Patient Complexity Factors & Their Influence on Nurses’ Perception of Staffing Adequacy

Margaret Duffy, PhD, RN, NEA-BC

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Presenter Disclosure Information

- PI: Margaret Duffy, PhD, RN, NEA-BC
- Disclosure Information: No conflict of interest or sponsorship to disclose for this presentation
- Learning Objectives: At the completion of this session, the learner will be able to:
  1. Analyze the findings of a quantitative research study to identify patient-specific complexity factors that influence nurses’ perception of staffing adequacy.
  2. Describe patient-level factors identified through research that need consideration in nurse staffing plans.
THE NUMBERS JUST DON’T ADD UP
WHICH PATIENT COMPLEXITY FACTORS, IF ANY, PREDICT THE LIKELIHOOD THAT NURSES WILL REPORT INADEQUATE STAFFING?

Main Research Question
Three Study Aims

1. Determine patient complexity factors that predict nurses’ perception of inadequate staffing

2. Examine the effect of staffing based on an automated outcomes-driven acuity software system on nurses’ perception of staffing adequacy

3. Determine if uncaptured patient complexity factor data affects nurses’ perception of staffing adequacy
Significance of the Study

• Florence Nightingale (1863) identified staffing patterns that would enhance nurses’ ability to provide quality nursing care
  • Cost savings for staffing hospitals with 30 bed wards vs. 9 bed wards was predicted to be £207,775 ($33,073,832 in 2016 US dollars)

• Previous studies have not accounted for differences in patient demands for nursing care and have been unable to allocate staffing directly to individual patients.

• This study identified patient factors that impact nurses’ perception of staffing adequacy.
Review of Literature

Patient Complexity Factors selected for this study:

• Obesity (BMI > 30)
• Limited English Proficiency
• Family Demands
• Disruptive Behavior
• Continuous Observation
• Restraints
Conceptual Framework
Methods

• Complex predictive research design
• Repeated measures used to examine influence of patient complexity factors on nurses’ perception of staffing adequacy at the unit-level
• Unit of analysis: shift worked
Sample Size

• 328 shifts collected
• 26 RNs from 2 medical telemetry units collected data of patient complexity factors and “Staffing Adequacy Perception – VAS”
• 1605 patients
• 48 RNs completed data for psychometric testing of the “Staffing Adequacy Perception – VAS” measure
Instruments: Independent Variables

- Patient complexity factors were recorded as present/not present by nurse participants
- Patient acuity scores and 3 nurse staffing variables were retrieved by the PI through the Outcomes-Driven Acuity software system
Instruments: Dependent Variables

- Perception of Staffing Adequacy was measured by an investigator developed Visual Analog Scale
- Convergent validity was evaluated with the “Practice Environment Scale of the Nursing Work Index”
- Significant, positive correlation between the two variables \( r = .61, p < .001 \)
Data Collection

• “Identification of Patient Complexity Factors/Staffing Adequacy Perception – VAS” forms were completed for 14 consecutive shifts over a 30-day period

• Patient Complexity Factors:
  • Constant observation, behavioral issues, family demands, obesity, restraint usage, and LEP

• Patient Characteristics:
  • Patient acuity, age, gender

• Nurse staffing variables:
  • Nurse-to-patient ratio, RN skill mix, and assigned care hours

• Two new variables created by the PI:
  • Percent of Assigned Care Hours
  • Sum of all patient complexity factors
Nurse Participants

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Baseline Sample N=48</th>
<th>Shift Sample N=26</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-hour Shifts</td>
<td>90%</td>
<td></td>
</tr>
<tr>
<td>Bachelor's Degree</td>
<td>80%</td>
<td></td>
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<tr>
<td>Mean Nursing Experience</td>
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</tbody>
</table>
Research Question

Stepwise Multiple Regression

Disruptive Behavior and Family Demands explain 10% of the variance in perception of staffing adequacy.
Findings

Study Aim 1:

• Low negative correlation between Staffing Adequacy Perception – VAS and disruptive behavior (-.274) and family demands (-.186)
• Moderate negative correlation between Staffing Adequacy Perception – VAS and shift sum of complexity factors (-.418)
Findings

Study Aim 2:
• No correlation found between patient acuity, staffing variables, and Staffing Adequacy Perception – VAS

Study Aim 3:
• No relationship between uncaptured data from the automated staffing system and Staffing Adequacy Perception - VAS
Patient Complexity Factor Properties

**Intensity**: Strength of the factor
- Disruptive behavior can be highly intense
- Need for translation for an LEP patient increases intensity for effective communication

**Duration**: Length of time patient complexity factor affects the nurses’ work
- Restraints may be needed for an entire shift

**Predictability**: The capacity to plan
- Obesity can be predictable because weight is known and functional status can be assessed and does not vary appreciably on a shift-by-shift basis
Nurses’ Perception of Staffing Adequacy

- Nurses need different types of support to meet patient needs
- Alleviation – lessening the burden on workflow
- Concept of alleviation helps explain the interaction of patient complexity properties and their effect on perception of staffing adequacy
- Nurses caring for patients with disruptive behavior or family demands work alone to meet patient/family needs
- Other 4 factors usually have assistance of some kind
Nurses’ Perception of Staffing Adequacy

- Negative correlation between the sum of all patient complexity factors for the RNs shift, and nurses’ perception of staffing adequacy demonstrates the additive effect of complexity factors
- Patient acuity was defined as different from patient complexity
- No significant relationship between patient acuity and nurses’ perception of staffing adequacy
Recommendations/Future Research

• Based on these findings, there is a need to strengthen individual RN ability to manage patients and family members initially and continue to develop their role on the healthcare team

• Relationship between reported episodes of missed nursing care and nurses’ perception of staffing adequacy

• Differences in nurses’ perception of staffing adequacy based on RN characteristics of education and experience

• A qualitative study that explores patient complexity factors in depth

• Explore patient complexity factors in different ways, such as using obesity with functional status vs. BMI

• Future research in the area of nurses’ perception of staffing might include use of a social desirability scale
Questions?