



Implementation of standardized patient program using local resources in Avalon School of Medicine

JESSE RAMEY¹, MANISH PRAJWAL MANE MANOHAR¹, AMINAH SHAH¹, ABDIWALI KEYNAN¹, SHIVAPRAKASH BAYAPALLI¹, TARIG FADLALLAH ALTAHIR AHMED¹, SATEESH BABU ARJA¹, SIREESHA BALA A¹, YOGESH ACHARYA^{1*}

¹Avalon University School of Medicine (AUSOM), Willemstad, Curacao, Netherland Antilles

Abstract

Introduction: The standardized Patient Program (SPP) is a standard educational training method which provides the pre-clinical students a better clinical foundation by linking the realm of clinical medicine to basic sciences. It incorporates a modern simulation technique and enhances the ability of the students wherein they can practice, apply and learn the basics of patient encounter. The main objective of this study was to analyze the implementation and efficiency of the SPP in Avalon University School of Medicine (AUSOM).

Methods: A quasi-experimental “before-and-after” study design was conducted among the 3rd Semester (MD3) medical students at AUSOM. 24 students voluntarily participated in the study. The effectiveness of the program was evaluated after comparing the summative examination scores before and after implementation of the SPP (graded in 100 points system). Mean scores were calculated and a comparison of the change in scores was made, using a paired t-test in Stata (©Stata corp).

Results: The mean final summative clinical skills examination scores of the students before and after the introduction of the SPP were 78.46±6.62 (SEM: 1.35, range: 89-70) and 86.54±6.41 (SEM: 1.31, range: 98-65), respectively. There was a statistically significant increment ($t=5.5058$, $p=0.0001$) in the scores of the students after the introduction of the SPP.

Conclusion: Introduction and implementation of SPP at AUSOM at preclinical years increased the overall students’ performance in clinical skills. It is necessary that medical schools implement SPP early in preclinical years to strengthen learning and inoculate necessary clinical skills in medical students.

Keywords: Education, Medical, Patient simulation, Clinical competence, Program evaluation

*Corresponding author:

Yogesh Acharya,
Department of Epidemiology
and Preventive Medicine,
Avalon University School of
Medicine,
Sta. Rosaweg 122-124,
Willemstad, Curacao,
Netherland Antilles

Fax: +5999 788 8102

Email: dryogeshach@gmail.com

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Introduction

A standardized patient program (SPP) is a dynamic educational training program designed to give pre-clinical medical students an opportunity to learn clinical skills by performing mock examinations on actors performing as patients, referred to as standardized patients (SP).

It bridges the gap between the time the students start their medical education until they pass their first licensure examination and begin training in clinical settings. Pre-clinical students are focused on learning the basic medical sciences and have not acquired the knowledge or skills required to interact with real patients. Exposure

to various important clinical cases during the pre-clinical period gives medical students the clinical knowledge necessary for a hospital setting. The pivotal role of this course lies in the medical training which drives the results to a more efficient and patient-oriented communication in a clinical setting. Students procure skills in history taking, physical examination, empathy and communication skills, which fabricates a quasi-real, but safe learning domain, for the students to learn and gain experience for a better clinical foundation (1).

SPP was introduced in Avalon University School of Medicine (AUSOM) in the fall of 2017 as a mandatory course requirement for all the pre-clinical students. The introduction of the SPP in Avalon aims to provide the students with an opportunity to get acquainted with the clinical knowledge and applications among the basic sciences students and to address the key components that will lead to clinical competence. Key components include integration of basic sciences, technical skill, empathy, communication, professional role, and personal history (2). The vision of this standardized patient program was to become a key innovator in the use of standardized patients in medical education by delivering high-quality educational experiences. This program was also expected to foster the professional behaviors of students and respect for others. Overall, the most beneficial effect is to witness an increase in clinical skills performance. It would be interesting to see these changes after the implementation of the course. Therefore, the main goal of this study was to evaluate the effectiveness of Avalon University's SPP as an effective delivery tool of clinical skills knowledge to achieve the teaching and learning goals and analyze the performance of the students within a standard university grading system.

Methods

A quasi-experimental study design was conducted among the 3rd semester (MD3) pre-clinical students at AUSOM. Current students take clinical skills as a mandatory course requirement for pre-clinical years, and with more than 80% of attendance they were included in the study. These students were introduced to SPP when they progressed to the 4th semesters (MD4), providing us a chance to compare their understanding and performance based on the cumulative grading scores before and after the introduction of SPP.

