# Comparing Grade Point Averages and Standardized Test Scores as Predictors of Successful Completion of Undergraduate Baccalaureate Program

Peggy Hernandez MSN EdD APRN PMHCNS-BC CNE

Assistant Professor of Nursing

College of Health Professions

Wichita State University

Wichita KS USA

peggy.hernandez@wichita.edu

WICHITA STATE UNIVERSITY

# Research Site

- Small, private school in mid-west USA

- 50% acceptance rate of qualified applicants

- High NCLEX-RN pass rates (92-100%)

- Minimal admission criteria
  - GPA ≥ 2.75
  - TEAS composite cut-score ≥ 68%
  - Pre-requisites with minimum of grade C or better

WICHITA STATE UNIVERSITY

# Problem

- More qualified student applicants than able to accommodate

- Shortage of qualified faculty, classroom and clinical spaces

- Only about 1/3 of students admitted will succeed

- Best practices in selecting nursing school applicants?

- Local, national, and global relevance

WSU WICHITA STATE UNIVERSITY

# Literature Review Summary
## Best practices in nursing school admission processes

1. Qualitative studies abound …age, race, ethnicity, marital status, self-efficacy, social support, finances, previous degree, EAL, etc. with disparate methods and results

2. Fewer quantitative studies, focus on GPA, nursing course grades & licensure with disparate methods and results

3. Many point to science prep and science preadmission exam scores as significant correlates of nursing school success

4. Most unsuccessful nursing students leave in first or second semesters of nursing program

5. Little is known about how unsuccessful students compare to others early in nursing program*

WICHITA STATE UNIVERSITY

# Research Question 1

To what extent are quantitative admission criteria effective as predictors of success in this population?

- 1A. How do quantitative admission criteria correlate with the variables that are indicative of success?

- 1B. How do quantitative admission criteria correlate with the variables that indicate lack of success?

(correlations)

WICHITA STATE
UNIVERSITY

# Research Thematic Question 2

Which **predictor** variables (GPA, preadmission TEAS Composite, and section score data)

**best predict**

**outcome** variables signifying success (exam scores on fundamental and RN predictor content mastery exams, graduation, and licensure)?

(regression analyses)

WICHITA STATE UNIVERSITY

# Research Question 2 Sub-sections

Which of the TEAS sections (reading, science, math, and English language usage) most closely correlate with student success as measured by the Fundamentals competency level ≥ 2?*

Which of the TEAS sections (reading, science, math, and English language usage) most closely correlate with student success as  measured by ≥ 80% RN Predictor probability taken prior to graduation?*

 How do the TEAS scores and GPAs of successful and unsuccessful students compare?**

*multivariate regression analyses

** *t*-test

WICHITA STATE UNIVERSITY

# Quantitative Data Defined

- Pre-admission GPA

- TEAS composite and section scores

- Fundamentals of Nursing Content Mastery scores (or proficiency level when available)

- RN Comprehensive Predictor Scores (or probability estimate, when available)

2015 Biennium STTI

WICHITA STATE UNIVERSITY

# Definitions of Dichotomous Variables

- "Successful students" defined as those who
  - Passed all nursing courses with no repeats
  - Achieved institutional benchmarks on standardized testing through Assessment Technologies Institute (ATI) on Fundamentals and RN Predictor tests
  - Graduated
  - Passed NCLEX-RN on the first try

- "Not successful" = failed one or more courses, dismissed or left, did not graduate, did not pass NCLEX-RN on first try

WICHITA STATE UNIVERSITY

# Methodology

- Descriptive, non-experimental, retrospective study of extant quantitative cognitive data

- Correlations, regressions, ANOVA and $t$-tests analysis of data collected over six years

- IRB approval as exempt

- Sample size total (n=246)

2015 Biennium STTI

WICHITA STATE UNIVERSITY

# Results Summary

- Both GPA and test scores are valuable correlates of student outcomes.

- Standardized test scores outperformed GPA on nearly all success indicators in this sample.

