PATIENT CARE TECHNOLOGY: WHERE THE PATIENT MEETS THE NURSE

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Disclosure

- The author has no conflict of interest to declare.

Learner Objectives

- The learner will be able to describe how perceptions of caring and nurse presence vary by patient demographics.
- The learner will be able to discuss how technological device use connotes a sense of safety, learning, and balance for the nurse and patient.

Acknowledgements

- Sharp HealthCare for their presentation support and University of San Diego for their research support.
BACKGROUND & SIGNIFICANCE

Nursing’s historical focus
- Holistic, humanistic relationship

Current state:
- Explosion of technological device use
- More connected to devices than each other
- “Technological imperative”
  (Weitz, 2013, p. 252)
- Care delivery focus: patient-centered care
  (Kitson, Marshall, Bassett & Zeitz, 2013)

Challenge:
- Integration of technology into care delivery process
  - Allure and presence
    (Barnard & Sandelowski, 2001)
- Paradoxical view:
  - Safety and reassurance vs dependency and distraction
    (Kongsuwan & Locsin, 2011; Locsin & Kongsuwan, 2013; Price, 2013; Stayt, Seers, & Tutton, 2015; Tunlind, Granström, & Engström, 2015)
Explore how patient care technology influences the interpersonal relationship between the patient and the nurse during care delivery in the acute care setting.
CONCEPTUAL MODEL ➔ STUDY VARIABLES

- Locsin* Technological Competency as Caring
- Swanson** The Structure of Caring
- Kostovich*** Model of Nursing Presence

RESEARCH AIMS

- To quantitatively describe the levels of nurse technological competency as caring, patient perceptions of caring, and patient perceptions of nurse presence.

- To examine the relationships among demographic variables and study variables.

- To qualitatively explore the perceptions of the nurse and patient of technological device use in care delivery.
**METHODOLOGY**

Research Design
- Mixed methods

Sample
- Quantitative convenience sample
  - 112 nurses
  - 115 patients
- Qualitative purposive sample
  - 23 nurses
  - 15 patients

Setting
### Instruments

<table>
<thead>
<tr>
<th>Variable</th>
<th>Instrument</th>
<th>Description</th>
<th>Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technological Competency as Caring</td>
<td>Technological Competency as Caring in Nursing (TCCNI)(^1)</td>
<td>25 items 0-100mm dichotomous visual analogue scale</td>
<td>(\alpha = .081)</td>
</tr>
<tr>
<td>Caring</td>
<td>Caring Behaviors Inventory (CBI - 24)(^2)</td>
<td>24 items 6 point Likert scale 4 subscales</td>
<td>(\alpha = .096)</td>
</tr>
<tr>
<td>Presence</td>
<td>Presence of Nursing Scale (PONS)(^3)</td>
<td>25 items 5 point Likert scale</td>
<td>(\alpha = .095)</td>
</tr>
</tbody>
</table>

\(^1\)Locsin, 1999; Parcells & Locsin, 2011; \(^2\)Wu, Larrabee, & Putman, 2006; \(^3\)Kostovich, 2012
<table>
<thead>
<tr>
<th>Participant</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient</td>
<td>Do you remember a time when you were connected to a piece of equipment? Tell me about it. Do you remember a time when your IV was beeping? Tell me about it. What were the actions of the nurse? How did you perceive the actions of the nurse? What occurred? What was the response of the nurse?</td>
</tr>
<tr>
<td>Nurse</td>
<td>Nurses are asked to work with more and more technological devices. What devices do you work with most frequently? How do you use the device in delivering care? Do you perceive the device as a help or hindrance? Tell me more. What do you do when a device alarm goes off? Tell me about your last experience.</td>
</tr>
</tbody>
</table>
DATA ANALYSIS

- Quantitative
  - SPSS, Version 22

- Qualitative
  - Thematic coding
**NURSE: DEMOGRAPHICS & QUANTITATIVE RESULTS**

- Nurses rated their technological competency as caring as high
  \[ M = 82.72, \ SD = 7.56 \]

- Race: ANOVA indicated significant differences among groups
  \[ F[2,109] = 6.600, \ p = 0.004 \]

- Post hoc: scores higher in the Asian group relative to the white group, \( p = .002 \)
  - Asian: \( M = 86.04, \ SD = 5.41 \)
  - White: \( M = 80.57, \ SD = 7.84 \)

