Development of Advance Practice Registered Nurse (APRN) Program Completion Standardized Exams

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Objectives

• Describe the development of an APRN program completion didactic assessment exam for use in graduate nursing education globally.

• Apply evidence-based techniques for benchmarking, remediation, and focused clinical-based learning to your population of graduate students.
APRNs

• NPs have provided excellent health care for more than 45 years. The first NPs were educated at the University of Colorado in 1965. Programs soon spread across the U.S.

• As of 2010, there are about 135,000 practicing NPs. Close to 8,000 new NPs are prepared each year at over 325 colleges and universities in the U.S.
Background

• There is new and resurgence interest for the APRN generalist and specialty roles globally.

• When society recognizes a need for health care cost containment and there is a shortage of care providers the outcome is social/political change and educational growth of APRN programs.
Background

• To assure a match between education and clinical competencies, certification is a commonly legislated practice eligibility mandate.

• Graduate nursing faculty are implementing standardize certification predictive testing, exit exam benchmarking, and remediation strategies to facilitate student success on national certification exams.
Evidence-Based Implementation

• An APRN standardized test development process and psychometrics was undertaken to match content of certification test blueprints
  
  – American Nurses Credentialing Center
  – American Academy of Nurse Practitioners
  – Organization of Nurse Executives
Standardized Computerized Exams

• Elsevier HESI APRN FNP/ANP/ACNP*

  – 100-item APRN Comprehensive Exams
  – Predict certification exam (ANCC/AANP) success
  – Identify specific areas for remediation
  – Provide an objective measure of program outcome achievement
  – Contribute to overall curriculum evaluation

* Piloting Exam
APRN Examination Development

• **Content Expertise**
  – Elsevier APRN item banks were initially developed from paper and pencil exams authored by the NP faculty at two universities - 2004
  – Application of HESI critical thinking test item writing model was applied
    • Original items written primarily at knowledge/comprehension level
    • Items were revised to application & higher level
  – Grown to include APRN educators item writers across the U.S.
Exam Blueprints

• HESI APRN Exam Blueprints
  • HESI Standard Scoring Categories
  • NONPF Competencies
  • ANCC & AANP Exam Content Outlines
  • National Organization of Nurse Executives

• Exams Developed
  • Family Nurse Practitioner
  • Adult Nurse Practitioner
  • Acute Care Nurse Practitioner*
  • Nursing Executive*

* Piloting Exam
Reliability

• Reliability Estimates—dynamically measured
• Calculated for each HESI exam administered
  • Item Difficulty
  • Item Discrimination
    – Point Biserial Correlation Coefficient
• Kuder-Richardson 20 (KR-20)

HESI APRN Exam Analysis

- **Reliabilities and Average Item Uses**
- **Family NP Exams**
  - KR-20 ~ 0.932
  - Item uses = ranges from 466 to 2394
- **Adult NP Exams**
  - KR-20 ~ 0.932
  - Item uses = ranges from 125 to 2382
Reporting Features

• Scoring reports include multiple scoring categories
  – HESI Standard Categories
  – NONPF Competencies
  – ANCC & AANP Domains of Practice
  – Associate of Nurse Executives

• Longitudinal trending of student outcomes
  – Download to Microsoft Excel® workbook
Identify Learning Needs

Standardize APRN predictive exams provided valuable student competency data that allow faculty to address student knowledge gaps with remediation and clinical experiences.
In addition, standardize testing provided outcomes for curriculum evaluation, program accreditation, and program policy development.
Texas Woman’s University – Houston 2005-2007 Experience

• **Standardized FNP Examination**
  – Preparation for AANP or ANCC Certification Examinations
  – Guides Clinical Experiences during Preceptorship

• **Provides Program Evaluation Data**
  – Course content and teaching strategies
  – Evidence of program outcomes for accreditation

TWU Study Results

• Evolve HESI APRN FNP Exam Results

• Descriptive Statistics

<table>
<thead>
<tr>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
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<tbody>
<tr>
<td>110</td>
<td>517</td>
<td>1092</td>
<td>827.66</td>
<td>106.624</td>
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</table>
HESI APRN FNP Exam: Scoring Categories

• Number & Percent of Students by Scoring Category (N = 110)

<table>
<thead>
<tr>
<th>Scoring Category</th>
<th>HESI Score</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category A/B</td>
<td>900-1000+</td>
<td>28</td>
<td>25%</td>
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<tr>
<td>Category C</td>
<td>850-899</td>
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<td>15%</td>
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<tr>
<td>Category D</td>
<td>800-849</td>
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<td>23%</td>
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<tr>
<td>Category E/F</td>
<td>700-799</td>
<td>30</td>
<td>27%</td>
</tr>
<tr>
<td>Category G/H</td>
<td>&lt; 699</td>
<td>11</td>
<td>10%</td>
</tr>
</tbody>
</table>
HESI Scores & Certification Results
Survey Responders

