Standardized patients’ training for a high-stakes OSCE: Experience from a French medical school

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Research Article

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Abstract

Background

Standardized participants (SPs) methodology is widely used in the context of the Objective Structured Examination (OSCE). Training of SPs for national licensure OSCE has to ensure the standardization and the reliability of SPs. The aims of the present study were to describe a single center experience in the process of the development of the SPs’ training framework for high-stakes OSCEs with the SPs as partners.

Methods: An exploratory single center observational study conducted between 2019 and 2021 describing a workflow during the development of the training framework of the SPs for high-stakes OSCEs and evaluating its perceived effectiveness during a formative OSCE. Data were obtained through self-assessment questionnaires. Descriptive statistics were used to analyze items of the questionnaires. Free-text answers were analyzed thematically.

Results

In total, 17 out of 20 members (85%) of our SPs bank participated in the development of the training framework comporting three two-hour sessions and its evaluation during three formative OSCE session. Sixteen examiners evaluated a mean of 27.7 +/- 3.6 SD patient-student encounters. In total, 93.5% of the SPs out of 16, considered the contact with students as easy and 87.5%, as comfortable. Four SPs (31%) reported the experience as stressful due to fears of making mistakes. Two themes emerged from the free-text comments of the SPs trainees: “SPs gaining experience as SP” and “Concerns for the evaluated students.” Free-text comments of the examiners revealed their interest to debrief the OSCE case in collaboration with the student and SP trainees.

Conclusions

The here proposed approach is feasible and might be useful for other medical schools initiating SP-based assessment programs. We plan to study the impact of the training framework on the students’ outcomes in summative OSCEs. Future research could explore the utility of self-efficacy as an assessment tool of the readiness of SPs. It would also be interesting to follow individual learning trajectories of the SPs.

Introduction

Standardized participants (SPs) methodology is widely used in the context of the Objective Structured Examination (OSCE) [1–3]. The SPs are trained to portray patients or health professionals in a standardized manner to ensure a reliable assessment of the student in various clinical scenarios. The institutions follow a workflow protocols to screen SP candidates starting from background checks to ensure both the quality of educational trainings and the physical and psychological well-being of SPs [4–
Several elements have been highlighted, such as variable campus supports of these programs, including the fact that participation of SPs is often periodic based on the teaching schedules of the particular institutes, and that an increased demand is put on SPs in terms of the accuracy of a role-portrayal particularly in the context of high-stakes summative assessments [8–9]. Each examination center is usually responsible for the training of its SPs and has to adopt specific measures to ensure standardization [6, 8]. This can be challenging for both SPs and their educators [10–12].

The OSCE is a part of a national licensure examination in several countries such as Canada [2], USA [13], Korea [14–15], Taiwan [16], Switzerland [17]. It has been adopted in 2021 by the French National Educational Minister as a summative assessment method for all medical students [18] and will be included in the national certification as a prerequisite for medical students to enter accredited graduate medical education program.

Training frameworks of SPs for national licensure OSCE examinations vary in different countries according to the specificities in the examination length and in the composition of circuits [19–20]. In the context of high-stakes OSCE, the aim of the training is to ensure the standardization and the reliability of SPs. In a qualitative study conducted in Switzerland on a sample of 15 SPs from 8 nursing schools and medical schools, SPs reported motivation and interest to participate in pedagogical activities, and at the same time highlighted the importance of supportive work conditions [21]. Recently, we have shown that the partnership between learners and their educators in the elaboration of pedagogical tools is beneficial for both learning and teaching [22].

The aims of the present study were to describe a single center experience in the process of the development of the SPs’ training framework for high-stakes OSCEs with the SPs as partners and to evaluate its perceived effectiveness.

Methods

This exploratory observational study was conducted at the Medical School of the University of Lorraine, France, between 2019 and 2021. It described the workflow during the development of the training framework of the SPs for high-stakes OSCEs and evaluated its perceived effectiveness.

