A First Look at Undergraduate Nursing Students' Knowledge of Evidence-based Practice Using the Evidence-based Practice Knowledge Assessment in Nursing

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Current State of Measurement in Nursing

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The discipline heavily relies on:

- Subjective Instruments that measure proxy indicators of knowledge
  - self-efficacy, attitudes, beliefs, and perceptions (Meyer et al., 2007; Nagy et al., 2001; Upton & Upton, 2006)

- Instruments with limited psychometric testing in education, practice, and research

Concerns With Subjective Measures

The quantitative relationship, between self-reports of competence and objective measures of performance, is generally < r = .3 and in a number of studies, inverse relationships have been observed (Davis et al., 2006; Dunning et al., 2003; Ehrlinger et al., 2008).

Self-assessments are mediated by emotion, cognitive bias, culture, and other poorly understood factors (Paulhus & Vazire, 2007).

Nursing Desperately Needs Objective Measures

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With the slow rate of adoption of EBP in clinical environments, an objective measure is clearly needed to determine what innovations are effective in advancing and sustaining the EBP knowledge of nurses.

The Evidence-based Practice Knowledge Assessment in Nursing (EKAN) instrument can be used to objectively evaluate EBP knowledge in (student) nurses:

- short-term, cross-sectional measurement (pre- and post- type measurements); and/or
- longitudinal measurement, tracking EBP knowledge development over time.

EKAN Development

Seven subject-matter experts reviewed the candidate items, culminating in a final pool of 75 items (S-CVI = .94).

Rasch modeling (1PL item-response theory [IRT]) with jMetrick (Meyer, 2014) was used to evaluate psychometric performance on the theorized unidimensional trait of EBP knowledge.

Candidate items were tested in *N* = 200 baccalaureate nursing students from two large Midwestern US nursing education programs.

Subjects were *M* = 24.8 years old (*SD* = 5.3) and 90.5% female.

Pilot Results

For the final, 20-item EKAN

- mean difficulty was .19 (Range -2.0 – 2.8)
- weighted mean square infit was 1.01 (Range .95 – 1.06)
- standardized weighted mean square infit was .33 (Range -.7 – 1.6)
- unweighted mean squares outfit was 1.02 (Range .93 – 1.14)
- standardized unweighted mean squares outfit was .34 (Range -1.08 – 2.00)

Pilot Results

For the scale

- Item separation index was 7.05
- Person separation index was 1.66

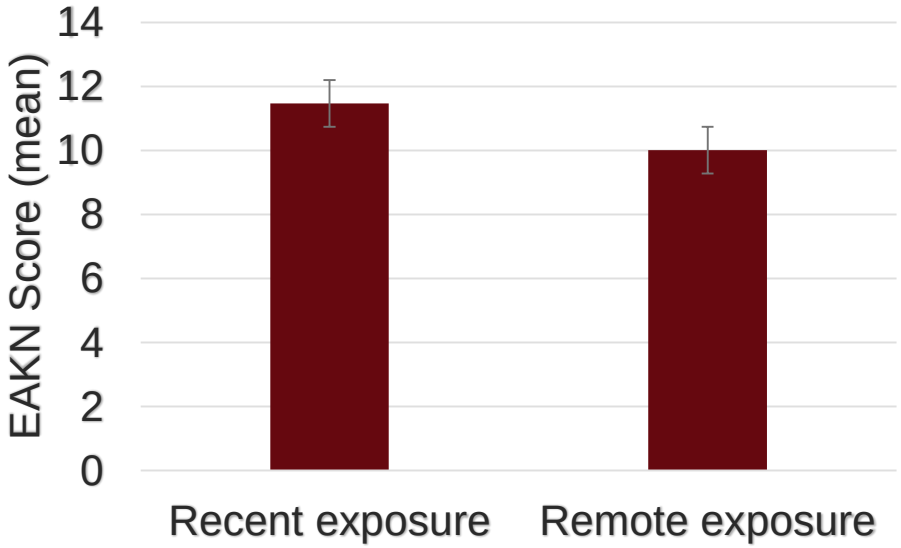
Item reliability was .98; Person reliability was .66.

- These values reflect strong item performance but highlight trait homogeneity in the subject pool (Meyer, 2014; Linacre, 2012).

Pilot Results

EKAN scores ranged from 5 – 16 (of a possible 20); *M* = 10.4 (*SD* = 2.31).

A known-group effect was observed when comparing scores from subjects recently exposed to vs. unexposed to prior EBP, research, or statistical coursework (*M* = 10.01 vs. 11.47; t = -2.53, *p* = .01).



Pilot Results

The correlation between responses to the attitude statement, "*I am sure I can deliver evidence-based care*", measured on a 5-point Likert-type scale, and total EKAN scores was not statistically significant ($r = .135$, $p = .057$).

	EKAN Mean Score	SD	*n*
Strongly disagree	8.67	2.08	3
Disagree	10.00	1.63	7
Neither agree or disagree	10.19	2.32	54
Agree	10.46	2.42	111
Strongly Agree	11.00	1.89	25
Total	10.41	2.31	200

Conclusions

The 20-item EKAN showed strong evidence of:

- trait unidimensionality; and
- desirable scale psychometrics when evaluated using the Rasch model.

Additional studies are in progress among groups possessing a greater range of EBP knowledge to provide additional validity evidence.

Similar to findings from other fields, the relationship between a self-reported confidence measure and an objective measure of knowledge was small and statistically non-significant.

The EKAN is an efficient, objective EBP knowledge measure available to educators and researchers in practice and academe.

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