- **Number & Percent of Students by Scoring Category**
  
  \(N = 49\)

<table>
<thead>
<tr>
<th>Scoring Category</th>
<th>HESI Score</th>
<th>N</th>
<th>Predictive Rate</th>
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<tr>
<td>Category A/B</td>
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<td>17</td>
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<tr>
<td>Category C</td>
<td>850-899</td>
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<tr>
<td>Category D</td>
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<td>100%</td>
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<td>82%</td>
</tr>
<tr>
<td>Category G/H</td>
<td>&lt; 699</td>
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<td>100%</td>
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</table>
Texas Woman’s University Study
APRN Certification Exam Results

- Thirty-eight students took the AANP exam with 37 students reporting either a numeric passing score or stating that a passing score ($\geq 500$) was awarded.
- Eleven students took the ANCC exam – all passed.
- Of students reporting passed certification, 48 had evidence of TX-BON APRN recognition.
TWU APRN Student Results

• Predictive Accuracy

• 100% of the students with known certification outcomes (N = 37, or 76% of the total 49 students) who scored ≥ 800 passed either the AANC or the AANP certification exams

• One (1) student whose HESI score was 700-799 did not pass AANP certification exam
Recommended Benchmark

- HESI APRN FNP Exam

- HESI APRN Recommended Score: 800 and above

- HESI APRN Minimally Acceptable Score: 750
Conclusions

- Survey responses indicated that exam scores were usually consistent with students’ performance.

- Predictive validity of the HESI scores for students achieving scores >800 on the exams with their ANCC or AANP certification exam outcomes was evaluated for accuracy.

- Data analysis indicated acceptable and recommended scoring levels.
Conclusions

- The standardized FNP exam was effective in assessing students’ preparedness for the specialty accreditation exams and also provided evidenced-based measures of curricular outcomes.

- Study outcomes have assisted FNP faculties in evaluating the usefulness of incorporating the use of standardized exams within their educational programs.
Texas A&M University: Corpus Christi

- Internet-delivered, computerized testing with an all-online MSN program
- Serves as a comprehensive final exam for the integrated clinical course
- Prepares students for certification exams
- Provides objective evidence of student performance
  - Documents program outcome achievement objectively
  - Useful in tracking student results longitudinally
    - Curriculum evaluation
    - Reaffirmation of accreditation
East Tennessee State University Experience

• **Fulfills university graduation requirement to have comprehensive exam**
  
• **Prepares students for certification exams**
  – Focuses on knowledge deficits identified by HESI scores

• **Provides program evaluation data**
  – Used in total curriculum evaluation to guide revisions
  – Evidence of program outcomes for accreditation

• **Testing occurs in the dedicated testing center on campus**
Rationale for Exams

• **APRN HESI Exams:**
  
  – Measure students’ application of knowledge to clinical practice situations.
  
  – Predict certification exam success.
  
  – Identify specific areas for remediation & to plan preceptor experiences.
  
  – Benchmark program outcomes for total curriculum evaluation & accreditation.
Establishing Validity

- **Research Studies**

- Conducted over four consecutive academic years examined relationships between APRN scores & certification outcomes for graduates
  - Based on students’ self-reported results
  - Verified by Boards of Nursing’s licensing recognition as an APRN
Results

• **Timeline - Initial exam development**
  • **Item Banks – first developed in Summer 2004**
    • Fall 2004 – started with ETSU pilot
    • Spring 2005 & Summer 2005 – TAMUCC & ETSU pilots
    • Fall 2005 – 4 additional programs participated
      • Public and private institutions included
      • Students tested in 5 states --- Illinois, Minnesota, Missouri, Tennessee, and Texas
  
• **Sample – Students in the APRN Exam pilots**
  • FNP = 158 (shared items with ANP; total uses > 150)
  • ANP = 12 (shared items with FNP; total uses > 150)
Results

• **Item Analysis Data**

• **Reliabilities for APRN Exams**
  – **KR-20 values**
    • FNP: 0.978
    • ANP: 0.962

• **Mean HESI Scores for each exam**
  • FNP = 816
  • ANP = 991
Plans for 2010

• Survey Deans/Directors about certification pass rates for predictive accuracy studies with certification

• Exams reflect the most recent certifying Blueprints

• Recruit new item writers to expand all item banks

• Respond to faculty requests for new specialty exams
Plans for 2010

• **Continue piloting exams**
  – Acute Care Nurse Practitioner – Adult
  – Nurse Executive

• **Develop APRN exams for:**
  – Acute Care Nurse Practitioner – Pediatric
  – Comprehensive “3 P” exam
    • Pathophysiology
    • Pharmocotherapeutics
    • Physical diagnosis
Thank you!

Questions

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