

## **Interprofessional Osce with First-Year Student from Eight Undergraduate Health Courses**

Simone Yuriko Kameo<sup>1</sup>, Fabrício Dos Santos Menezes<sup>2</sup>,  
Simone De Souza Nascimento<sup>3</sup>, Simone Otília Cabral Neves<sup>4</sup>,  
Alessandra Alcides De Sá Santos<sup>5</sup>, Namie Okino Sawada<sup>6</sup>

<sup>1,2,3,4,5</sup>*Department of Health Education. Federal University of Sergipe, Lagarto, Sergipe, Brazil,*

<sup>6</sup>*Department of Nursing. School of Nursing of Ribeirão Preto at the University of São Paulo, Ribeirão Preto, São Paulo, Brazil.*

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**Abstract:** *The aim was to describe a large and interprofessional OSCE with first-year students from eight undergraduate health courses at the Federal University of Sergipe. This descriptive report involved the five years' experience on developing and implementing about an interprofessional OSCE, considering its challenges and perspectives. The campus uses active methodologies (problem-based learning), which the first year is common and mandatory for all undergraduate courses, with 480 students enrolled annually. This integrated and humanistic curriculum has an annual cycle structured in interdisciplinary modules, such as Tutorial, Skills and Attitudes in Health (HAS) and the Community Teaching Practice. OSCE was the skill-based evaluation choose to HAS module. Logistics counts with problems-situations, materials for technical, structure in the lab skills and attitudes in health. The students are distributed per shift and according to the amount, attending the day and schedule turn, they stay in a room under the guidance of technicians, they are released to go through three stations, that have 05 minutes to perform. This experience highlighted the importance to continue the OSCE throughout the next years of undergraduate health courses, given its advantages to education of health workers and consequently to improve patient care and health systems.*

**Keywords:** *practical assessment skills and attitudes in health, problem-based learning, interdisciplinary.*

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### **I. Introduction**

The focus on interdisciplinary/multiprofessional education, the development of knowledge-, attitude- and skill-based competencies are essential for health professionals. Interdisciplinary and multiprofessional learning become more significant as they begin from the first year of graduation, going through both the undergraduate course and the professional practice. Consequently, besides improving the patients' health care, it reinforces the health systems centered in primary care, such as Brazil's National Health System (SUS).

The process of teaching, learning and evaluation in Skills and Attitudes in Health module is complex and should be viewed with a biopsychosocial perspective. The principles of assessment of learning clinical skills, attitudes and communication must be applied repetitively and with the use of different resources and different methods in a variety of environments and contexts, to capture different aspects of performance. Use the balance of complex real life situations that require reasoning and judgment well structured, focused on simplified ratings in everyday clinical knowledge, communication skills and attitudes [1].

Learning is much more significant when new content is incorporated into the knowledge of a student structures and acquires meaning for him from the relationship with their prior knowledge. Rather, it becomes mechanically or repetitive, since it produce less incorporation and assignment of this significance, and passes the new content to be stored separately or through arbitrary associations cognitive structure [2].

Active methodologies are grounded in a significant theoretical principle: autonomy. Contemporary education should assume that a student can self-manage and self-govern their formation process.

The active methodology has allowed the relationship between the university, the service and the community by using a reading and consistent intervention on reality, valuing all stakeholders in the collective construction process and their different knowledge and promote freedom in the process of thinking and at work as a team [3,4]. In this sense, two instruments have been recognized as activators of integrating education and health service: teaching by questioning and curricular organization around Problem-Based Learning (PBL).

Assessment is an important issue in determining the outcome of students' educational courses in view of their learning objectives [5]. Observation is the main method of assessment, which is customary and widespread in education of health professionals [6].

This study aims to describe the experience of practical assessment of Skills and Attitudes in Health module with first-year students of eight undergraduate health courses at the Federal University of Sergipe, Lagarto, Sergipe, Brazil, using active teaching-learning methodologies.

## **II. Overview**

In 2011, the University Campus located in Sergipe State was created, including undergraduate courses such as medicine, pharmacy, dentistry, nursing, nutrition, physiotherapy, occupational therapy and phonocardiology or speech therapy.

In the first year of all courses, the same curriculum structure, centered in Problem-Based Learning, were developed for the comprehension of basic sciences in association with professional skills considering real scenarios of the health system in Brazil (SUS). The curriculum did not have traditional disciplines, but seven modules, which comprised tutorial sections, laboratory practice, lectures and self-directed learning. Furthermore, there were two modules titled Teaching Practice in the Community (PEC), and Skills and Attitudes in Health (HAS), and efforts were made to integrate the modules.

Focusing on the teaching of basic sciences associated with professional skills, HAS aimed to develop common knowledge-, attitude- and skill-based competencies for future health professionals. Professors acted as facilitators, and the center of the teaching-learning process was students aiming to discuss and to practice integrated themes.

