Manikins or Standardized Patients: Is There a Difference?

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Background

As the scope of pharmacy practice increases, it becomes increasingly necessary to add physical assessment and point of care techniques into the doctor of pharmacy curriculum. With the introduction of these services, the final exam was two hours long and included questions that were based on the physical assessment skills taught in class. It is not debated that simulation based learning benefits student pharmacists when learning skills used to interact with patients. In a physical assessment course, there is emphasis on the skill set developed to perform an examination on a patient effectively, however, communication and critical thinking skills are also imperative to the outcome of the course. Simulation based learning is able to build these necessary skills when utilized effectively. These simulations have traditionally been taught using either a high fidelity manikin or student standardized patients in various forms including paid patient actors or student volunteers and student peers. These methods have proven to create an effective, low stakes learning environment, but the cost of equipment can serve as a major barrier for implementing high fidelity manikins within a PharmD curriculum. Is there a great enough difference to justify the cost of the equipment? Do students prefer one method over the other when learning the material? This research looked at these various factors in an attempt to gain a broader understanding when using high fidelity manikins or standardized patients in the form of student peers through a physical assessment course.

Objective

The objective of this research is to assess the differences in using standardized patients and manikins in the teaching method and application of physical exam techniques of student pharmacists.

Methods

Instructional Design (Table 1)

Five physical exam techniques were presented to student pharmacists by practicing pharmacists in a team based learning environment over the course of eight weeks. These physical exam techniques were presented in four modules categorized by body system:

| Skin and Head, Eyes, Ears, Nose Throat (HEENT) |
| Cardiovascular |
| Neurological |
| Abdominal and Respiratory |

Within these modules the students were given material to prepare individually prior to attending class. They were then given an individual readiness assessment test and a team readiness assessment test within assigned groups of 4-6 student pharmacists. To apply these key concepts, students were able to utilize lab space to practice the techniques described either with a patient, a fellow student or fellow students within their team based learning groups. The students were assigned a week to systematically practice using the SimMan manikin.

On the last week of this course, the students were given a comprehensive final exam. This consisted of a patient case scenario where the students were required to perform the correct physical assessment based on the patient presentation in their assigned patient case given one week prior to the exam. On the day of the exam, the students entered the simulation and the physical exam portion was completed by the assigned groups that were used in the team based learning model. This was followed by a team debriefing with the grading instructor and the completion of a SOAP note. This SOAP note was not dependent on the student performing well on the physical exam portion of the exam. Any information that was lacking, was given to the students during their debrief period.

Table 1: Learning-based Activity

<table>
<thead>
<tr>
<th>Learning-based Activity</th>
<th>Content Covered</th>
<th>Pharmacists’ Patient Care Process Component</th>
<th>Bloom’s Taxonomy Level</th>
<th>Fish’s Taxonomy Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual Preparation</td>
<td>Application of Key Concepts</td>
<td>Collect, Assess, Plan, Implement, Follow-up</td>
<td>Knowledge</td>
<td>Foundational Knowledge</td>
</tr>
<tr>
<td>Readiness Assurance</td>
<td>Individual Readiness Assurance Test</td>
<td>Knowledge</td>
<td>Application</td>
<td></td>
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</tbody>
</table>

| Application of Key Concepts | Practice Physical Assessment Techniques on group members or manikin | Collect, Assess, Plan, Implement, Follow-up | Application, Integration, Human dimension, Caring |

Evaluation

Student preference

- A nine question survey was given to the students to gain insight on the course.
- This survey asked nine questions with regard to student perceptions of team based learning, student preference of standardized patients or manikins, student perception of learning objective achievement, and student opinions regarding physical assessment in future practice. Each question was assessed on a five point Likert scale.
- This survey was given after the students fully completed their final exam.
- The class average and standard deviation for this portion of the final exam was 94% +/- 4%. This does not include the SimMan manikin to the utility of physical assessment skills on a SimMan manikin has enhanced my ability to apply physical assessment skills. The class average score and standard deviation for this portion of the final exam was 94% +/- 4%.

Cost

- Cost was assessed using the concept of a cost-effectiveness analysis (CEA). A CEA is used to compare the efficacy of an intervention to its costs. In our scenario, we would be comparing the cost of a SimMan manikin to the utility of perceived benefit from student pharmacists.

- The cost of SimMan was assessed using a pricelist from the company Leadership (2011). This was the most current and complete listing. The average cost for the basic SimMan 3G model was $68,000. This does not include the cost of maintenance or warranties.
- Student utility was based off of a weighted average of the answers to given to questions four and five on the survey. Strongly agree was given a weight of 5, agree a weight of 4, neutral a weight of 3, disagree a weight of 2 and strongly disagree a weight of 1. The average utility for question four was 3.24% and the average utility for question five was 4.49 utility.

Figure 1 shows the final exam score and standard deviation for this portion of the final exam was 94% +/- 4%.

Figure 2: Survey Question 4

- Being able to practice physical assessment on a SimMan manikin has enhanced my ability to apply physical assessment skills. This does not include the SimMan manikin to the utility of physical assessment skills on a SimMan manikin has enhanced my ability to apply physical assessment skills. Based off of the survey results, the students pharmacists found greater utility in practicing physical assessment skills on a standardized patient (4.74 versus the SimMan manikin 4.49). The SimMan manikin has a much higher cost than utilizing peers as standardized patients. Thus, in this situation, the standardized patient is the dominant choice due to its slightly increased utility and lower cost.

Summary

- Student preference did not vary greatly between the two instructional methods, but there was a slight preference toward standardized patients.
- All 139 students met 80% competency on the first attempt of the physical assessment portion of the final exam. The class average was 59%.
- The cost of a high fidelity manikin is much higher than using student peers as simulated patients with a non-significant difference in perceived benefit by students within this cohort.
- As with any instructional design, aligning desired outcomes with the utility of manikins and standardized patients within a course is key.

References