Evaluation of First-Year Student Pharmacists’ Confidence Before and After a Performance-Based Assessment
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BACKGROUND
- Performance-Based Assessments (PBAs) showcase student achievement of learning by performing specified tasks that simulate what is done professionally.
- Studies have been conducted focusing on student performance related to skills assessment and have found positive correlations between self-confidence after the assessment.
- Recent changes to the SIUe School of Pharmacy curriculum, has moved PBAs to be performed during the first three years of didactic coursework.

OBJECTIVES
- To gauge the confidence levels of first-year student pharmacists before and after select skill examinations, in order to improve outcomes for later students, in addition to impacting patient care.

METHODS

Study Design:
- Prospective, cross-sectional, survey review of first-year student pharmacists.

Survey:
- 16-question survey containing questions from past survey-based literature.
- Survey assessed participants’ demographic data and confidence before and after a given PBA to be later used for future curriculum adjustments.
- Individual student confidence scores before and after PBA (4-point Likert Scale with Strongly Agree = 4, Agree = 3, Disagree = 2, and Strongly Disagree = 1).
- Calculated mean confidence scores for each PBA.

Dummy Coded (0/1/2/3/4):
- Whether the student had current pharmacy job (Yes/No)
- Demographic Data (Community, Hospital, Ambulatory Care, Research, Other)
- Duration of Pharmacy Experience (<3 months, 3-6 months, >1 year)

Study Population:
- Students from the SIUe School of Pharmacy Class of 2024, enrolled in Pharmacy Skills Laboratory I and II courses during Fall 2020 and Spring 2021.

Statistical Analysis:
- Descriptive statistics used in this study include means, percentages, and standard deviations.
- Paired student t-tests were used to analyze pre- and post-survey confidence scores for each item for students that successfully completed both surveys. Findings were regarded as statistically significant if \( p < 0.05 \).

RESULTS

Table 1: Demographics, \( n = 40 \)

<table>
<thead>
<tr>
<th>Demographic Topic</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working in a Pharmacy, ( n (%) )</td>
<td>Yes 27 (67.5%), No 13 (32.5%)</td>
</tr>
<tr>
<td>Pharmacy Experience Setting, ( n (%) )</td>
<td>None 13 (32.5%), Community Hospital 23 (57.5%), Hospital 4 (10%)</td>
</tr>
</tbody>
</table>

Table 2: Student Pharmacists’ Confidence Scores Before and After Completing Fall 2020 PBAs (\( n = 40 \))

<table>
<thead>
<tr>
<th>Question</th>
<th>Pre-Survey Mean (SD)</th>
<th>Post-Survey Mean (SD)</th>
<th>( P )-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Perform necessary calculations to determine the amount of drug needed for an IV solution</td>
<td>2.98 (0.6597)</td>
<td>3.43 (0.5943)</td>
<td>( p = 0.0003 )</td>
</tr>
<tr>
<td>2) Identify an error in the sterile compounding process</td>
<td>2.85 (0.7355)</td>
<td>3.73 (0.4522)</td>
<td>( p &lt; 0.0001 )</td>
</tr>
<tr>
<td>3) Correctly prepare a sterile IV solution with no errors</td>
<td>2.58 (0.8130)</td>
<td>3.75 (0.4385)</td>
<td>( p &lt; 0.0001 )</td>
</tr>
<tr>
<td>4) Use a systematic approach to identify errors when verifying a prescription</td>
<td>2.50 (0.7161)</td>
<td>3.63 (0.4903)</td>
<td>( p &lt; 0.0001 )</td>
</tr>
<tr>
<td>5) Use a systematic approach to identify medication-related problems when performing a drug utilization review (DUR)</td>
<td>2.00 (0.6405)</td>
<td>3.55 (0.5524)</td>
<td>( p &lt; 0.0001 )</td>
</tr>
<tr>
<td>6) Prioritize medication-related problems when performing a drug utilization review, if multiple issues exist</td>
<td>1.95 (0.6775)</td>
<td>3.4 (0.6325)</td>
<td>( p &lt; 0.0001 )</td>
</tr>
<tr>
<td>7) Appropriately transcribe a voicemail prescription by ensuring all legal requirements are followed</td>
<td>2.40 (0.8412)</td>
<td>3.85 (0.3616)</td>
<td>( p &lt; 0.0001 )</td>
</tr>
</tbody>
</table>

Figure 1: Demographics

LIMITATIONS
- Limitations included risk of bias due to administering survey after grades became available.
- Unable to account for incomplete/duplicate responses being due to technical error or survey fatigue.
- Multiple-choice questions over-simplified true feelings.
- Self-reported confidence is a subjective measure that does not directly correlate to knowledge or skill.

CONCLUSION
- Results indicate that the current SIUe Fall 2020 Pharmacy Skills Lab I course was successful in significantly increasing baseline confidence scores of first-year student pharmacists.
- The institution’s recent curriculum shift promotes positive learning outcomes in student ability.
- Further studies are needed utilizing objective measures (e.g. GPA, assessment scores, etc.) to assess the true impact of the current curriculum on first-year student pharmacists.