Population

Standardized participants’ bank

The SPs bank in our institution has been initiated in 2019. The recruitment is still currently ongoing via advertising at the medical faculty website (http://medecine.univ-lorraine.fr/fr/communaute/patient_standardise) open to both general publics and all health professionals, excluding expert patients, actors, physicians and students as suggested by the French national program [23]. Screening and recruitment is carried by two members of the pedagogical team of
our medical school (physician and pedagogical engineer). Each candidate is received individually, and is provided with a general information on the OSCE (definition, organization and objectives of assessment, didactic video showing a typical OSCE session) and on the expected collaboration (roles and responsibilities, associated measures to ensure well-being and psychological security of SPs). Measures related to the work safety of SPs have been elaborated according to the international recommendations [7] and are summarized in Additional File 1. A chart of SP created by the pedagogical team provides a framework for the participation of SPs in training sessions and in pedagogical activities. For each SP, situations to be avoided are noted during the recruitment interview according to personal and family medical histories of each candidate. The list of potential roles suitable for each one of them is regularly reviewed and updated according to his/her profile. Within the OSCE framework, all SP personal data are treated in a coded form guaranteeing their confidentiality. Reciprocally, although all SPs in our institution participate on a voluntary basis, they are bound to confidentiality regarding their participation in the pedagogical activities within the framework of OSCE.

**General training of the SPs**

At the beginning of each university year, the pedagogical team presented a 2-hours long OSCE information session to all participants (pedagogical team and SPs) covering the OSCE basics (introductory half session) and a more in-depth understanding of OSCE from SP's perspective (advanced half session). During the introductory half-session, the following information was conveyed: 1/ introduction to the campus and its facilities, 2/ introduction to the OSCE by viewing an OSCE didactic film (6 min) created by the pedagogical team available on the medical faculty website (http://medecine.univ-lorraine.fr/fr/etudiants/examen-clinique-objectif-et-structure-ecos/fr); 3/ lecture of a chart of SPs; 4/ discussion of the expectations of the SPs and that of the pedagogical team; 5/ rules of simulation and its limits with the respect of a safe learning environment; and 6/ review of the pedagogical activities for the upcoming university year. The advanced half session was focused on a more in-depth understanding of OSCE from SP's perspective: 1/ videotaped mock OSCE cases (examples of good performance of SP, identification of errors,... ) were reviewed; 2/ an example of a script template for SP was discussed. At the end of the session, learning objectives and a schedule of training sessions were provided.

At the time of the study, our SPs bank comported 20 members. All SPs were invited to participate in the present study by the pedagogical team. The participation was on a voluntary basis.

**Development of a training framework for high-stakes OSCE**

To develop a training framework for a high-stakes OSCE and to ensure that SPs are trained to play their role consistently, several steps have been undertaken as illustrated in Fig. 1. The SPs were involved as partners in (1) the design and elaboration of training activities and (2) the final adaptation of both the training scheme and the template of script for SP themselves. Theoretical content of training sessions has been elaborated by the pedagogical team after reviewing the available literature regarding the training schemes of SPs for the OSCE as national licensure examinations [19, 24–25]. Several factors have been considered in our pedagogical approach: the behaviour should be easy to reproduce by the
learners and the topic must capture their motivation. We expected a 100% accuracy of the role portrayal. Among the key components of our training program are interactions among the learners and between the educator and his/her students [26].

Our training framework of SPs was tested during 3 formative OSCE sessions that were organized for the 4th year medical students during 3 separated half-day periods in April 2021 (Fig. 1). Each OSCE session was composed of four circuits including a total of 5 stations. All examiners of the OSCE were previously trained and participated in the pre-examination meeting. All SPs from our SPs bank were invited to take part in at least one of the sessions based on their profile and their availability. Students had 8 min at each station to both read the clinical vignette and to complete the task, and 1 min to switch between stations.

**Scenario development for patient presentation**

The OSCE scenarios were elaborated by the pedagogical team following the standard templates with one chief complaint as a clinical starting point [23] enabling to train SPs across various tasks (history taking, prevention and counselling, communication between the patient and the physician). One important element of each patient script was the first phrase or “opening statement” pronounced by the patient at the beginning of the patient-physician interaction after the introduction. To train the SPs in providing precise information in a consistent manner, script of the SP included as well informations regarding the responses to give only when the student performed a specific action or asked a specific question. The patient script was adapted in collaboration with the SPs, its final version is presented in Additional File 2.

