Symptoms 10. Effect on Function	

7. Past medical history (9 points, see scoring below) • Allergies and Reactions to Drugs (What happened?) (1) • Current Medications (Including "Over-the-Counter")(1) • Childhood illness-adult illness history (1) • Medical/Psychiatric Illnesses (Diabetes, Hypertension, Depression, etc.) (2) • Surgeries/Injuries/Hospitalizations (Appendectomy, Car Accident, etc.) (2) • Immunizations (1) • Tobacco/Alcohol/Drug Use (1) • Reproductive Status for Females (Not scored, can be used for overall evaluation score) o Last Menstrual Period o Last Pelvic Exam/Pap Smear o Pregnancies/Births/Contraception	
8. Family history (2 scores) • Age, health, causes of death-age at death of first-second degree family members (1) • Specific (documented?) diseases in family (1)	
9. Personal and social history (2 scores for 2 of 4 below) • Marital/Family Status • Occupation/Exposures • Health behavior-lifestyle • Stressors	
10. Closing the session or transition to PE (2 scores) • Summarize main facts-check for understanding and completeness (1) • Inform patient for next step(s) or obtain consent for PE (1)	
11. Overall evaluation of performance (5 points)	

Supplement 2. Skills Check-List for Motivational Interviewing

Check-list motivational interviewing (total 10 points out of 100)

1. Readiness to change (4 points)

- Rate confidence (2 points)
    - On a scale of 0-10, how confident are you that you can change successfully? (1)
    - What would it take to give it a (higher number)? (1)
- Rate importance (2 points)

- On a scale of 0-10, how important is it to you to (change)? (1)
- Why did you give it (#) and not (lower number)? (1)

2. FRAMES or OARS (4 points)
FRAMES (4 out of 6)

Feedback about personal risk or impairment
Responsibility for change lies with the individual (patient)
Advice on changing the behaviour
Menu of alternatives and change options
Empathy on the part of the physician
Self-efficacy or optimism on the part of patient, facilitated by physician

OARS (3 out of 4)

- Ask **O**pen-ended Questions
- **A**ffirm Positive Talk and Behaviour
- **R**eflect What You are Hearing or Seeing
- **S**ummarize What has Been Said

3. How to give advice (2 points, 2 out of 3 below)

- Get ***permission***
- Talk in a ***third person style***
- ***Give responsibility***