Adopting role plays/skits to enhance the learning of clinical respiratory physiology

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It has been frequently reported that most students use a combination of learning styles. Teachers can use a variety of teaching-learning methods, which may encourage adaptability and lifelong learning. Instructional strategies that are lively, educative, and encourage students to actively participate in the process are better than an uninterrupted exposition of information. This article was designed to clarify how one can use role playing and skits to make the learning of rather simple principles in human cardiopulmonary physiology more fun and relevant, in the absence of clinical classes in first-year undergraduate studies. These role plays also allow students to practice their communication skills in a conducive environment. It has been shown that improvisation is not only entertaining but extremely useful in understanding concepts (3).

The idea behind the enactment of role plays was that a hands-on experience is a lifelong experience: it is the best teacher. There have been many definitions of role plays. The simplest one states that role plays consists of “acting out a defined character in a mock situation.” Since one experiences a situation, therefore role plays can help make classes dynamic, energetic, and actively involve students in the teaching-learning environment. In fact, skits and games have been used to enhance the learning of physiology, and it has been observed that the planning of skits serves as a good review of some course material (2).

Methods

Role plays were designed related to lung volumes and capacities, applied aspects of respiratory physiology, and basic life support. Four role plays were designed. It was decided that different students would play different roles, to ensure maximum participation. The role plays were conducted after the major portion of the theory of respiratory physiology and anatomy was completed and after the history taking and general physical examination and examination of respiratory system in practical demonstration classes were taught to the students. Students were randomly selected by the teacher and were grouped in 4–5 students/group for the four role plays, but they were included to play parts only when they gave their consent for the same. The role plays were partially scripted. The teacher directed from a distance and played parts only when they gave their consent for the same. The role plays were conducted during the practical physiology classes and during the demonstration time. The class of 100 students was divided into 2 practical groups of 50 students each.

Role Play 1: the Celebration Party Role Play

Objective: to demonstrate the Heimlich maneuver.
Number of participating students: 5 (for each practical group).
Scene. Three students go to a restaurant to celebrate good grades on the physiology exam. They call upon the waiter and order fish. They are talking, laughing, and enjoying the dish. Then, suddenly, one of them stops talking and starts choking. This individual is red in the face, can’t speak, and is unable to breathe. Initially, his/her friends can’t decipher whether s/he is having a heart attack at such a young age or if it is a different matter. The waiter runs to call the ambulance. In the meantime, one of the friends asks the afflicted individual to cough. S/he is not able to do even that. Now the friends know that their companion is choking. One friend tries the Heimlich maneuver, but s/he is not able to do it correctly, and nothing happens. Then another friend comes forward and performs the act with the right method. S/he puts their fists at the epigastric area and gives quick, strong thrusts backward and upward, and out pops the fish bone! The student patient starts to cough, and his/her respiration resumes. They all take a sigh of relief.

All during the enactment, the narrator student (group leader) narrates what is happening. S/he also narrates how the procedure should be carried out technically and why the first time the procedure was not correct. As the group leader narrated, the participating students froze their posture, so that students in the audience could digest the whole concept. Later, three to four groups of students in the audience were asked to come forward and perform the maneuver on each other. The physiology concepts, physiological changes during choking, and physiology behind the maneuver were discussed. Student questions were then answered.

Role Play 2: the Drowning Role Play

Objective: to demonstrate the Holger-Neilson technique of cardiopulmonary resuscitation (CPR).
Participating students: 4 (for each practical group).
Scene. Four students performed this role play. The group leader was also the narrator. Three students go for a picnic near a sea. One of the students starts to drown. S/he is helped by two friends out of the water. One student starts calling the ambulance. The second friend starts performing the Holger-Neilson technique of CPR. The subject is held prone on the solid beach bed. The method is performed step wise. The narrator keeps on narrating the correct method while the second student is performing the act. The act was replayed for students in the audience based on their request. A few groups of students were invited to perform the experiment. The concepts, physiological changes, and

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physiological advantages and disadvantages of the method were discussed with students. The doubts of the students were clarified, first by the participating students and, if needed, by the teacher.

This role play was designed to provide fascinating insight into early attempts to resuscitate people. The students were apprised of the resuscitation methods used in the past, the lacunae in them, and how the present technique of CPR has overcome those lacunae.

