Charles Sturt University

SCHOOL OF NURSING, MIDWIFERY AND INDIGENOUS HEALTH
FACULTY OF SCIENCE

Research Director
Health and Ambulance Services Committee
Parliament House
Brisbane
Qld 4000

13 January 2016

Dear Sir/Madam,

Please find attached a submission to the *Inquiry into Hospital and Health Boards (Safe Nurse-to-Patient and Midwife-to-Patient Ratios) Amendment Bill 2015*.

I would be happy to provide more evidence if required. My email is above and my mobile phone number is [redacted]

As well as my position at Charles Sturt University, I hold the position of Honorary Professor, School of Medicine, at The University of Queensland.

I am delighted to see the Queensland Government embrace this initiative. Nurse-patient ratios have a large body of evidence to support their safety, effectiveness and positive influence on patient outcomes, and will substantially contribute to the health of Queenslanders and the effectiveness of Queensland Health.

Yours faithfully,

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SUMMARY REPORT OF LITERATURE ABOUT NURSE-PATIENT RATIOS

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Nurse-patient ratios are being consistently proven to improve patient outcomes, in other words, reduce harm to patients during a hospital stay. Victoria has had nurse-patient ratios in work agreements since 2000, and in 2015, nurse-patient ratios passed into law (Victoria State Government, 2015). At present, nurse-patient ratios are mandated in only California and Victoria. Queensland is about to implement them in their public hospitals. While this is being seen as contentious, there is good evidence to show that appropriate nurse-patient ratios prevent harm.

A systematic review uses a meta-analysis of studies on a particular topic, thus providing extensive evidence. In a recent systematic review of nurse staffing ratios and hospital mortality, a causal relationship between higher nurse staffing levels and decreased inpatient deaths found that there was an association of a "dose-response", that is, the higher the nurse-patient ratio, the fewer deaths occurred. However, the review authors reported that there was a deficiency in evaluation studies of nurse-patient ratios, thus preventing a formal cost analysis (Shekelle, 2013).

An earlier extensive systematic review found strong support for specific nurse–patient ratios in acute hospitals (Lang et al. 2004). They examined variations in nurse staffing levels in relation to differences in patient outcomes; in nurse-related staffing outcomes, such as staff retention or stress; and hospital outcomes, e.g. length of stay.

In summary:

Patient outcomes

Failure to rescue. In a US study (Needleman et al. 2002), “failure to rescue” (death within 30 days in patients with complications) was lower among surgical, (not medical), patients with higher levels of registered nurses (RN) and higher total nursing hours, and also if there were more nurses per patient. They also found that mortality was lower with higher nurse-patient ratios and in hospitals with a more nurses who held a nursing degree (compared with nurses with lower qualifications) (Aiken et al, 2002; 2003). In other words, there was a relationship between higher nurse staffing and reductions in episodes of failure to rescue among surgical patients.

In-patient mortality. Another study included in the review, in which data from 3,796 hospitals were included, found that more RNs per patient was associated with lower mortality rates (Mannheim et al. 1992). Another, similar study (Hartz et al., 1989) found that more RNs reduced mortality in the 3,100 hospitals. Krakauer et al. (1992) used two predictive models based on different data sets and found a relationship between a richer RN skill mix and lower mortality. This is comparable to Aiken et al. (2000, 2002, 2003) who found similar results in 22 Magnet hospitals. In the 2003 study, they demonstrated that if a nurse’s workload was

increased by one patient, there was a 7% increase in mortality. Others found, among US Medicare patients, relationships between the proportion of RNs per occupied bed and mortality rates (Bond et al. 1999); however, others found no such associations (Needleman et al. 2002; Robertson et al. 1999). However, the review authors concluded that more nurses in a staffing complement equated with lower mortality.

Pneumonia. The studies reviewed had different results about pneumonia acquired during a hospital admission, with a reduction in the incidence found between increased nursing staffing and lower rates of pneumonia in California, but not New York hospitals (American Nurses Association 1999). Needleman et al. (2002) found similar relationships in both medical and surgical patients, while others found that increased RNs reduced pneumonia rates in post-surgery patients but not those having vascular procedures (Kovner & Gergen 1998). Other researchers found no such relationship (Cho et al., 2003; Kovner et al., 2002; Unruh, 2003). These mixed results in relation to the influence of nurse staffing on rates of pneumonia suggest that other factors are more influential in preventing pneumonia than the number or type of nurses employed.

Urinary tract infections (UTIs). UTIs can be a serious complication acquired during hospital admission. The American Nurses' Association (1997) found that increased nurse staffing lowered UTIs in California hospitals, but not always in the New York sites, again suggesting other influences, and Needleman et al. (2002) again found mixed results between surgical and medical patients. Higher total nursing hours was related to decreased rates of UTI in medical students (Sovie et al. 2000), although not in all patient data studied. Kovner and Gergen (1998) reported that more RN FTEs per day that a patient was in hospital did decrease rates of UTIs, but others found no relationship (Cho et al. 2003).

Pressure ulcers. Again, the evidence about the relationship of nurse staffing to pressure ulcers is mixed, indicating possible other factors influencing this particular outcome. Blegen et al. (1998) found that a higher proportion of RNs was associated with lower rates of pressure ulcers, but Needleman et al. (2002) did not. The review concluded that there was no association between nurse staffing and pressure ulcer incidence.

Nurse Employee Outcomes

Needlestick injuries. Nurses working in hospitals with fewer resources were three times more likely to suffer a needlestick injury than those in well-resourced hospitals, and this was associated with lower staffing levels, lack of leadership and exhaustion (Clarke et al. 2002).

Nursing burnout. A relationship was found between low nurse- patient ratios and burnout in the nurses (Aiken et al. 2002). With every patient added to the nurse's workload, there was a 23% increase in the nurse having increased burnout.

Documentation by nurses. Some of this research is confounded by the reporting practices of adverse events, near misses, etc. An all-RN staffing complement resulted in more problems being documented (Hinshaw et al., 1981). This, of course, is positive, as it allows problems to be fixed. However, the review concluded that the evidence for a relationship between nursing staff workforce and documentation is mixed.

Nurse Staffing Levels on Hospital Outcomes

Hospital length of stay. Unequivocally, length of stay (LOS) was affected by nurse staffing. LOS decreased between 4.4% and 9.7% with each additional hour of nursing care provided

per patient (American Nurses' Association, 1999). Similar effects, though measured differently, were found by others (Shamian et al. 1994), while Needleman et al. (2002) found that higher RN hours significantly lowered LOS by 3-12% for surgical patients, though not for medical patients. However, others found a similar relationship with medical patients (Flood and Diers, 1998).

Hospital financial outcomes were studied, but only in studies from the 1980s and so are not reported on here, as much has changed in hospital costs since then.

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