**Self-administered questionnaires**

After each session within the same day, the participants were invited by e-mail to complete an online self-administered anonymous questionnaires to evaluate their learning experience. For the purposes of the present study, only the answers of the SPs and those of the examiners were analyzed. Self-administered questionnaires were created by the pedagogical team after a literature review and were anonymously distributed using the Lime Survey platform of the University of Lorraine. The questionnaires for the OSCE examiners contained four questions examining their views on SPs’ performance (Additional File 3). The questionnaire for the SPs, adapted according to Wind et al [27], explored their experience as both SP and participant of the OSCE formative session (Additional File 4). Six-point Likert-type scales ranged from strongly disagree to strongly agree. The questionnaires included a voluntary section for respondents to submit in writing any commentaries they might have concerning the OSCE session of the day.

**Data analysis**

Quantitative variables were described as mean and standard deviation (SD), qualitative variables were expressed as numbers and percentages. The free-text answers of the questionnaires were transcribed and analyzed thematically [28]. All answers were anonymous. In order to maintain the confidentiality of the data pertained to each SPs, learning trajectories of individual SPs were not included in the present report. The free-text comments of the examiners focused on the stations involving the SPs trainees are presented here.
Results

Study participants

In total, 17 out of 20 members (85%) of our SPs bank participated in the present study. All of them received identical general training focused on the basic understanding of OSCE and the clinical performances being evaluated. A total of 356 fourth year medical students, 60 examiners, and all 17 SPs trainees participated in three formative OSCE sessions. To assess patient-student interactions, three different scenarios, with one major complaint as a starting point, were used each of the three half-days to allow the assessment of focused history-taking and of patient counselling (Table 1). The clinical context of each scenario was selected to cover acute, post-acute and preventive care.

Table 1
OSCE scenarios included in the study

<table>
<thead>
<tr>
<th>OSCE case / Chief complaint</th>
<th>Age / Context</th>
<th>Diagnosis</th>
<th>N° of students per 4 circuits</th>
<th>N° of SPs per 4 circuits</th>
<th>N° of examiners per 4 circuits</th>
<th>Mean N° of SPs-students encounters per examiner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevention in the context of a family history of a heart attack</td>
<td>Adult patient / Prevention</td>
<td>Abnormal lipid profile</td>
<td>118</td>
<td>5</td>
<td>4</td>
<td>23.6</td>
</tr>
<tr>
<td>Parent consulting for an extreme fatigue of his/her baby</td>
<td>Nurse-child / Acute</td>
<td>Anemia</td>
<td>119</td>
<td>6</td>
<td>4</td>
<td>29.75</td>
</tr>
<tr>
<td>Patient with epilepsy consulting after having had a seizure</td>
<td>Adult patient / Post-acute care</td>
<td>Counselling on epileptic seizures prevention</td>
<td>119</td>
<td>6</td>
<td>4</td>
<td>29.75</td>
</tr>
<tr>
<td>Mean (+/- SD)</td>
<td></td>
<td></td>
<td>118.7</td>
<td>5.6 +/-</td>
<td>0.6</td>
<td>27.7 +/-</td>
</tr>
</tbody>
</table>

SPs’ perspectives

As detailed in Table 2, among the 16 SPs who responded to the survey, 93.5% agreed or strongly agreed that the contact with students as easy and 87.5% agreed or strongly agreed that the contact with students as comfortable. Four SPs (31%) agreed or strongly agreed the experience as stressful due to fears of making mistakes. Two themes emerged from the free-text comments: “SPs gaining experience as SP” and “Concerns for the evaluated students” (Table 3). The SPs trainees stated that the training session was “very formative” (SP1) and “interesting... To do again...” (SP2) and declared a belief “that it
will contribute to training of our future doctors who, I hope, will understand that the trust of their patients is necessary." (SP3) “(Table 2). The SPs expressed their concerns for the evaluated students: "Students are often stressed and are in difficulty on this station. They spend a lot of time interpreting the blood test while forgetting the patient." (SP4) and they perceived some difficulties of students to perform clinical tasks: "Sometimes, the students do not ask many questions (some of them search for clues on the worksheet)..." (SP8); ...."I perceived the students stressed (which is normal), attentive, listening with a rich but limited questioning" (SP9); ...and to interact with their patients "Students are more concentrated on knowledge mobilization than on the interactions with the patient" (SP7); .... “70% of the students have some difficulty asking the right questions...” (SP6).

