



JoAnn Grif Alspach

# Editorial

## Nurse Education and Patient Mortality: Sorting Fact From Fury

It seems whenever a study reports differences in patient outcomes related to levels of nurse education, a wave of reaction is unleashed that disparages both the message as well as the messenger. Much of this reaction seems to float along an undercurrent that reverberates with deeply held convictions that a registered nurse's (RN's) level of formal education, specifically whether the nurse possesses a bachelor's or associate degree in nursing, has no bearing on patient care or outcomes. It comes as no surprise, then, that a recently published study by Aiken et al,<sup>1</sup> despite its focus exclusively on European nurses and patients, managed to push both herald as well as hot buttons in the US nursing community. Let's take a look at the study and its findings, sort through some of the reactions expressed about it, and consider how critical care nurses might constructively respond.

### Study on Nurse Staffing and Education, and Patient Mortality in Europe

This observational study, led by Linda Aiken from the University of Pennsylvania School of Nursing with colleagues from the European Union RN4CAST consortium,<sup>2</sup> aimed to determine whether differences in nurse-patient staffing ratios and nurses' educational preparation were associated with in-hospital mortality following common general, vascular, and orthopedic surgical procedures. The 3-year collaborative RN4CAST project<sup>3</sup>

represents one of the largest nursing workforce studies ever conducted in the European Union.

Data for the study related to hospitals and patients were obtained from administrative sources and included discharge data for 422 730 patients aged 50 years or older who underwent surgery at any of 300 hospitals in 9 participating European countries (Belgium, England, Finland, Ireland, Netherlands, Norway, Spain, Sweden, Switzerland). Three RN4CAST countries did not participate in this study (Germany, Greece, Poland) because they lacked patient discharge data required for the patient mortality protocol. Data related to nurse staffing and education were obtained via surveys completed by 26 516 nurses who practiced in the study hospitals.

This study produced 2 major findings that reflect differences in hospital mortality associated with nurse staffing levels and nurse educational level: (1) Increasing a nurse's workload by one patient increased the likelihood of an inpatient dying within 30 days of admission by 7% (odds ratio=1.068; 95% CI, 1.031-1.106) and (2) every 10% increase in the proportion of nurses with bachelor's degrees reduced the likelihood of an inpatient dying within 30 days of admission by 7% (odds ratio=0.929; 95% CI, 0.886-0.973). These associations further implied that hospitals having 60% of nurses with bachelor's degrees and where the average nurse-patient ratio is 1:6 would have a mortality rate nearly 30% lower than hospitals having only 30% of its nurses with bachelor's degrees and where the average nurse-patient ratio is 1:8.

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The study authors concluded that austerity measures that include cuts to nurse staffing could adversely influence patient outcomes and that employing a greater percentage of nurses with bachelor's degrees may contribute to reduced patient mortality.

Although this study may have been unique in reporting actual patient outcomes instead of patient- or nurse-reported outcomes, in reporting nursing workforce data across multiple European nations,<sup>4</sup> and in describing pan-European nurse-patient ratios,<sup>5</sup> its 2 primary findings were neither new nor unique. These findings are consistent with Aiken's initial report over a decade ago on the relationship between nurse education and patient mortality,<sup>6</sup> a number of smaller studies conducted in Europe,<sup>7-11</sup> as well as with a substantial body of international reports,<sup>12-15</sup> including more recent studies<sup>16-19</sup> that continue to affirm the beneficial relationship between higher percentages of nursing staff with bachelor's degrees and lower patient mortality.

