

NURSE STAFFING

BACCALAUREATE OR HIGHER NURSE EDUCATION RELATED TO FEWER SURGICAL PATIENT DEATHS

Source

Aiken, L. H., Clarke, S. P., Cheung, R. B., Sloane, D. M., & Silber, J. H. (2003). Educational levels of hospital nurses and surgical patient mortality. *JAMA*, 290(12), 1617-1623.

Objective

To examine whether hospitals with higher proportions of direct-care registered nurses (RNs) educated at the baccalaureate or graduate level in nursing have lower risk-adjusted patient mortality rates and lower rates of death in patients with serious complications.

Background

There is increasing evidence that nurse¹ staffing characteristics such as the number of patients assigned to each nurse and the proportion of RNs in the nursing staff mix influence quality of care in hospitals and patient safety. Little is known about what impact other characteristics of RNs in hospitals, such as their educational level, have on patient outcomes.

Methods

- In this cross-sectional study, outcome data for 232,342 patients who had general, orthopedic or vascular surgery in 168 adult acute-care general hospitals in Pennsylvania were linked with data collected from a survey of 10,184 RNs in the state and other data related to the patients' hospitalization.
- The two patient outcomes studied were:
 - death within 30 days of hospital admission; and
 - death within 30 days of hospital admission among patients who experienced serious complications (referred to as a "failure to rescue").
- Both patient outcome measures were risk-adjusted to take into account variations such as age, sex and whether the patient was admitted on an emergency basis.

¹ In this study, 'nurse' refers to registered nurses (RNs).

- The survey provided information on the RN's highest educational credential attained in nursing, number of patients assigned to the nurse on the last shift worked (nursing workload), and the number of years of experience working as an RN.
- Other variables included hospital characteristics (size, teaching status, level of technology) and whether the patient's surgeon was board-certified.

Principal Findings

- For each 10% increase in the proportion of RNs in a hospital holding baccalaureate or graduate degrees, the risk of death or failure to rescue decreased by 5% when patient and hospital characteristics were similar.
- Put another way, if the proportion of RNs with baccalaureate or higher degrees in all hospitals were 60% rather than 20%, 3.6 fewer deaths per 1,000 patients and 14.2 fewer deaths per 1,000 patients with complications would be expected.
- A 20% increase in the percentage of RNs with baccalaureate degrees would have a similar effect on mortality as a reduction of two patients in the average workload of RNs.
- If the nursing workforce comprised a higher percentage of RNs with education at the baccalaureate level or above **and** if workloads were decreased, mortality and failure to rescue rates would be substantially lower.

What do the Study Findings Mean?

- Increasing the proportion of RNs with baccalaureate or graduate degrees on surgical units can be expected to improve patient outcomes.
- Employers should consider that preventable deaths could be reduced by having the majority of nurses on a unit educated at the baccalaureate level or higher and, at the same time, lowering patient-to-nurse ratios.
- Diploma-prepared RNs require support and incentives from their employers to pursue higher education and educational programs that are accessible and flexible in meeting their needs.
- Strategies are needed to recruit and retain RNs with baccalaureate and graduate degrees in hospitals.
- In national nurse human resource planning, policy-makers should consider:
 - how to obtain an adequate future supply of RNs; and
 - how the educational composition of the nursing workforce can be altered to ensure that more highly educated nurses are providing direct patient care.

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