Table 2
Perspectives of standardized participants (SPs) and of examiners following the formative OSCE

<table>
<thead>
<tr>
<th>Perspectives of SPs (n = 17)</th>
<th>N</th>
<th>Strongly disagree (%)</th>
<th>Somewhat disagree (%)</th>
<th>Somewhat agree (%)</th>
<th>Agree (%)</th>
<th>Strongly agree (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The contact with the students was easy</td>
<td>16</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>12.5</td>
<td>81</td>
</tr>
<tr>
<td>I felt comfortable during the encounters with the students</td>
<td>16</td>
<td>0</td>
<td>0</td>
<td>12.5</td>
<td>12.5</td>
<td>75</td>
</tr>
<tr>
<td>I was stressed to make mistakes</td>
<td>13</td>
<td>38.5</td>
<td>23.1</td>
<td>0.8</td>
<td>23.1</td>
<td>8</td>
</tr>
<tr>
<td>I did not dare to ask all the questions noted in the script</td>
<td>13</td>
<td>69</td>
<td>15,4</td>
<td>0</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>I felt listened to by the students</td>
<td>14</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>64</td>
<td>29</td>
</tr>
<tr>
<td>The students gave me enough time to answer questions</td>
<td>13</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>62</td>
<td>31</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Perspectives of examiners (n = 12) a</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The SP is authentic in his role</td>
<td>10</td>
</tr>
<tr>
<td>The SP unnecessarily retains some information</td>
<td>10</td>
</tr>
<tr>
<td>The SP tries to get the student in difficulty</td>
<td>10</td>
</tr>
<tr>
<td>The SP gives the student enough time to answer questions</td>
<td>10</td>
</tr>
</tbody>
</table>

a - Adapted from Wind et al [27].
Based on this result, we introduced video recordings with self-and peer-assessment activities and educator's feedback, to better assess a role-play accuracy of the SPs trainees.

Table 3
Representative free-text comments of SPs following formative OSCE

<table>
<thead>
<tr>
<th>SPs gaining experience as SP</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Very formative session, I really appreciated it&quot; (SP1)</td>
</tr>
<tr>
<td>“Very interesting experience. To do again....&quot; (SP2)</td>
</tr>
<tr>
<td>“.. Congratulations to you and all your team for organizing and managing this afternoon session. I hope that it will contribute to training of our future doctors who, I hope, will understand that the trust of their patients is necessary.” (SP3)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Concerns for the evaluated students</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Students are often stressed and are in difficulty on this station. They spend a lot of time interpreting the blood test while forgetting the patient.&quot; (SP4)</td>
</tr>
<tr>
<td>&quot;Students express easily that they lack knowledge.&quot; (SP5)</td>
</tr>
<tr>
<td>&quot;70% of the students have some difficulty asking the right questions...&quot; (SP6)</td>
</tr>
<tr>
<td>&quot;Students are more concentrated on knowledge mobilization than on the interactions with the patient.&quot; (SP7)</td>
</tr>
<tr>
<td>&quot;Sometimes, the students do not ask many questions (some of them search for clues on the worksheet)...&quot; (SP8)</td>
</tr>
<tr>
<td>&quot;I perceived the students stressed (which is normal), attentive, listening with a rich but limited questioning.&quot; (SP9)</td>
</tr>
</tbody>
</table>

SP = standardized participant

Examiners’ perspectives

In total, a mean of 27.7 +/- 3.6 SD patient-student encounters were evaluated. Sixteen examiners were involved in 4 different circuits. One examiner out of 10 who had responded to the survey, considered that SP trainee unnecessarily retained some information and that SP trainee tried to get the student into difficulty. Free-text comments of the examiners revealed their interest to debrief the OSCE case in collaboration with the student and the patient: "Interesting to be able to evaluate the station with the student and the standardized patient."