Among the education-learning strategies employed, there are activities of health care for the local community, discussion of problems/cases, experiences in health care environments, mock jury, movies, role-playing and patient simulated, scientific meeting, simulation of real situations mirroring the professional practice and social dramatizations. Evaluations comprised knowledge-based evaluations, formative assessments, and the OSCE to measure the students' skills and competences.

This curriculum stimulates the development of common skills and competencies among all students. Moreover, this approach allowed the development of some themes repeatedly in the next years with more complexity. The benefits include the stimulus for the interdisciplinarity among the disciplines and for the multiprofessional work, the early acquisition of professional skills associated to basic sciences, the motivation towards the teamwork, communication, leadership, decision-making, humanization, evidence-based practice, permanent education, and creativity/criticality/reflection in real scenarios of the SUS. The feedback in a supportive environment allow students to develop the teaching-learning process and improve the activities, as well as barriers were crashed among the educator and students from different health courses. Therefore, this experience highlighted the importance to continue the interdisciplinary/multiprofessional education throughout the next years of undergraduate courses, considering their specificities.

## **III. Materials and Method**

This study comprised the description of the experience on the development and implementation of OSCE by professors of the first year in the Skills and Attitudes in Health, which make up the Department of Health Education (DESL) of the Federal University of Sergipe (UFS) in Lagarto, Sergipe, Brazil.

The active methodologies and the PBL strategy was proposed for the "Campus Universitário Professor Antônio Garcia Filho" of the UFS and follows the specifications indicated by Barrows (2006) [7], which consists of (1) student learning; (2) learning in small groups; (3) professors as facilitators (called tutors); (4) clinical cases problems or based on discussion; (5) problems or clinical cases used for the learning of skills development; (6) new knowledge through self-directed learning.

The Skills and Attitudes in Health module have eight professors divided throughout the week, into classrooms with 12-15 undergraduate students. Every year, an average of 480 students are gathered in eight different courses.

## **IV. Evaluation Of Knowledge-, Attitude- and Skill-Based Competencies in the Pedagogical Model of Active Methodologies**

Evaluate students into competency-based curriculum is a challenge, and it requires adequate strategies mainly if consider eight undergraduate courses at the same time. Given its advantages in terms of objectivity, uniformity and versatility [8], the OSCE is chosen to measure competencies in the pedagogical model of active methodologies. The following sessions will describe the planning, administration, execution and feedback of the scenarios and simulations.

### **4.1 Planning and administration**

The development of OSCE requires a complex process, especially because the public is compound by the first year of the undergraduate students inside an interprofessional purpose. To certify a reasonable level of validity, reliability and objectivity, some care needs to be taken in its planning and administration [9]. Firstly, the OSCE team is recruited by the coordinator (professor), that involve seven examiners (professors), three auxiliary technicians (support staff), one timekeeper, and at least nine monitors or simulated patient. In addition,

recruitment and training of the simulated patients occur before the OSCE with the collaboration of monitors and volunteers.

The stations of OSCE, the examination content, the curricular goals, the educational objectives defined in the study guide (SG) and protocols are considered. This SG is previously evaluated through peer review among professors, and consequently shared online for learners before each class meeting. Beyond the active methodologies proposed, the SG comprises guidelines, contents and situations mirroring the professional practice to stimulate the knowledge, self-directed learning abilities and problem-solving competencies.

The evaluation is structured and trained by the OSCE team to assess the time purposed, the realism of OSCE scenarios, checklist, resources, skills and competencies measured. Moreover, additional stations are developed if problems occur. Before the exam test, draws for the test sequence are developed to facilitate the OSCE beginning, as well as instructional orientations are transmitted to examiners and students. To allow reproducibility inter examiners, the short case and the checklist with 10 to 20 items are previously constructed and reviewed by professors to reach a consensus, in accordance with study guides and protocols.

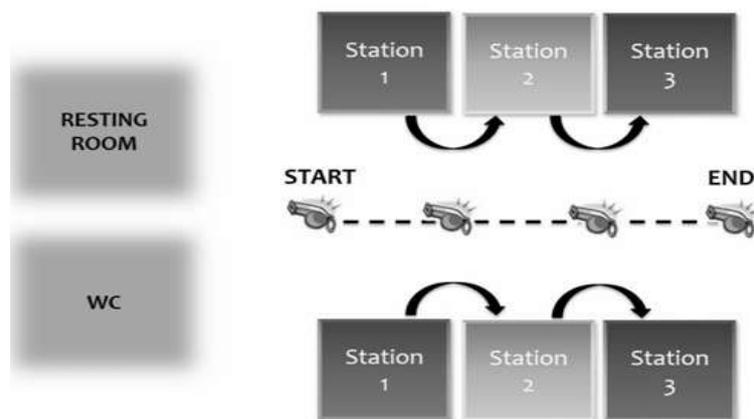
The stations are prepared based on curricular goals and had a maximal time of 5 minutes, which 1 minute is applied to read the short case and 4 minutes to solve the task. This simulation is planned for candidate to mobilize a core of competencies, mixed or in isolation, regards attitude, communication, interpersonal skills, leadership, decision-making, humanization, ethics and bioethics, and clinical skills to perform procedures related to evidence-based practice, hand hygiene, personal protective equipment, accidents with biological materials, management and discard of the residues of health services, history-taking, physical examination and measurement of vital signs, basic life support (BLS) with initial approach to scene and cardiopulmonary resuscitation (CPR), choking, foreign body airway obstruction and first aid maneuvers related to poisoning, exposition to toxic chemicals, and seizures.