A 2014 study involving more than 300 adult acute care hospitals in California, Florida, New Jersey, and Pennsylvania, with a patient sample of more than 55 000 adults receiving mechanical ventilation, set out to determine the extent to which intensive care unit nursing characteristics are associated with patient mortality.<sup>20</sup> Once again, patients in hospitals with higher proportions of critical care nurses with a bachelor's degree in nursing had significantly lower odds of dying: each 10% increase in the proportion of intensive care unit nurses with a bachelor's degree in nursing was associated with a 2% decrease in the odds of patient mortality within 30 days. The odds of patient deaths in hospitals having 75% of nurses with a bachelor's degree in nursing would be 10% lower than in hospitals having only 25% of its nurses with a bachelor's degree in nursing. As in the 2003 Aiken report, nurse experience was not associated with patient mortality.

Even before these recent studies, however, the Institute of Medicine considered the accumulated evidence related to improved outcomes for patients when a greater proportion of nurses held bachelor's degrees when it issued its 2011 recommendation that 80% of US nurses have a bachelor's degree by 2020.<sup>21</sup>

## Nurses' Comments to Study on Nurse Education and Patient Mortality

Considering the breadth of existing evidence that speaks to the relationship between the educational level of nurses

and patient mortality, it is perplexing to view the range of opinions expressed by nurses on this topic. Comments posted on Medscape<sup>4</sup> generally concurred with the study authors' conclusions regarding the inverse relationship between nurse staffing level and patient mortality, but they varied widely in their reactions to the same study's findings regarding the inverse association between average educational level of hospital nurses and patient mortality.

A number of comments<sup>4</sup> posted by nurses agreed with this study's finding related to nurse education and patient mortality, noting that numerous research reports have documented comparable results for many years now to support the contention that having more nurses educated at the baccalaureate degree level is associated with better patient outcomes.

Other posts<sup>4</sup> disagreed generally, dismissively, or vehemently with that study finding, with comments that characterized the study as "flawed" and its statistics as "a joke" and suggested an array of other nurse variables such as years of experience, knowledge, skills, competence, caring, and work ethic as more influential on patient outcomes than nurse education.

The evidence supporting the role for years of clinical experience in influencing patient mortality is considerably less clear. For example, in 2003, Aiken et al<sup>6</sup> included testing of nurse education and mortality and found that the average years of experience as a nurse did not independently predict patient mortality and did not represent a significant influence on the association between education or staffing and patient mortality. As a result, the study authors suggested that the conventional wisdom that nurses' experience is more important than their educational preparation may not be correct. Two other studies found conflicting results on the influence of RNs' experience on patient mortality. Tourangeau et al<sup>22</sup> reported that for each additional average year of clinical nursing experience, there were 4 to 6 fewer deaths within 30 days among every 1000 acute medical patients discharged, whereas Sasichay-Akkadechanunt and colleagues<sup>23</sup> found no relationship between the number of years of experience as an RN and patient mortality.

## Implications: Where Do You Stand on This Issue?

Whatever your personal and professional views may be on this topic, you have an opportunity to advance

these issues and contribute to the nursing profession. If you agree with this study and its finding related to the benefits to patients when a larger percentage of the RN staff have a bachelor's degree in nursing, you can advance this understanding by helping to identify the factors that enable nurses with that educational preparation to improve patient outcomes. You could complete a literature search on the factors identified to date as influencing patient mortality, coordinate a forum to network on quality improvement project strategies that might be adopted jointly to improve one or more patient outcomes, design a pilot study to test specific research questions in this area, and participate in a research study in this area. Anything you can do to help distinguish the reasons to explain this association may assist in improving those outcomes.

If you disagree with this study's findings related to the relationship between nurse education and patient mortality, please ensure that you have given it a fair and open consideration based on reading the full study report. You might also wish to review some compiled summaries of research evidence that have been prepared on this topic.<sup>24</sup> Just as those who claim the association exists need to have documented statistical evidence to support their contention, be sure to locate objective, documented, and statistical evidence that supports your position. Nurses can and often do interpret information differently and debating controversial topics can be a healthy exercise, but all of us have a responsibility to separate facts from fury over findings, especially when patients' lives are in the balance. I have the highest confidence that critical care nurses are up to that task. **CCN**



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