Final Version Of The Training Scheme For High-stakes Osce

Our final version of the SP training scheme for high stakes OSCEs is based on the results of the formative OSCE, taking into account the responses of the examiners from the online survey and the comments obtained from the debriefing session with the SPs. As shown in Fig. 2, the SP training scheme is composed of 3 sessions, each lasting 2 hours. At the beginning of each training session, the educators
remind the rules of confidentiality and of the psychological safety. To get the attention of SPs trainees, the OSCE case is illustrated with the help of videos showing distinguished / characteristic features of the role-portrayal. The SPs work in groups (maximum 7 SPs per session) with two educators. Each session ends by debriefing activities and educators’ feedback.

The first session is focused on the clarification of the scenario and of the role to portray (personality, clinical context and patient’s complaints). The SPs read aloud the scenarios with their educators. Didactic films are used to show different behaviours and skills to portray. The SPs play their roles with the educators playing an examined student. The action of each SPs is recorded for didactic purposes and the role rehearsal. During the final debriefing, the SPs analyse the situation with the help of the educators.

During the second session is organized in group or individually. The video-recordings from the previous session are discussed with the educators. The SPs play their roles with the educator taking the role of a student. We introduced self-assessment activities and peer-feedbacks using case-specific checklists.

The rehearsal group session is organized to verify whether SPs are ready for their role. Specific readiness assessment checklists according to each scenario were elaborated. The SPs’ readiness is verified with the help of video recordings. The SPs take turns expressing themselves and provide feedback to their peers. The educator provides a final debriefing and emphasizes the important points in the role-portrayal.

Finally on the OSCE day, a pre-session rehearsal is organized. During the OSCE session, we suggest an intermittent monitoring using a case-specific checklists. After the OSCE, debriefing with educators and online survey to capture experiences of the SPs are proposed on a voluntary basis. Two weeks after the OSCE, a presential debriefing session is organized aiming to review the script and to discuss the results of online survey with the purposes of quality assurance measures (Fig. 2).

**Discussion**

This paper reports the experience of the past years in establishing the framework of OSCE at the level of a single institution, focusing on the installation of SPs bank and the training scheme of SPs for high-stakes OSCEs in medical school. Several key elements have been identified during the process: i/ the SPs are interested in the pedagogical program and want to engage actively to improve both their own performance as SP and the OSCE framework of the institute; ii/ SPs can experience certain degrees of stress while participating in high-stakes OSCEs; iii/ SPs appreciate the experience gained during formative OSCEs prior to their participation of summative OSCEs.

As illustrated by the free-text comments, our pedagogical approach was appreciated by the SPs trainees. To get the attention of SPs trainees, we introduced OSCE case videos showing distinguished features of the scenario to portray. The behaviours were demonstrated by the educators facilitating its reproduction by the SPs and discussed with the trainees. Indeed, pedagogical strategies with learners and their educators working as partners help educators to follow more easily the learning trajectories of their learners [29]. The advantage of this approach is also its ability to increase self-efficacy and confidence of
the learners [30–31]. Only few data are available concerning the utility of self-efficacy in the context of health professions education [32]. In future studies, we plan to explore the utility of self-efficacy in the evaluation of competencies of our SPs.

Our study participants reported a certain degree of stress during the actual examination due to fears of making errors. Similar to our observations, Harvey and Radomski [33] reported that during summative OSCEs, 19 SPs (from a bank of 55 SPs) declared exhaustion. Training of SPs for high-stakes OSCEs may lead to distresses of the participating SPs [33], the authors suggested that the relationships between the SPs and the faculty should not be limited to a simple transfer of written scripts, but the SPs should be considered as a part of the pedagogical community. A recent study conducted on the sample of 18 SPs identified three key aspects that were considered as important by the SPs: i/ becoming and being a SP, ii/ preparing for a role, and iii/ performing a role [34].