24 participants were voluntarily enrolled in the study and consent forms were obtained. The study proposal was presented and passed through the

research and ethics committee of AUSOM. Upmost priority was given to maintaining the anonymity of the participants. Scores were obtained from the final summative clinical skills exams. Exams were conducted based on the standard university examination system. Mean scores were calculated after obtaining the final summative grading points of the students in clinical skills before and after the introduction of the SPP, comparison of the changes in scores was made, using paired t-test. Data were collected and analyzed using Stata 15 (©StataCorp).

Course objectives

The objective of the standardized patient program in AUSOM is to develop some tools to teach and assess the competency of students in history taking, patient data gathering, physical examination skills, communication skills, clinical reasoning, clinical acumen, professionalism, and organization/efficiency through real life quasi-experience. The SPP was expected to strengthen the students' understanding to be reflected through improvement in their clinical skills performance and overall grading. It was to be achieved through incorporating the SPP with the clinical skills course to inculcating clinical reasoning in medical students. The other important learning objective was to develop the cultural understanding for being able to handle different cultures, beliefs and emotions of the patients by simulating real life encounter. Students should be able to learn physical examination skills, effectively communicate with patients, families and professional as well as non-professional members of healthcare teams which are necessary to develop professional behaviors throughout their professional career.

Course design

The SPP was designed to develop a feasible, flexible, and valid teaching resource to the students at Avalon University through role playing to fill the gap and enhance better learning experience. The course curriculum was emulated with other universities and refined to be effective within its unique environment of a diverse cultural blend at the international school located in Curacao, Netherland Antilles. These bilingual standardized patients were selected from the island of Curacao to present the communication challenges and consolidate training in local as well as international context. They represented different genders, ages and professions. They replaced the existing practice of the use of untrained volunteers and students, who were practicing on the fellow students

before implementation of the program. Well-experienced faculties were used to supervise and train the students.

Teaching methodology

The main teaching method for clinical skills course at AUSOM is the use of standardized patients (3). Clinical skills are taught through a hybrid teaching technique that follows a consecutive sequence of live demonstration, commentary with and without audiovisual aid and patient simulation. All of these standardized patients are the local personnel from the communities of Curacao who volunteered to take part in the SPP. They are trained to simulate the real patients, and present a common and challenging clinical scenario in front of the patients. Instructors are required to access all of these clinical encounters and provide feedback then and there.

Assessment and uniform grading system

AUSOM maintains its program within a multi-cultural background best suited for its diverse educational environment. Instructors and students have created self-assessments as a means to determine the effectiveness of key interactive principles by testing their comprehensive retention of clinical applications with the use of the SPP. Instructors provide feedback after each patient encounter. This encourages the instructors to adjust the program in order to create a better environment for the students to improve long-term retention of clinical communication skills learned during the pre-clinical years (4).

Examinations were conducted creating real time case-simulation with SP, and skilled clinical physicians trained with different conventions in clinical examination were used for grading the students. The standardized uniformity in grading was managed through the application of detailed rubrics. Examinations were graded strictly following the rubrics. The rubric points were earned not only for history taking, examination thoroughness and medical knowledge, but also for communication skills, rapport and empathy. The rubric is highly granular to quantify maximum

criteria. Standardized patients were trained on the scripts that presented complaints which were most consistent in a clinical setting. Examiners were required to adhere to the rubric limits to grade each student within a same set of a standard final grading protocol. The overall final grading was changed to a 100 point scale for each student.

Results

24 students, 62.5% (n=15) male and 37.5% (n=9) female, participated in the study. The mean final examination scores of the students before the introduction of the SPP was 78.46±6.62 (SEM: 1.35, range: 89-70). Similarly, the mean scores of the students after the introduction of the SPP was 86.54±6.41 (SEM: 1.31, range: 98-65). The mean difference between the two groups was 8.08 (95% CI: 5.05-11.12). There was a statistically significant increment in the scores of the students after the introduction of the SPP in AUSOM (t=5.5058, p=0.0001), leading to an improvement in the overall grading of the students (Table 1).

Discussion

The SPP is more effective in conveying knowledge and skills when compared to a more conventional teaching approach; it was introduced into the teaching curriculum in medical school for two reasons: to present a case scenario where medical students are able to simulate all aspects of a case and to provide them with a consistent evaluation based on a rubric (5). The entire process allows the learner to encounter a "standardized patient" for exposure to a similar and challenging situation each time. As such, AUSOM has incorporated several key aspects of the SPP within its curriculum, focusing on the overall integration of pre-clinical students becoming situated in a regulated environment where they can further refine their technique. Early exposures of medical students to clinical sciences and simulated teaching methods including standardized patients have shown positive results (6).

