Psychometric Testing of the Presence of Nursing Scale in a Magnet Hospital

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Nursing presence capability is a unique professional skill of practicing nurses. Nursing presence is an interpersonally-experienced phenomenon in which a nurse chooses to expend him/herself on the behalf of a unique patient. The resulting provision of specific types of nursing care (physical, mental, psychological, spiritual, and social) is based on the deep understanding of individual patient need derived during the nurse and patient interaction. Interactional quality of nursing communication skill may be diminishing due to technological advances which have decreased human-to-human direct communication.

Better understanding of this phenomenon along with methods of measurement is needed to be able to teach nurses and future nursing students this skill. Nursing presence has traditionally been deemed a phenomenon that is elusive to full understanding and measurement due to its mystical quality. Multiple concept analyses have illuminated pre-conditions, attributes and outcomes of nursing presence, however only three instruments have been developed to measure nursing presence.

The Measurement of Presence Scale (MOPS) (Hines, 1991) and its derivative visual analog scale (MOPVAS) (Foust, 1998) both measured nursing presence from a nurse perspective with no subsequent research. Initial factor analysis resulted in nine subscales for MOPS that varied when the MOPS was retested in the second study. The Presence of Nursing Scale (PONS) was recently developed to measure nursing presence from the patient’s perspective in three U.S. acute care institutions (Hansbrough, 2011; Kostovich, 2002; Kostovich, 2012). Psychometric testing of PONS using exploratory factor analysis had not been reported at the time of this study.

This report documents research conducted in a large southeastern academic medical center using the PONS-Revised. A sample of 122 hospitalized, adult inpatients from ten acute-care nursing units were surveyed to conduct the first psychometric testing of this revised instrument using exploratory factor analyses. Seven research questions were explored to evaluate potential correlations between the PONS-R, patient satisfaction, nursing unit-specific workforce factors and patient demographic factors. Historic and concurrent patient satisfaction data using four nursing sensitive measures of the HCAHPS (Hospital Consumer Assessment of Healthcare Providers and Systems) standardized instrument were compared with PONS-R. Nursing unit-specific workforce factors including average nurse experiential level, registered nurse age, academic preparation levels of unit nursing workforce, and registered nurse turnover were compared with PONS-R.

Results:

Internal consistency reliability of the PONS-R was established with the highest to date internal consistency rating (r = .974) for related instruments. Test-retest reliability was established with a sample of 21 patients 48 hours after initial test with both parametric and non-parametric analyses (Pearson’ r = .791, and Spearman’s rho = .872, both statistically significant at the .01 level). Construct validity was evaluated with comparison of PONS-R summed scores to nurse HCAHPS measures with Pearson’s r = .736 and correlation highly significant at the .01 level. Divergent validity was verified by evaluating a small sample of thirteen from the unit with historically poorest performance on nursing HCAHPS measures. A statistically significant negative difference was found in both HCAHPS historical average score and patient-specific average HCAHPS score based on independent t-tests between divergent sample and remaining sample. The magnitude of the differences was large (eta squared = .92) indicating a very large effect size (historical nurse HCAHPS) and between moderate and large effect size (eta squared = .11) for concurrent nurse HCAHPS. A statistically significant negative difference was likewise found on PONS-R.
summed scores between the divergent unit sample and the remaining sample with poor performance unit [M=93.75, SD=16.47] and remaining units [M=108.59, SD=15.46; t(112)= -3.12, p=.002]. The magnitude of the differences was moderate (eta squared = .08).

Exploratory factor analysis revealed one solid factor using eigenvalues over one following Varimax rotation and parallel analysis indicating the PONS-R instrument was measuring one concept. Using Oblimin rotation with two factors forced revealed a weak secondary factor in which items were centered on the concept of intimacy (physical and emotional closeness, and spirituality, suggesting the need for inclusion of additional items and a larger sample size to further psychometrically develop the instrument.

Correlations were found between PONS-R and unit-workforce factors which were not anticipated::
Average RN experience level to PONS-R: r = -.185 (negative correlation significant at the .05 level).
Average RN age to PONS-R: r = -.218 (negative correlation). Percentage of Associate degree nurses to PONS-R: r = -.212, positive correlation, statistically significant at the .05 level. Percentage of Bachelor's degree nurses to PONS-R: r = -.212, negative correlation, statistically significant at the .05 level.
Percentable of Master's degree nurses to PONS-R: r = -.77, minimal negative correlation, not significant.
Annual RN turnover rate to PONS-R: r = -.048, minimal negative correlation. No statistically significant correlations were found for PONS-R in relation to patient demographics including age, race/ethnic background, gender, state of residence, state region, household annual income, or employment status. Finally, no statistically significant correlations were found between nursing presence and patient-specific variables such as estimated number of RN that provided care, nor the length of stay on the units.