To respect physical and psychological well-being of the SPs participating in our program, the SPs do not play any role related to the health condition for which they have been or are still being treated [4, 7]. The roles are proposed to the SPs according to their profile. Indeed, health status and previous experiences may impact SPs’ performances and their psychological balance [21, 35–36]. In concordance with the data available in the literature [4, 7–8, 34] and with the recommendations of the French National Authority for Health [37], we collected the information related to the health status of SP candidates within the French National Commission for Data Protection and Liberties program.

Our SPs further showed some concerns for medical students and willingness to participate in their training. Interestingly, empathy of the SPs toward students passing the exam has already been shown by others [21]. In this project, the SPs were not given the task of delivering feedbacks for students and we did not include training in feedback skills in our training framework.

The study has several limitation that have to be acknowledged here. Firstly, the data were analyzed retrospectively and some information is missing. Secondly, the study sample is relatively small, given the small size of our recently created SPs bank. As the answers of participants were anonymized, we could not determine if responses were different for those SPs who were involved in more than on OSCE scenario. The calculation of scores and the evaluation of the quality of OSCE were beyond the scope of the present work. The strength of the study is related to the fact that the questionnaires were distributed immediately after OSCE limiting the risk of a recall bias. The present study was designed to obtain the SPs and the examiners’ views regarding perceived performance to optimize the training framework of SPs for high-stakes summative OSCEs.

Despite a monocentric design, replication of the here presented approach is possible. In addition, our strategy is predicted to be financially reasonable given a voluntary participation of the SPs and no costs to train them. Based on the present experience, several elements can be highlighted. The SPs should be provided the opportunity to give the feedback. Case-specific checklists evaluating the accuracy of the role portrayal should be based on the behaviors that are judged difficult to portray by the SPs themselves.
Conclusion

The here proposed approach is feasible and might be useful for other medical schools initiating SP-based assessment programs. We plan to study the impact of the training framework on the students' outcomes in summative OSCEs. Future research could also explore the utility of self-efficacy as an assessment tool of the readiness of SPs. It would also be interesting to follow individual learning trajectories of the SPs.

Declarations

Ethics approval and consent to participate

The study was registered at the French National Commission for Data Protection and Liberties (n° 2020/118). The need for ethics approval and informed consent was deemed unnecessary according to national regulations, stating that ethical committee is responsible for issuing a prior opinion on the conditions of validity of any research involving the human person, with regard to the criteria defined by article L 1123-7 of the Public Health Code (CSP). The present research is not a medical research involving humans, but a project of an educational nature. The SPs bank project was registered at the French National Commission for Data Protection and Liberties (n°2019/077) in accordance with the provisions of the General Data Protection Regulation. SPs have the right to access, rectify, delete and limit the use of their personal data and may contact the educational institution's data protection officer and the the French National Commission for Data Protection and Liberties (Commission Nationale de l'Informatique et des Libertés; http://www.cnil.fr). All data were anonymized before the start of the analysis.

Consent for publication

Not applicable.

Availability of data and materials

Data are available from the authors (eva.feigerlova@univ-lorraine.fr) upon reasonable request and with permission

Competing interests

The author declares that she has no competing interests

Funding

This study received no funding from any institution. The investigator contributed voluntarily to this project.

Author contribution
E.F. (Orcid 0000-0002-5434-7320) made substantial contribution to this work by playing a leading role in the design and the realization of the study, data collection and analyses, drafting and revising the manuscript.

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References


### Design and elaboration of training content 2019
- Choice of learning theories and principles for standardization of role portrayals
- Elaboration of the training scheme, exercises, SP script and case-specific checklists

### Work sessions with SPs as partners 2019 – 2021
- Role playing promoting self-assessment and peer-assessment activities
- Reviewing and adaptation of the training scheme

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**Formative OSCE**
4th year medical students *(University year 2020-2021)*

- Perceived performance / experience of participants: self-administered questionnaires
- Debriefing with SPs and final adaptation of the training scheme

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**Final version of the training scheme**

*(-> Figure 2)*

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**Figure 1**

Construction of a training framework for a high-stakes OSCE with SPs as partners
Figure 2

Final version of the SPs’ training scheme for a high-stakes OSCE

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- AdditionalFile1.docx
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- AdditionalFile3.docx
- AdditionalFile4.docx