A Study of the Impact of Nursing Staff Mix Models and Organizational Change Strategies on Patient, System and Nurse Outcomes

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Key Implications for Decision Makers

Hospital downsizing and restructuring has led to changes in the nursing workforce. The nursing community has concerns about how this affects the quality of care that patients receive.

To successfully recruit and retain nurses, decision makers should pay attention to the concerns nurses have about their working environment and the quality of patient care.

Appropriate staff mix should be maintained, quality of care should be high, and attention should be paid to other factors in nurses’ work environments, because these all affect patient care.

Staff mix and nursing roles affect patients’ health significantly:
- More registered nursing and registered practical nurses on staff in medical, surgical, and obstetric units means better health for patients, less pain, and higher satisfaction for the care they receive.
- The lower the proportion of regulated staff, the higher the number of medication errors and wound infections.

The quality of care available affects both nurses and patients:
- The lower the nurses’ perception of the quality of care on their units, the higher their level of job pressure, job threat, and tension about their roles.
- Lower quality of care also leads to:
  ♦ more pain for medical-surgical and obstetrical patients
  ♦ more emergency room visits after discharge

Nurses’ job satisfaction is also directly related to patients’ satisfaction with nursing care. Some factors that lead to higher job satisfaction and lower levels of job pressure include:
- a positive perception of the nursing leadership in their units
- a clear understanding of what is expected of them (lack of role tension)
- good communication among nurses and between nurses and other disciplines
- more flexibility in using coordinated programming approaches
- being near to their patients to help provide continuity of care
- caring for patients whose illnesses required less complex care (“patient complexity”)

Changes in these areas will be seen in the short-term. Decision makers should realize that such an investment in nursing resources will likely have both short-term and long-term benefits for patients.
Executive Summary

The Nursing Staff Mix Outcomes Study was a province-wide research project that assessed the impact of changes in the composition and mix of nursing care staff in acute care teaching hospitals on patient, nurse and system outcomes.

The findings of this study have implications for nurses and their patients, and for decision makers who determine how to allocate resources. This study found that staff mix and nursing roles affect patients’ health significantly. Nurses’ job satisfaction is also directly related to patients’ satisfaction with nursing care. The study also found that the quality of care available affects both nurses and patients.

Staff Mix and Nurse Outcomes

More than sixty percent of the hospital units in this study used a staff mix of both regulated and unregulated staff, with most employing registered nurses and unregulated workers in their staff mix. The proportion of registered nurses varied across the hospital units examined, with the majority having registered nurses making up between 60 and 89% of their staff mix.

Most units in this study used total patient care as the patient care delivery model. Nurses’ perceptions of job pressure were higher on units that did not use this model. Contrary to our expectations, a patient care delivery model that provided lower continuity of care for patients contributed to nurses’ job satisfaction, while a care delivery model that promoted continuity contributed to their perceptions of job pressure.

The majority of findings related to the staff mix and nurse outcomes in this study underscore the importance of the environment in which nurses work. Almost all of the system quality variables were found to be important predictors of the nurse outcomes. The higher the nurses’ perception of the quality of the care provided on the unit, the
higher their level of job satisfaction. In contrast, the lower the nurses’ perception on the quality of the care provided on the unit, the higher their level of job pressure, job threat and role tension. At the unit level, the less that nurses were required to use *programming approaches for coordinating patient care*, the more satisfied they were. In contrast, at the individual level, nurses were more satisfied with using programming approaches for patient care, and reported higher levels of role tension if these approaches were not used. *Nursing leadership* was also found to have an important influence on all of the nurse outcomes in this study.

The lower the average *complexity of patients* on the unit, the higher nursing job satisfaction and the lower their perceptions of job pressure, job threat and role tension. As expected, patient complexity was also found to have an influence on *nursing hours cost*. Patients whose conditions were more complex used more nursing care resources. Staff mix models that included a *lower proportion of regulated staff* used more nursing hours in this study. As well, patient age and complexity were found to be predictors of nursing hours use within the medical-surgical patient population.

**Staff Mix and Patient Outcomes**

Significant improvements were found in the *patient health outcome scores* between admission and six weeks following discharge, although at the time of discharge patients actually experienced reductions in many of the health outcomes. This reduction in functional and pain outcomes at discharge is not unexpected because a large proportion of the sample were surgical patients who were recovering from recent surgery and anaesthetic. *Nursing staff mix* was found to be a significant predictor of four of the patient health and quality outcomes: *functional independence, pain, social functioning,*
and satisfaction with obstetrical care. In all cases, higher proportions of registered nurses and registered practical nurses were associated with better health and satisfaction outcomes. It is noteworthy that the influence of the staff mix variable was evident at hospital discharge but not at the time of the six week follow-up.

The environment in which nurses practice also influenced patient results. The quality of care on the inpatient unit was associated with less pain for medical-surgical and obstetrical patients. Furthermore, medical-surgical patients were less likely to make a visit to an emergency ward following discharge when they had been cared for on high quality units. These findings underscore the importance of nursing resources in acute care and tertiary care hospitals. The quality of communication among nurses, and between nurses and other disciplines, was positively associated with patients’ functional independence scored at discharge and with obstetrical patients’ satisfaction with nursing care.

Several nursing outcomes were associated with the patients’ health and quality outcomes. There was a positive relationship between nurse job satisfaction and medical-surgical patients’ satisfaction with nursing care. Nurses’ role tension had a negative effect on patients’ functional independence outcomes at discharge, but a positive influence on patients’ mental health outcomes.

Method

The study was conducted at 19 teaching hospitals across Ontario, and included questionnaires, interviews, focus groups, and data from selected official databases. Approximately 2,046 patients, 1,116 nurses, 63 unit managers, and more than 50 senior executives participated in the study.