**Role Play 3: the Accident Victim/Mannequin Role Play**

**Objective:** to perform CPR on a mannequin.

**Participating students:** 4 (for each practical group).

**Scene.** The group leader narrates the story. An accident victim/ mannequin is lying on the road. Two friends travelling that way stop by and find the victim. They block the traffic and check the victim for vital signs. They call the ambulance and start to resuscitate the injured individual. One student starts with chest compressions at a rate of at least 100 compressions/min and a compression depth of at least 2 in., allowing for the complete recoil of chest compressions. The second student cleans the victim’s mouth and nose, extends their neck, and starts mouth-to-mouth breathing, maintaining a compression-to-ventilation ratio of 30:2. The narrator keeps on narrating the correct technique.

Later, all components of this CPR technique were discussed by the teacher; the doubts of the students were removed. The discussion also focused on 2010 American Heart Association guidelines for CPR. The change in CPR sequence from the airway-breathing-chest compression (A-B-C) method to the chest compression-airway-breathing (C-A-B) method was reiterated. Emphasis was made that an untrained lay rescuer should provide compression only-CPR, with stress added to “push hard and fast” on the center of the chest, with minimal CPR-free intervals. For a trained lay rescuer who is able, the recommendation remains for the rescuer to perform both compression and ventilation. A few student groups were then invited to demonstrate the technique.

**Role Play 4: the Doctor-Patient Role Play**

**Objective:** to demonstrate history taking and perform a respiratory system examination and spirometry.

**Participating students:** 5 (for each practical group).

**Scenes.** In the following scenes, the group leader is the narrator. One student acts as a doctor. A second student acts out the part of the nurse, and another two students act out the parts of patients.

**SCENE 1.** The first student patient walks in and performs as a patient with obstructive lung disease. The doctor takes the history and performs the respiratory system examination. S/he then performs spirometry.

**SCENE 2.** The second student patient walks in and acts like a patient with restrictive lung disease. Their history is taken, a respiratory system examination is done, and spirometry is performed.

Two different types of computerized spirometry were previously obtained (spirometries of a patient with obstructive lung disease and a patient with restrictive lung disease patient). The graphs were shown, and students in the audience were asked to explain them and the type of disease shown in the graphs. The technique behind the procedure, the physiology behind the diseases, and interpretations of the graphs were discussed at length. Student doubts, if any, were removed.

**RESULTS AND DISCUSSION**

We tried to make the role plays very simple. We tried to accomplish a few important aspects. We tried the simplest and clearest approach. Any complexities regarding the role plays were elaborated on later during the discussions. Focus group discussions were held with the participating students. They were asked how they prepared for their roles and how they studied for them. The effectiveness of role plays in enhancing communication skills was also discussed. All students agreed that the role plays improved their communication skills and collaboration among group members. They were asked about their reactions in the beginning, at the middle, and at the end of the role plays. They were then asked to suggest advice for future students. Students in the audience were asked about their perception of the role plays, and 76% of students strongly agreed and 21% of students agreed that the role plays created interest and greatly enhanced their knowledge of the concepts. Only 3% of students were neutral on this aspect. Students were happy with the cheerful practical classes. It was ensured that all students were involved in some way, either as performers or in the audience. Therefore, nobody felt excluded.

In an earlier study (1), it was concluded that role-play lectures were an effective, economical, and easily reproducible method to help students better understand the core concepts and features involved in different neurological diseases. The most important advantage of role play is that if such experience in a real setting is not possible, then a mock situation can be created, which may not be ideal but will at least be satisfactory for experimental learning. If students can talk about or act what they are learning, then they can relate to it and apply it in their daily lives. The visual impact and active participation helped students to better understand the concepts. We believe that it is important to plan activities for students because activities engage the audience, build curiosity, and create a challenge.

**DISCLOSURES**

No conflicts of interest, financial or otherwise, are declared by the author(s).

**AUTHOR CONTRIBUTIONS**

Author contributions: R.G.T. conception and design of research; R.G.T. and A.K.A. performed experiments; R.G.T. analyzed data; R.G.T. interpreted results of experiments; R.G.T. drafted manuscript; R.G.T. and A.K.A. edited and revised manuscript; R.G.T. and A.K.A. approved final version of manuscript; A.K.A. prepared figures.

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