Relationship Between Patient Mortality and Nurses' Level of Education

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ceived care at hospitals with higher proportions of registered nurses (RNs) educated at the baccalaureate level or higher. On behalf of the American Federation of Government Employees, AFL-CIO (which represents RNs in Veterans Affairs medical centers throughout the United States), we do not think that the authors’ methods support their conclusions.

The authors did not assess many variables that are related to the quality of individual care, such as the educational preparation of the RNs who actually provided care to the patients at any given time. They also did not account for patient acuity, the staffing mix, or the nursing care model.

We believe that these results suggest that patient deaths after surgery are highest in hospitals where RNs care for greater numbers of patients. Although the authors admitted that their data showed that the ratio of board-certified surgeons had a greater impact on patient mortality, this fact was minimized.

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To the Editor: Dr Aiken and colleagues concluded that public policy should encourage baccalaureate programs for nurses over associate or hospital diploma programs. Their analysis, however, suggests that nurse staffing has a similar effect on mortality as does education levels: decreasing nursing workloads by 2 patients was predicted to decrease mortality by 1.8 per 1000 patients, the same effect as increasing staff levels of nurses with a bachelor of science in nursing (BSN) degree by 20%. Given an environment of nursing shortages, increasing tuition rates, and an economically diverse labor pool, advocating a one-size-fits-all baccalaureate solution is not cost-effective policy. Increasing the employment of nurses of all types is equally as beneficial as increasing staff levels of those with BSNs. Availability of all types of educational programs allows future nurses to find a program that fits best, leading to a larger nursing labor pool.

I have several other concerns about this study. First, it is counterintuitive that the authors found no effect of experience on patient outcomes. The authors’ results imply that it would be safer to assign the sickest patients to a newly graduated nurse with a BSN instead of to an associate’s-level nurse with 30 years of experience. I suggest that the authors’ result reflects the likelihood that hospitals with more BSNs have the resources to hire more experienced nurses of all types. The small number of hospitals in this data set may preclude statistical analysis of education vs experience.

I also question the authors’ choice of quality measures. The nursing literature does not support mortality-related patient outcomes as appropriate measures of nursing quality. Better measures are those more directly aligned with care. I have reported that measuring mortality can produce opposite results to those from nursing-related outcomes.

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To the Editor: In the study by Dr Aiken and colleagues, it is puzzling that clinical outcomes were significantly related to nurses’ education and staffing but not to their years of experience. It is possible, however, that education may be a proxy for certification, with which it could be confounded. To the extent that this is true, education and experience may be colinear, and thus the statistical analysis would be unlikely to find that both variables are significantly related to the outcome. This is particularly a problem because the unit of analysis was hospitals, not individual nurses or patients.

The authors suggested that hospital care may be improved by limiting the number of patients assigned to each RN and also by increasing the certification level of RNs. Both forms of investment consume resources; the ideal mix of these remains uncertain. Many RNs appear to be leaving hospital care within the first 5 years of their career. Strict staffing minimums promise to reduce this burnout, and society gains twice. First, a nurse’s education bears fruit for more years. Second, the nurse acquires experience, which appears to be important despite the statistical results reported by Aiken et al.

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To the Editor: Dr Aiken and colleagues studied hospitals, not the educational level of individual RNs or the care delivered by individual nurses. Several nurses may care for a patient during a hospital stay. Because of staffing variability, it is impossible to cor-
relate patient outcomes with any particular nurse(s) in this study. In a hospital categorized as having a high proportion of baccalaureate-prepared nurses, it could well have been the RN with an associate degree who took care of the patients who survived or who were rescued. Another important consideration is that hospitals with low numbers of baccalaureate-prepared nurses were smaller, rural facilities with fewer financial, educational, and technological resources than hospitals with larger numbers of baccalaureate-prepared nurses. These are important variables that undoubtedly affect patient care and outcomes.

In our roles as administrators and faculty in a community college, we continue to see the contributions that our associate degree nursing students and graduates create daily in a multitude of health care settings. We are concerned that these contributions were minimized by the unsupported conclusions of Aiken et al.

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To the Editor: Dr Aiken and colleagues1 discounted the effect of surgeons’ qualifications and overall hospital quality on patient mortality. The authors stated that “the strong and significant decrease in mortality associated with having a board-certified surgeon as operating physician is largely explained by the tendency of patients with board-certified surgeons to be treated at hospitals with other characteristics associated with better outcomes.” Although hospitals with more board-certified surgeons also had more nurses with baccalaureate degrees, the authors did not examine these “other characteristics” to explain the much smaller difference in patient mortality associated with nurses’ educational background.

Furthermore, the study was a secondary analysis of data that were collected to look at workload, not educational background, as the independent variable. The authors then grouped the nurses into 2 education levels depending on whether they had a BSN or higher academic degree. There are several additional gradations of nursing degrees, however, and the authors should have examined these separately. In any event, the results of a retrospective study should be used only to suggest areas for further research; no conclusions should be drawn from such an analysis.

Finally, the authors stated that a random sample of nurses were surveyed, not just those who care for surgical patients. It is likely that, on average, nurses who work in different areas have different educational backgrounds. Nurses who work with surgical patients are the only nurses whose educational background could possibly have any impact on clinical outcomes in this setting.

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To the Editor: Dr Aiken and colleagues1 presented the effects of different levels of nurses’ education on the outcomes for surgical patients. To put this in perspective, however, the Institute of Medicine reports that numerous studies have led to the conclusion that “the burden of harm conveyed by the collective impact of all our health care quality problems is staggering.”2,3 Nurses are major contributors to quality health care. The increased visibility of nursing’s vital contribution to patients’ well-being highlights the need for all health professionals to learn more about their colleagues and create and maximize effective health care teams. Health care settings and patient populations are extremely complex, and many quality problems exist because of system problems. There are no simple answers to the challenges faced in providing health care. Browbeating health professionals, including nurses, is not the answer.

The Institute of Medicine1 reported that clinical education across the disciplines has not kept pace with or been responsive to shifting patient demographics, changing health system expectations, evolving practice requirements and staffing arrangements, new information, a focus on improving quality, or new technologies. The larger issue is whether to immediately put public funds into specific types of programs. Rather, the question is how health professionals in education and practice can fund and reform clinical education at a time of shortage of key professionals and budget shortfalls.

The nursing community supports the need for advanced education and lifelong learning. Significant funding is required to enhance the quality of all types of nursing education programs, particularly now during an unprecedented shortage in nursing education and practice, a crisis situation that is anticipated to last for many years. Therefore, the challenges in nursing and health care must be faced and solutions must be advanced.

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In Reply: These letters raise concerns about the appropriateness of our analysis. Our article follows a long tradition in health services research that asks whether differences in health care resources are associated with variation in patient outcomes. Hospitals in which nurses cared for fewer patients and in which a greater proportion of nurses had baccalaureate degrees had lower rates of mortality and failure to rescue.


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