Nursing Resources, Workload, the Work Environment and Patient Outcomes

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Study Team

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Study Design

Cross-sectional
- 80 wards
- 19 hospitals
- 5920 patients
- 22,497 patient-days
- 13,442 nurse-shifts
- 2,278 nurse surveys
- (81% response rate)

Longitudinal
- Patient Data: 90 Hospitals; 10,132,245 ward stay records
- Nurse Payroll Data: 27 Hospitals; 286 Wards; 10,965,866 records

Data Analysis

Nursing Workload
- Ratios / NHPPD / Case Types

Skill Mix & Staffing
- Trends / Unit Variation

Patient Outcomes
- OPSNs / Falls / Medication Errors

Work Environment
- Nursing Work Index / Job Satisfaction / Violence / Leadership & Stability
1. Nursing Workload: Acuity & ALOS

- Patient acuity increased on medical and surgical units.
- ALOS across all 80 hospitals decreased from 78.3 to 77.6 hours across all case types.
  - Concentrating nursing care into a shorter period.

1. Patient Movements & Case Types

- Patient movements increased from an average of 2.10 units/wards per patient per episode to 2.26.
- The average number of patients per bed per day was 1.25.
- The average number of case types (DRGs) per nursing unit per year increased.
1. Nursing Hours Per Patient Day

- Nursing hours/patient day (NHPPD) were highly variable
  - Mean 5.1
  - Range 2.7 – 10.9
- On average approximately one additional hour of care per day, above that provided, was needed for each patient

1. Nurse: Patient Ratios

- All nursing staff
  - AM – Mean 3.8 (1.7 – 6.7)
  - PM – Mean 4.5 (1.8 – 12)
  - Night – Mean 8.2 (3.3 – 19)
- RN staff only
  - AM – Mean 5.7 (2.2 – 14.7)
  - PM – Mean 6.6 (2.2 – 21.3)
  - Night – Mean 11.8 (3.7 – 36)

- Nurses caring for > 8 patients vs < 4 results in a 30% increased chance of dying
- Their capacity to provide surveillance decreases as patient numbers increase

(Aiken et al. 2003)
2. Skill Mix & Staffing Trends

- Increased RNs in specialised units
  - ED, ICU
- Medical, surgical & general units
  - Maintained the same proportion of RN hours to patient hours
  - BUT patient movements and acuity have increased on those units

3. Patient Outcomes

- OPSN
  - Decubitus ulcers, gastrointestinal bleeding, sepsis, shock, physiologic/metabolic derangement, pulmonary failure and failure to rescue
    » (Needleman et al., 2001; 2002)

- Falls
- Medication errors
3. Patient Outcomes

A higher proportion of RNs resulted in decreased rates of:
- Decubitus ulcers, gastrointestinal bleeding, sepsis, shock, physiologic/metabolic derangement, pulmonary failure and failure to rescue
- Fewer falls

Fewer medication errors when:
- The proportion of planned admissions increased
- The proportion of nurses working on their “usual” ward increased
- A clinical nurse educator was present on the ward

Decreased adverse events (falls, medication errors, pneumonia) with:
- Specialist nursing support (CNCs)
- A clinical nurse educator on the ward
- More hours of housekeeping

4. The Work Environment

- Nursing work index (NWI-R)
  - Autonomy
    - Freedom to make important patient care and work decisions
  - Control over practice
    - Adequate support services allow me to spend time with my patients
  - Nurse-doctor relationships
    - Collaboration between nurses and physicians
  - Resource adequacy
    - Enough registered nurses on staff to provide quality patient care
  - Leadership
    - A nurse manager or immediate supervisor who is a good manager and leader
    » (Aiken & Patrician, 2000)

- Environmental Complexity Scale
  - Unexpected changes in acuity
  - Resequencing of work

- Nurse Demographics & Experience
- Job Satisfaction
- Violence
4. Satisfaction with the Job and Nursing

- Most nurses (67%) were satisfied with their current position and were not intending to leave
- Even more (72%) were satisfied with their chosen profession
- Higher levels of nurses’ satisfaction with the profession were linked to increased nurse autonomy and better relationships with doctors
- RNs were less satisfied with nursing than all other categories of nurse

4. Violence & Abuse

- During the last five shifts:
  - More than one-third of nurses reported experiencing recent emotional abuse and about 1 in 5 nurses reported threats of physical harm
  - More than one in 10 reported actual physical abuse
  - The source of violence was nearly exclusively patients and families
- **Patient outcomes:**
  - Patients were more likely to experience a medication error or other adverse outcomes where nurses experience physical violence or threat of violence
4. Tasks Delayed

- Nurses reported an average of 1.4 tasks delayed and 1.7 not done – per nurse per shift.
- Tasks delayed or not done were statistically linked to:
  - Increased unanticipated changes in patient acuity
  - Decreased resource adequacy (NWI-R)
  - Decreased specialist nursing support (CNSs)
- **Patient outcomes:**
  - Nurses delaying the completion of tasks linked to increased rates of adverse events.

4. Nursing Leadership

- Good nursing leadership was linked to:
  - Job satisfaction
  - Satisfaction with nursing
- Nurses who experienced good leadership on the ward:
  - Were less likely to intend to leave their current job.
4. Ward Stability

- Adverse patient outcomes increased as ward environments became less stable
  - Fewer permanent staff
  - Fewer nursing hours per patient day
  - Decreased perception of nurse leadership
  - No nurse educator support
  - More patients per bed
  - Higher levels of perception of violence

In Summary

- Skill mix (the proportion of RNs) is more critical to patient outcomes than hours of nursing provided
- Stability of the ward environment improves patient outcomes
- Good nursing leadership enhances the work environment
“My discovery, as a patient first on a medical service and later in surgery, is that the institution is held together, glued together, enabled to function as an organism, by the nurses and by nobody else…”

– Lewis Thomas, MD,

Publications from this Research


• Duffield, C. M., Roche, M. A., O'Brien-Pallas, L. L., Catling-Paull, C., & King, M. T. (2009). Staff satisfaction and retention and the role of the Nursing Unit Manager. Collegian, 16(1), 11-17.