<table>
<thead>
<tr>
<th>Demographic Variable</th>
<th>n=112 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age in years</strong></td>
<td></td>
</tr>
<tr>
<td>Mean SD</td>
<td>34.88</td>
</tr>
<tr>
<td>Median</td>
<td>32.00</td>
</tr>
<tr>
<td></td>
<td>9.44</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>94 (83.9)</td>
</tr>
<tr>
<td>Male</td>
<td>18 (16.1)</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>63 (56.3)</td>
</tr>
<tr>
<td>Asian</td>
<td>33 (29.5)</td>
</tr>
<tr>
<td>Two or more Races</td>
<td>4 (3.6)</td>
</tr>
<tr>
<td>Black/African American</td>
<td>4 (3.6)</td>
</tr>
<tr>
<td>Native Hawaiian/Pacific Islander</td>
<td>3 (2.7)</td>
</tr>
<tr>
<td>Other</td>
<td>5 (4.5)</td>
</tr>
<tr>
<td><strong>Highest Nursing Degree</strong></td>
<td></td>
</tr>
<tr>
<td>Associate Degree</td>
<td>17 (15.3)</td>
</tr>
<tr>
<td>Bachelor’s Degree</td>
<td>89 (80.2)</td>
</tr>
<tr>
<td>Master’s Degree</td>
<td>5 (4.5)</td>
</tr>
<tr>
<td><strong>Years of Nursing Experience</strong></td>
<td></td>
</tr>
<tr>
<td>Mean SD</td>
<td>9.42</td>
</tr>
<tr>
<td>Median SD</td>
<td>6.00</td>
</tr>
<tr>
<td></td>
<td>9.69</td>
</tr>
</tbody>
</table>
Patients rated overall caring behaviors high, between almost always to always:  
\[ M = 5.44, \; SD = .58 \]

Subscales:
- Highest: Professional knowledge and skill
- Lowest: Positive connectedness

Patient perceptions of nurse presence were high, scoring these behaviors as occurring frequently to always:  
\[ M = 115.82, \; SD = 10.55 \]
**Demographic Variable** | **n=87 (%)**
--- | ---
**Age in years** | Mean 58.94, Median 60.00, SD 15.57
**Gender** | Female 40 (46.0), Male 47 (54.0)
**Experiencing Pain** | Yes 34 (39.1), No 53 (60.9)
  | Mean 4.50, Median 4.00, SD 2.25

### Presence:
- Age: $r_s(85) = .280, p = .006$

### Caring:
- Gender: Male patients rated overall caring higher than females
  - $M = 5.56 (SD = .47) vs M = 5.29 (SD = .66), p = .040$
- Pain: Patients in pain rated positive connectedness lower than those not in pain
  - $M = 4.94 (SD = .92) vs M = 5.30 (SD = .74), p = .047$
QUALITATIVE RESULTS

Patient:
- Safety net
- Devices
  - care efficiencies
  - easier
  - faster
- Connected to device

Nurse:
- Safety net
- Devices
  - malfunctioning
  - troubleshooting
  - learning
- Utilized device
STUDY IMPLICATIONS

Nursing Education

• Need for relevant training and support in live setting
• Teaching integration of caring and presence attributes with technology in academic setting

Nursing Practice

• Pain relief – positive connectedness
• Noise
  • Inherent in operating system
  • Timely response to alarms
  • alarm fatigue
  • alarm burden
  • patient response/intercession with alarm
LIMITATION AND STRENGTHS

Limitations

- Single site
- Convenience sampling
- Self selection for qualitative interviews
- Non-response bias?

Strengths

- Mixed methods
- Comparison of two constructs from patient perspective
CONCLUSIONS

- Attributes of technological competency as caring, caring, and nurse presence rated high
- Demographic factors influenced scores
  - Race
  - Gender, age, pain
- Safety, learning, and balance were qualitative themes
The increasing use of technology in healthcare imbues an interaction with a presence. That presence can be perceived as positive or negative; what is key is how the technology is explained, operationalized, and integrated into patient care.

“Technologies, in every generation, present opportunities to reflect on our values and direction.”

Turkle (2011, p. 19)
REFERENCES


REFERENCES