#### **4.2 Execution**

This interprofessional OSCE occurs twice a year in the end of semester involving cumulative competencies along the course. Aiming to attend approximately 480 undergraduates, they are distributed in the morning or evening shift and between two or three days. Furthermore, the stations are duplicated and mirrored in order to gradually increase the complexity along the plan of OSCE circuit. This strategy generates more comfort and quickness to OSCE, mainly if consider the waiting time to begin the exam. However, it requires a large amount of situations to avoid repeated stations.

In the exam day, the stations are organized and numbered an hour before the beginning of the test. All students are located in the resting room with a tolerance of 15 minutes to start the circuit stations. Within this time of tolerance, orientations are performed again and cell phones or any communication device are stored to avoid information among candidates that did the OSCE. In case of cheating, a disapproval was considered after analysis. The use of individual clinical equipment was allowed whether it does not impair the student learning. The resting room are managed by the support staff. In order to build an environment less stressful and humanized, activities that do not disturb the OSCE are accepted such as reading, music or artistic performance.

Depending on complexity of the skills and competences to be assessed, there are six or eight realistic scenarios structuring the circuit stations, and the undergraduates must pass for all situations in sequence. The stations mirrored the professional practice mimicking a situation described in the text of the entrance. After one minute, the timekeeper sounds the whistle and the candidates, simultaneously and individually, enter in analogous stations. Four minutes later, the whistle sounds again to end the stations and to signalize the students to go to next situation with a new cycle to perform the actions required. In general, it takes a maximum of four hours to candidates to be evaluated per shift. In brief, the figure 1 describes the flowchart of the interprofessional OSCE.



**Fig. 1:** Plan of OSCE circuit with duplicated stations.

### 4.3 Feedback

The feedback occurs immediately after the end of the station or, when the time does not allow, one week after the OSCE. Thus, examiners and undergraduates discuss the situation and the checklist to improve the competencies and skills evaluated, considering the failure as a component important to student development. The mean of the stations was used to compose the annual result of the module to reach the second year of the undergraduate health courses. Other aspects also were assessed to improve the next OSCEs, such as: the students' perceptions of the evaluation process, time spent, costs, instructional orientations, examiners reproducibility and OSCE planning or design.

## V. Discussion

There are gaps and inequities in health both within and between countries, highlighting challenges to global health such as new infectious, environmental, and behavioral risks, as well as rapid demographic and epidemiological transitions [10]. These situations threaten health security of patients, demanding a better education to health workers. Consequently, innovative initiatives are needed to transform the health professional education to centralize in health systems and patients [10].

Integrated and humanistic curriculum with active methodologies support these reforms enhancing collaborative and non-hierarchical relationships in effective groups. In our context, this competency-based curriculum are adopted with following features: (i) early acquisition of professional skills associated to basic sciences since the first year of the undergraduate courses [11]; (ii) problematization [12] and significant and critical-reflexive learning through successive approximations with increased complexity along the years (spiral curriculum); (iii) curriculum design based on interdisciplinarity, totality and theory-practice relation as an indissoluble unity [13]; (iv) competency as the mobilization of cognitive, affective and psychomotor resources to solve a task situation, not only limited to repeat technical procedures to professional qualification [14,15]; (v) biopsychosocial model with behavioral, social or human sciences as transversal theme, once the biological model individually does not comprises the human being in his integrality; (vi) interprofessional education [10]; and (vi) early insertion on prevention and social determinants at local level of the communities and the Brazil's National Health System. To keep this curriculum proposal, it is necessary an institutional challenge, given the financial sustainability, qualification of human resources, commercialism in the professions, and fragmentation of the knowledge in health. Even though, good results have been reached along five years of implementation such as improve the access to health services in interior cities and reorienting the health education to attend the society's demand.

