Introduction

- Simulated patient interactions in the final two years of the professional pharmacy curriculum have shown increased learning or confidence for:
  - inhaler technique and counseling;
  - decompensated heart failure management;
  - medication error recognition;
  - insulin injection techniques between groups;
  - advanced cardiac life support.

- The Accreditation Council for Pharmacy Education encourages use of simulation throughout the curriculum and approved its use for experiential education.

- Up to 75% of patients do not administer or store their insulin pens correctly, providing opportunity for education.

- First-year PharmD (P1) students will be required to counsel patients on their introductory experiential experiences, often having never practiced the technique.

Purpose

To analyze the effectiveness of adding standardized patients to didactic coursework on first professional year pharmacy students' knowledge and retention of proper insulin injection technique.

Objectives

- Primary
  - To compare changes between pre- and post-intervention written test scores assessing insulin injection techniques among P1 PharmD students using traditional learning techniques with (intervention group) and without (control group) simulated standardized patients.

- Secondary
  - To compare post-instruction counseling checklist scores regarding insulin injection techniques between groups.

- To compare changes between pre- and post-intervention written test scores at one month regarding insulin injection techniques between groups.

Methods

- Prospective, single-blind, single-center, cluster randomized trial
- Given exempted status by the Campbell University Institutional Review Board
- Data collected included:
  - Baseline characteristics regarding the topic
  - Counseling checklist scores
  - Written test scores
- Questions for the written tests were provided by APHA's The Pharmacist and Patient-Centered Diabetes Care Certificate Training Program
- Two-sample 1-T tests were conducted in JMP-10 (SAS- Cary, NC) for the primary and secondary endpoints
- Pearson's chi-square tests analyzed baseline characteristics

Results

Table 1. Key baseline characteristics of study subjects

<table>
<thead>
<tr>
<th>Baseline Characteristics</th>
<th>Control, n (%)</th>
<th>Intervention, n (%)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous Pharmacy Experience</td>
<td>33 (68.8)</td>
<td>40 (72.7)</td>
<td>0.66</td>
</tr>
<tr>
<td>Hospital</td>
<td>6 (12.5)</td>
<td>10 (18.2)</td>
<td>0.427</td>
</tr>
<tr>
<td>Community</td>
<td>29 (60.4)</td>
<td>35 (63.6)</td>
<td>0.737</td>
</tr>
<tr>
<td>Prior experience with insulin pen or syringe</td>
<td>4 (8.3)</td>
<td>6 (10.9)</td>
<td>0.66</td>
</tr>
<tr>
<td>Personal/family history of diabetes</td>
<td>14 (29.2)</td>
<td>14 (25.4)</td>
<td>0.673</td>
</tr>
<tr>
<td>Current insulin use</td>
<td>1 (2.1)</td>
<td>0.282</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Comparison of test scores between groups

<table>
<thead>
<tr>
<th>Endpoint (%)</th>
<th>Control, n=48</th>
<th>Intervention, n=55</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge Retention Test*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pre-test score</td>
<td>46.0 ± 12.5</td>
<td>43.9 ± 12.9</td>
<td></td>
</tr>
<tr>
<td>post-test score</td>
<td>63.8 ± 20.7</td>
<td>65.3 ± 12.3</td>
<td></td>
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<tr>
<td>change from baseline</td>
<td>+17.8 ± 19.2</td>
<td>+21.4 ± 11.8</td>
<td>0.077</td>
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<tr>
<td>Counseling Checklist Score</td>
<td>63.5 ± 11.8</td>
<td>72.1 ± 14.0</td>
<td>0.0012</td>
</tr>
<tr>
<td>Knowledge Retention Test*</td>
<td>60.4 ± 20.9</td>
<td>64.1 ± 9.3</td>
<td></td>
</tr>
<tr>
<td>change from baseline</td>
<td>+14.4 ± 12.3</td>
<td>+20.4 ± 11.5</td>
<td>0.0138</td>
</tr>
</tbody>
</table>

Table 2: Comparison of test scores between groups

- *Two students in the intervention group were lost to follow-up for the knowledge retention test due to absence.

Discussion

- 90% had no prior experience using insulin pens or syringes
- Addition of standardized patient interaction increased:
  - counseling skills
  - knowledge retention
  - knowledge level
- Strengths
  - results consistent with previously published studies
  - validated test questions provided by APHA
- utilized standardized patient interactions in first-year doctor of pharmacy students
  - 100% participation in knowledge test and counseling checklist
- Limitations
  - time constraints and follow-up time
  - potential variability in student knowledge level

Conclusion

When added to traditional coursework within a first-year doctor of pharmacy skills lab, simulated patient interactions improved student counseling skills and knowledge retention scores.

Disclosures

The authors of this poster have nothing to disclose concerning possible financial or personal relationships with commercial entities that may affect this presentation.

References

10. APHA. The Pharmacist and Patient-Centered Diabetes Care Certificate Training Program