Virtual Software to Personalize Student Learning In A Required Pharmacy Course

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Introduction

• There is significant variation in the amount and type of experience related to pharmacy practice that students have prior to entering a professional pharmacy program.
• Historically, Pharmacy Practice Skills I (P504) at the University of Michigan has been taught using a traditional hands-on medication dispensing approach in a laboratory setting.
• Virtual simulation has been used in didactic and experiential health professions education settings to teach medication dispensing, preparation of intravenous medications, disease state management, medication therapy management, problem solving, decision-making, communication, professionalism, and interprofessional teamwork.1-11
• Students enjoy learning using simulation and the amount of learning is significant.12
• MyDispense is a customizable, open-access, virtual software program that allows students to develop and practice a wide variety of medication dispensing skills and receive immediate formative feedback after completion of each exercise.13

Goals

• To determine the applicability of virtual medication dispensing in preparing students for real-life medication dispensing compared to the traditional hands-on medication dispensing approach in a laboratory setting.
• To design a course in which previous professional experience is accounted for in learning activities in order to make the course relevant to each student.

Objectives

• To determine the utilization of virtual medication dispensing software in Pharmacy Practice Skills I lab based on previous pharmacy experience.
• To determine the effect of previous pharmacy experience and utilization of virtual medication dispensing software on student outcomes.
• To determine student perceived relevance and usefulness of the virtual medication dispensing program.

Methods

• Pharmacy students enrolled in the P504 course during fall 2015 (n=85) participated in this study.
• Students completed an electronic survey that identified their previous amount pharmacy practice experience.
• Students used the virtual simulation software to practice skills during lab in weeks 1-4, 8 and 11.
• After the introductory exercises during week 1 in lab, six optional practice exercises were made available one week in advance of each lab. There was a total of 30 optional practice exercises throughout the semester.
• The utilization of the practice exercises on the individual student level was collected from the virtual simulation program and students were classified as high (21-30), moderate (11-20), and low (0-10) users of the practice exercises.
• Scores from pertinent questions on the midpoint and final practical exams, and the overall course grade were collected for each student.
• Regression analysis and chi-square tests were used to assess the relationship between the practice exercises and prior years of pharmacy experience on test scores.
• Students completed an online survey regarding their perceptions of using a virtual simulation medication dispensing program.

Results

Figure 1: Previous pharmacy experience

![Graph showing previous pharmacy experience](image)

Figure 2: % of students who found virtual simulation useful in learning about medication dispensing

![Graph showing percentage of students](image)

Table 1: Relationship between previous pharmacy experience and number of optional practice cases completed

<table>
<thead>
<tr>
<th>Experience Level</th>
<th>Number of Optional Practice Exercises Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Experience</td>
<td>0-10 Exercises</td>
</tr>
<tr>
<td></td>
<td>105</td>
</tr>
<tr>
<td>&lt;1 year Experience</td>
<td>66.7%</td>
</tr>
<tr>
<td>&gt;1 year Experience</td>
<td>13 (17.4%)</td>
</tr>
<tr>
<td>31 week Experience</td>
<td>7 (24.2%)</td>
</tr>
</tbody>
</table>

Table 2: Percentage of students who found virtual simulation useful in learning about medication dispensing

<table>
<thead>
<tr>
<th>Experience Level</th>
<th>Percentage of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Experience</td>
<td>85.2%</td>
</tr>
<tr>
<td>&gt;1 year Experience</td>
<td>94%</td>
</tr>
</tbody>
</table>

Results, cont.

• The amount of previous pharmacy experience ranged from none to more than one year (Figure 1).
• The majority of students—both with and without prior pharmacy experience—found virtual simulation to be a helpful tool for learning about medication dispensing in the outpatient setting (Figure 2).
• Students identified a variety of skills that were learned using the virtual simulation program (Figure 3).
• To design a course in which previous professional experience is accounted for in learning activities in order to make the course relevant to each student.

Conclusions

• The virtual medication dispensing program allowed students to self identify the amount of practice that was necessary in order to gain specific skills.
• Virtual simulation was well received by the students and will be used during future semesters.

References