The overall effectiveness of the SPP in medical schools in recent years has been questioned due to the steady deterioration of the clinical skills

Table 1: Comparison of the grading of the students on the basis of the scores obtained before and after the introduction of SPP.

Grading system (Based on AUSOM)	Total no. of students	
	Clinical skills I (n=24) (Before the introduction of SPP)	Clinical skills II (n=24) (After the introduction of SPP)
Honors (96-100 %)	0	2 (8.33%)
A (90-95 %)	0	8 (33.33%)
B (80-89 %)	13 (54.17%)	9 (37.5%)
C (70-79 %)	11 (45.83 %)	5 (20.83%)
F (<70 %)	0	0

among the physicians (7). Since patients are aware of the students and residents' training on them, they are becoming increasingly worried. Consequently, clinical medicine has changed to concentrate more on the patient's safety and quality, rather than on teaching and education. In order to adapt to this change, educators have had to restructure their curriculum, as well as increase self-directed learning and independent research. Despite this adjustment, a division still remains between the classroom and clinical environment. This is why many medical students feel as though they were lacking the skills required to be a proper physician. Medical simulation through the SPP was thus introduced as a way to bridge this education gap. Therefore, by introducing medical students to the SPP prior to their real patient encounter, we will be able to reduce the amount of error amongst newly trained physicians (8).

Avalon has learned from SPPs conducted in other locations, but has made an attempt to implement it in a way that fits Avalon's Caribbean medical educational environment. For example, Germany requires SPPs as part of the national requirements for medical schools (9). Historically, Dr. Howard S. Barrows, MD, created the first SPP for his third-year clerkship while teaching at the University of Southern California (USC) in 1963, which is followed by a consortium of many medical schools worldwide (10, 11). A United States national survey conducted with directors of clinical skills programs in all 141 Liaison Committee on Medical Education (LCME) accredited schools showed 101 responders indicating a median of 59 hours of instructor time spent with pre-clinical students learning how to take medical history (12). The acceptance of the SPP, as a valid teaching method, is well illustrated by the number of responders to this study.

The recent success of the SPP can answer questions to various limitations. Prior to developing consensus-based criteria like grading rubrics, the physician's agreement on the importance of the reported criteria was not uniform (13). These challenges in AUSOM were tackled by using the rubrics with a set of uniform guidelines. Avalon's SPP is beneficial to pre-clinical students in that it provides them with the opportunity to be introduced to real-life case scenarios, while also evaluating their comprehensive understanding of basic sciences. Recommendations of future modulations to improve the Avalon SPP include gathering more data from Caribbean Schools with SPP for comparative analysis, adding clinical symptoms to cases for greater challenge and providing more training for SPs. It is recommended that a

collective study should be conducted to evaluate the overall implementation of SPP in a scientific way.

It would be interesting to analyze the SPP further that has now been in operation with an objective of bridging the gap between the times of students starting their medical education until they pass their first licensure examination and begin training in clinical settings. Since this study merely focused on the effectiveness of the SPP in AUSOM, a point of interest is the effectiveness of SPPs in other schools. SPPs have been well established with many schools over the last sixty years, but the objective effectiveness of SPP has not been well documented. As per the LCME survey (12), with only 59 hours of instructor time spent with most students during pre-clinical studies, few schools have analyzed the results using objective criteria. Although it is probable that some schools may have done such an analysis, none has published the results. Consequently, it is not possible for one school to compare their effectiveness against another at this time. This would require a uniform reporting tool for consistent analysis of each program with published results of the data. It is, therefore, recommended to devise and implement a uniform "SP" program and assessment technique best suited for the modern learning environment early in preclinical years.

Conclusion

Introduction and implementation of SPP in pre-clinical years increased the overall students' performance in clinical skills. This dynamic educational training program provided us with an opportunity to learn clinical skills by performing mock examinations on actors performing like patients. SPP introduced in AUSOM had a remarkable impact on refining the students' cognition toward clinical skills reflected through their performance. It is pertinent that clinical skills should be introduced in the pre-clinical years within the norms of the modern scientific and educational standards.

Conflict of Interest: None declared.

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