ABSTRACT

THE IMPACT OF HOSPITAL NURSING ON POSTSURGICAL SEPSIS

Andrew M. Dierkes
Matthew D. McHugh

Sepsis is common, deadly, and costly. Over 1 million patients are affected each year, and as many as half of them die. The cost of care exceeds that of any hospital admission. Early diagnosis and rapid response are essential elements of effective treatment. Nurses providing direct patient care, have regular patient contact and relevant clinical knowledge, making them a critical component of inpatient sepsis prevention, surveillance, and response. Sepsis research has an extensive history. Many of the studies evaluate clinical interventions and examine patient risk factors. They inform evidence-based guidelines, such as the Surviving Sepsis Campaign. Despite the international expert consensus on sepsis treatment that this campaign represents, sepsis incidence and mortality varies by hospital. The Quality Health Outcomes Models proposes that system (and patient) characteristics affect outcomes, and they do so more directly than clinical interventions. Hospital nursing characteristics are system-level features that may help explain institutional differences in sepsis incidence and mortality. This study explored the relationship between hospital nursing characteristics and sepsis. Specifically, it analyzed postsurgical patients to determine the impact of nurse staffing, education, and the work environment on the odds of sepsis (Aim 1), and on mortality among septic patients (Aim 2). This was a cross-sectional, secondary analysis of nurse survey responses, patient discharge abstracts, and hospital administrative data from hospitals in four states. The sample included 1,435,919 patient who were hospitalized for general, orthopedic, or vascular surgeries from 2005 through 2007, 23,603 nurse survey respondents, and the 503 hospitals associated with these subjects. Logistic regression modelled the relationship between hospital nursing characteristics and patient outcomes. There was a significant association between hospital work environment and postsurgical sepsis and between nurse education and death after sepsis. Surgical patients in hospitals with better nurse work environment experienced lower odds of sepsis (OR 0.93; p=0.002). Postsurgical septic patients in hospitals with a higher percentage of BSN-prepared nurses had
lower odds of death (OR 0.94; p<0.001). The organization of nursing care is associated with patient outcomes and may be a mechanism for administrators to reduce sepsis incidence and mortality.