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Keywords:
nursing presence, patient satisfaction and psychometrics

References:


Abstract Summary:
This educational activity will describe the process by which psychometric testing was completed on the Presence of Nursing Scale - Revised. Includes reliability and validity measures, comparative analysis
between four nurse-sensitive items from HCAHPS surveys. Exploratory factor analysis is described and findings for this instrument will be reviewed.

Content Outline:

1. I. Introduction
   1. A. Nursing Presence
   2. B. Nursing Presence Capability
   3. C. Nursing Presence Knowledge/Origins
   4. D. Concept Analyses & Development
   5. E. Theoretical Frameworks
      1. a. Transformative Nursing Presence model (Iseminger, et al., 2009)
      2. b. Mid-Range Theory of Nursing Presence (McMahon & Christopher, 2011)

2. II. State of the Science
   1. A. Inpatient Qualitative Research
   2. B. Inpatient Quantitative Research
   3. C. Instrumentation
      2. Presence of Nursing Scale (PONS) – patient perception (Kostovich, 2002; Hansbrough, 2011)

3. III. Study Design & Timeframe
4. Non-experimental, correlational, quantitative research design with two aspects:
   1) instrument psychometrics, and 2) inpatient study using a minimally revised version of the Presence of Nursing Scale (PONS-R) to explore correlations within the work environment.

Conducted over 4 months (May 2015 – August 2015)

1. IV. Study Aims
   2. B. First exploratory factor analysis of the revised instrument.
   3. C. Compare factors and any resultant subscales to Mid-Range Theory of Nursing Presence attributes, concepts
   4. D. Compare four nurse-sensitive measures of HCAHPS (Hospital Consumer Assessment of Healthcare Providers and Systems) patient satisfaction (historic & concurrent) with PONS-R data to evaluate for construct validity. – (value based purchasing components)
   5. E. Compare unit-specific nursing workforce demographic data with PONS-R results to evaluate for specific associations nursing presence and key nursing educational and/or experience factors.

2. V. Setting
   Tertiary care Magnet hospital in Southeast

3. VI. Sample and Data Collection
   1. A. Convenience sample of adult hospitalized, inpatients in 10 non-intensive care units
      Sample Size: 122 subjects
   2. B. Test-retest reliability - resampled after 2 days = 21 subjects
   3. C. Divergent validity –sample of poorest HCAHPS unit = 13 subjects
   4. D. Patient Recruitment & Inclusion
      1. Adult patients (18 years and older);
      2. Present on unit for at least 24 hours
      3. Absence of certain physical conditions (i.e. unconscious, dementia, vision difficulties, evidence of potential neurological deficits/diagnoses, sedation, etc.)

4. VII. The Instruments
1. A. Patient Demographic and Satisfaction form (designed by the PI) – contains four nursing-sensitive HCAHPS satisfaction items.

2. B. Presence of Nursing Scale (PONS) – Revised (minus the traditional patient satisfaction question).

3. C. Historical data on four nursing-sensitive HCAHPS satisfaction items obtained from hospital Quality department for comparison purposes.

4. D. Unit-Specific Nursing Workforce Data Collection Tool – obtained through the hospital Nursing Research dept.

5. VIII. Psychometric Data Analysis
   1. A. RQ1: What is the internal consistency and construct validity of the Presence of Nursing Scale (PONS-R)?

   PONS-R: $\alpha = .974$ (N = 114).

   HCAHPS: $\alpha = 797$ (N = 120).

   Test-retest reliability: $r = .791$ and Spearman’s rho = .872, both statistically significant at the .01 level (n = 21).


   1. B. RQ2: How does reliability and validity evidence of the PONS-R in this sample compare to prior studies using the PONS instrument?

   2. C. RQ3: What factors are identified by conducting exploratory factor analysis?

   Methods EFA: Principal component analysis using VARIMAX and Oblimin rotations. Number of factors taken as the number of eigenvalues over 1 from scree plot evaluation and parallel analysis. Factor loadings and intra-factor correlations calculated.

   Varimax Rotation & Parallel Analysis

   Oblimin Rotation (2-factor forced)

   1. D. RQ4: Are resultant subscales and factors congruent with the Mid-Range Theory of Nursing Presence? Loose identification of a secondary factor termed (intimacy factor)

      Included these items from PONS-R:

      1. physical comforting
      2. emotional comforting
      3. understanding feelings
      4. talking as a friend
      5. meeting spiritual needs

   E. RQ5: How do unit-specific data from HCAHPS patient satisfaction compare to Presence of
Nursing Scale data during the study period?

Concurrent Nurse HCAHPS to PONS-R:

n = 113. r = .736 (highly correlated) statistically significant at the .01 level (two-tailed).

Historical Nurse HCAHPS to PONS-R: n = 114. r = .084 (absence of correlation)

Historical Nurse HCAHPS to Concurrent HCAHPS: n = 120. r = .178 (absence of correlation)

1. IX. Limitations of the Study
2. X. Discussion/Implications
3. XI. Future Research
4. XII. References

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