- TEAS Composite, Science and Reading sections scores were significantly the best predictors of success variables (p=.001)

2015 Biennium STTI

WICHITA STATE UNIVERSITY

# Results Summary

How do the TEAS scores and GPAs of successful and unsuccessful students compare? All of the predictor variables significantly predict at least some of the outcome variables in the following order:

1. TEAS Composite
2. TEAS Science
3. TEAS Mathematics, English, & Reading
4. GPA

WICHITA STATE UNIVERSITY

# Limitations

- Data are unique to one population of students at one school with limited generalizability

- Face-to-face instructional delivery method

- Changes in curriculum, faculty, admission committee

- Changes in ranking procedures using GPA & TEAS

- 0-50% ATI vs GPA weighting

2015 Biennium STTI

WICHITA STATE UNIVERSITY

# Discussion

- Schools admit at different times, i.e. freshman, sophomore, junior year

- Nursing programs vary in length from 12 months to 4 years

- Some schools use TEAS and similar instruments <u>after</u> admission

- Financial support of tutors, remediation specialists and faculty "success" mentors vary

- Robust nursing education research needed

WICHITA STATE UNIVERSITY

# Conclusions

- GPAs are a "soft" quantitative variable
- GPAs are not standardized
- GPAs are affected by many variables including:
  - Variations in course rigor, test development and statistical analyses
  - How tests are developed; T/F, matching questions, essay
  - Group projects
  - Extra credit may inflate course grades
  - Instructors may equate grades with evaluations affecting tenure and promotion decisions

WICHITA STATE UNIVERSITY

# Recommendations for Schools of Nursing

- Use some form of standardized testing measure
- Evaluate local data
  - 4.0 students **do** fail out of nursing programs
  - Note correlation between specific pre-requisite courses and science sub scores i.e. chemistry, anatomy and physiology. Example
- Determine cut scores for entry exam
- Determine benchmarks using available info
- Determine relative weights of quantitative preadmission criteria based on local data

WICHITA STATE UNIVERSITY

# Recommendations for Schools of Nursing

- Prioritize admission variables

- Value science course grades and exam scores

- NCLEX is job #1

- GPA shows history of academic success

- Look for repeated pre-requisites

- Are failing grades removed from GPA computation?

- Best predictor of behavior is history

- Look at all standardized exams, i.e. ACT, SAT

WSU WICHITA STATE UNIVERSITY

# Recommendations for Further Research

- Standardize computation of retention, attrition, and graduation rates

- Retention rates and NCLEX pass rates could be combined as a measure of program quality

- Psychometric comparison of available pre-admission tests currently available
  - Validity
  - Reliability
  - Internal consistency
  - Exam bias

WICHITA STATE UNIVERSITY

# Recommendations for Further Research

- Calculate costs of unsuccessful students at local schools of nursing

- Replicate this study or design another that is replicable

- Determine cost/benefit analysis of additional products or support staff to improve student success

WICHITA STATE UNIVERSITY

# Consider the Cost/Benefit of Standardized Testing Program

- The costs of standardized tests are easily offset by the costs of tuition dollars and faculty salaries wasted when nursing students are academically dismissed or otherwise unsuccessful.

- Student loans must be repaid whether or not students are successful.

WICHITA STATE UNIVERSITY

# Selected References

- Assessment Technologies Institute. (n.d.a). *Pre-admission TEAS*. Retrieved from http://www.atitesting.com/global/faculty/pre-admission-teas.aspx

- Kenny, C. J. (2010). *Meta-analysis of entrance standards for undergraduate nursing and selected allied health programs*. (Unpublished doctoral dissertation). Kent State University, Kent, OH.

- Newton, S. E., Smith, L. H., & Moore, G. (2007). Baccalaureate nursing program admission policies: Promoting success or facilitating failure? *Journal of Nursing Education*, *46*(10), 439-444.

- Peterson, V.M. (2009). Predictors of academic success in first semester baccalaureate nursing students. *Social Behavior and Personality 37*(3), 411-418.

- Roa, M., Shipman,D., Hooten, J., & Carter, M. (2011). The cost of NCLEX-RN failure. *Nurse Education Today*, *31*(4), 373-377.

- Wolkowitz, A., and Kelley, J. A. (2010). Academic predictors of success in a nursing program. *Journal of Nursing Education, 49*(9), 498-503.

WICHITA STATE UNIVERSITY

# Thanks and question time

- **Thanks for your attention!**

- **Questions, please???**

- **For more information, please contact me.**

**Peggy Hernandez MSN EdD APRN PMHCNS-BC CNE**

**peggy.hernandez@wichita.edu**

WICHITA STATE UNIVERSITY