The strategy for assessment must be, first of all, procedural and trained for inclusion, autonomy, dialogue and collective reflections in the search for answers and ways to identified problems. Do not punish or censures, but offers guidelines to make decisions and set priorities. In most health courses, curriculum guidelines suggest evaluation as an ongoing activity and inseparable dynamic teaching and learning, which should monitor the progress of students and recognize the time their difficulties, to intervene with sensitivity [7]. Moreover, the evaluation should be a comprehensive process which leads to a critical reflection on practice, in order to capture their progress, their strengths, their difficulties and possible resolutions for the following actions [8–10].

The records, self-assessment and dialogue have been used as a guide strategy to this process. Professors can register the development of the student in relation to independence, creativity, organizational skills, participation and drawing up, as well as their relationship with the group and their communication. In the self-assessment, the methodology used in teaching practice can be reviewed, while the students will reflect on themselves and the construction of knowledge held [9].

Beyond the formative and the knowledge-based assessments, there is the OSCE once it contributes to transform the health education at adopt competency-driven tasks [10]. Furthermore, this evaluation supports the integrated and humanistic curriculum, likewise involve the four pillars of education: learning to know, learning to do, learning to live together, learning to live with others, and learning to be [16]. The OSCE was firstly developed and introduced in 1975 to evaluate medicine students [17]. Since then, it has been widely implemented around the world in different undergraduate courses of health [18–24] and post-graduation program [25]. As a result of its reliability and validity, it has been recognized as gold standard evaluation to measure competencies that another evaluation could not perform [25].

The OSCE is a circuit of stations standardized designed to assess students' competencies and skills [26,27]. The number of stations ranges conform the contents and the educational objectives of interests, involving one or more aspects to be solved into a timeframe. There are OSCEs with 5 to 14 stations [24,27–29], but this interprofessional OSCE use three stations mirrored (six overall). Despite the intention to increase the amount of stations, the limited human resources and the quantity of 480 candidates per year are a barrier that made it difficult. On one hand, a greater number of stations and a higher number of examiners per station are related to better average reliability. On the other hand, the increasing number of stations is expensive [26], as well as the OSCE is costly in terms of manpower requirement [8].

For maintaining the reliability of the OSCE, all students must be exposed to analogous test situations [9], and the stations can be designed to assess not only clinical aspects, but also other competencies such as communication [30]. The timeframe may affect the OSCE reliability [9], and a time of 5 to 10 minutes per station is suitable [21,31] lasting up to 15 minutes or more [21,32]. This large-scale OSCE adopted a timeframe of 5 minutes similarly to other report [24], once simulations with complexity appropriate for a first-year student supported this approach minimizing possible bias. In addition, short cases and duplicated OSCE circuit located in multiple laboratories are employed successfully. In particular, it was possible because of the OSCE team motivation, teamwork and desire to develop the teaching-learning process through a supportive and interprofessional environment.

In skills-based assessments, such as OSCE, high levels stress and fatigue should be taken into consideration [27], before and during assessments, aiming do not impact negatively on student performance. Post graduate students perceived OSCE to be less stressful than other examination [33]. However, in the first-year student it tends to be stressfully due to insufficient preparation for the evaluation [27] and his unfamiliarity with assessment. This interprofessional OSCE uses alternative activities to decrease the tension pre-exam in the resting room, once the candidate takes up to four hours to perform the exam, and when the whistle sounds generates more tension given its association with the time to solve the task and to change the station. Moreover, the monitor program related to HAS simulated some weeks before an evaluation mimicking the OSCE to prepare the students.

Students "cannot be evaluated by a system that treats them as mere numbers in a bureaucratic game" [34]. For this reason, the feedback was encouraged and has a great effect on OSCE. When students become actives partners of examiners by their own progress, a powerful collaborative environment arise allowing, for example, to involve the OSCE examination. In addition, horizontal relationships are constructed between candidate and examiner generating a way for collaborative learning with immeasurable benefits.

This study had limitations such as materials availability, infrastructure, human resources, large amount of candidates, waiting time, and stress/anxiety related to whistle. To our knowledge, there is no similar large-scale OSCE in literature involving simultaneously the first year of eight undergraduate health courses, what becomes this experience remarkable and significant. In future, recorded stations and replacement of paper sheet for digital database will improve this assessment. Therefore, these tools would encourage students to recognize their strengths and weaknesses, and to build strategies for improving their skills.

## **VI. Conclusion**

HAS aimed to build a common basis to professional career through theory-practice interaction of the contents, appreciation of the previous students experiences, gradual development in different complexity degrees and the simulation learning conforms problems originated from reality. Furthermore, to ingress the learner into active methodologies to facilitate the acquisition of cognitive, affective and psychomotor skills focused on professional practice considering the integrality and interprofessionality of the actions.

For success of this large-scale and interprofessional OSCE, the institutional support, communication, permanent education of OSCE team, and integration among different health courses are decisive. Therefore, this experience highlighted the importance to continue the OSCE throughout the next years of undergraduate courses, given its advantages to education of health workers mainly in competency-based curriculum.

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