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The impact of adding assistants in nursing to acute care hospital ward nurse staffing on adverse patient outcomes: An analysis of administrative health data

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ABSTRACT

Objectives: The aim of this study was to assess the impact of adding assistants in nursing to acute care hospital ward nurse staffing on adverse patient outcomes using administrative health data.
Design: Logistic regression modelling was used with linked administrative health data to examine the association between seven adverse patient outcomes and use of assistants in nursing utilising a pre-test/post-test design. Outcomes included were in-hospital 30-day mortality, failure to rescue, urinary tract infection, pressure injury, pneumonia, sepsis and falls with injury.
Setting: Eleven acute care metropolitan hospitals in Western Australia.
Sample: Patients were retained in the dataset if they spent any time on a medical, surgical or rehabilitation ward during their admission and excluded if they only spent time on other ward types, as the outcomes used in this study are only validated for these patient populations. There were 256,302 patient records in the total sample with 125,762 in the pre-test period (2006–2007) and 130,540 in the post-test period (2009–2010).
Results: The results showed three significant increases in observed to expected adverse outcomes on the assistant in nursing wards (failure to rescue, urinary tract infection, falls with injury), with one significant decrease (mortality). On the non-assistant in nursing wards there was one significant decrease (pneumonia) in the observed to expected adverse outcomes and one significant increase (falls with injury). Post-test analysis showed that spending time on assistant in nursing wards was a significant predictor for urinary tract infection and pneumonia. For every 10% of extra time patients spent on assistant in nursing wards they had a 1% increase in the odds of developing a urinary tract infection and a 2% increase in the odds of developing pneumonia.
Conclusion: The results suggest that the introduction of assistants in nursing into ward staffing in an additive role should be done under a protocol which clearly defines their role, scope of practice, and working relationship with registered nurses, and the impact on patient care should be monitored.

What is already known about the topic?

- The use of assistants in nursing in acute care settings has increased in recent times due to shortages of registered nurses, cost containment priorities and changes in the scope of registered nurse practice.
- Changing the nursing skill mix by reducing registered nurse hours of care has been shown to impact adversely on patient outcomes, however the impact of adding assistants in nursing to the existing ward staffing complement has not been studied.
- The use of assistants in nursing is contentious, with varying levels of support among nurses and policy makers.

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What this paper adds

- This is the first study of the relationship between adverse patient outcomes and the use of assistants in nursing in an additive rather than substitutive role.
- This study demonstrated an association between the proportion of time that patients spent on wards where assistants in nursing were employed and increased odds of two adverse patient outcomes – urinary tract infections and pneumonia.
- This study also demonstrated that when comparing the observed to expected adverse patient outcomes following the implementation of assistants in nursing to the acute care wards, there were more increases in adverse outcomes on assistant in nursing wards compared to wards where they were not employed, and more decreases in adverse outcomes on wards where assistants in nursing were not employed compared to the wards where they were employed.

1. Background and introduction

Assistants in nursing (AINs) were introduced into the health workforce to work alongside registered or licenced nurses. AINs have various designations including health care assistant (United Kingdom (UK) and Australia (AU)), patient care assistant (AU), certified nursing assistant, unlicensed assistive personnel (United States (US)), assistant practitioner, healthcare support worker, nursing auxiliary and nursing aide (UK). For this paper the term AINs will be used. AINs have always been part of the health system, although their use, both in terms of numbers and settings, has increased in recent times (Duffield et al., 2014; Kessler et al., 2012). The main drivers for this increase have been a shortage of registered staff, cost containment, the loss of student nurses in hospitals, changes in the scope of registered nurse (RN) practice toward increased technical skills and specialist nursing roles, and increasing amounts of paperwork (Kessler et al., 2012). It is thought that AINs can adequately perform duties not requiring the level of education and skill of the RN thereby giving RNs more time for performing nursing care that requires a higher level of expertise (Duckett et al., 2014; Jenkins and Joyner, 2013; Kessler et al., 2012; Skills for Health, 2011; Spilsbury et al., 2011). In practice, this has often resulted in nurses spending less time in direct patient care and more time on care planning and paperwork, often to the dissatisfaction of nursing staff (Munn et al., 2013; Spilsbury et al., 2011).

Although AINs have been established in long term care settings for many years in Western Australia (WA), where this study was conducted, they were not employed in acute care settings. In 2008, the WA Department of Health Nursing and Midwifery Office, in conjunction with hospital Directors of Nursing and Chief Executives, introduced AINs into acute care settings in a complementary rather than a substitutive role, providing a unique opportunity to evaluate this model. The role of the AIN was to carry out basic patient care tasks in accordance with their skills and competencies under the direction of the RN (ANF, 2011). AINs had a list of duties they were deemed able to perform, and this constituted their scope of practice (WA Department of Health, 2008a,b). Duties included assisting with patient meals, mobility, toileting and activities of daily living, taking patient observations such as pulse and temperature, blood glucose monitoring and patient surveillance. Individual hospitals determined the way in which AINs were introduced; some hospitals assigned them to specific wards while others employed them across a number of wards.

The AINs were additional to the usual ward staffing allocation as determined by the Nursing Hours per Patient Day (NHpPD) model. This model was introduced into WA hospitals in 2002 in order to manage the nursing workload and ensure adequate staffing. In this model each ward is assigned to a category (A–D) dependent on the complexity and diversity of patients and the nursing tasks required to care for them. Each category is allocated a staffing level per occupied bed day. The required staffing is then determined by multiplying the occupied bed days by the category staffing level to give the hours per day and wards are expected to staff at this level (Twigg and Duffield, 2009; Twigg et al., 2011). AINs work alongside the two levels of nurses in the WA nursing structure, RNs and enrolled nurses (EN). Wards are staffed with a mix of RNs and ENs depending on the clinical profile of the ward. RNs hold a three-year undergraduate degree and are registered to practice. The EN, who works under the supervision of the RN, possesses an 18-month Diploma of Nursing from an accredited training organisation in the Vocation Education and Training sector and is also registered to practice. In contrast, AINs either receive 18 weeks of training provided by the Department of Health which includes seven weeks of theory and an eleven week clinical placement or have achieved a six-month Certificate III qualification through a Registered Training Organisation prior to commencement of employment.

The use of unregulated staff such as AINs is contentious, with varying levels of support among nurses and policy makers (Kessler et al., 2012). The potential for role blurring, lack of understanding about the respective roles of AINs and RNs, inadequate supervision of AINs, inappropriate delegation of tasks and boundary rivalry is high between these two groups (Bach et al., 2012; Kessler et al., 2012). Unlike the health care professionals with whom they work AINs are not regulated, often have minimal educational preparation for their roles, and there is no standardisation in the level of education required for the role (Duffield et al., 2014). In the UK, there have been recent high profile cases in which a diluted skill mix, that is, a lower than expected ratio of registered to unregistered staff, was implicated in significant failures in patient safety in various National Health Service (NHS) trusts (Francis, 2010; Healthcare Commission, 2007). While health care assistant recruitment, training and education were subsequently reviewed, options for regulation were not included in the terms of reference (Cavendish, 2013). Others have called for AINs to be regulated, for example the Royal College of Nursing (RCN) and the Australian Nursing Federation (ANF) have issued position statements calling for registration (ANF, 2011; Duffield et al., 2014; Mason, 2013; RCN, 2007). However, this remains contentious as regulation would increase costs and reduce the flexibility with which AINs can be utilised (Kessler et al., 2012; Mason, 2013).

The two RN/AIN staffing models that currently exist in the workplace are the substitutive model and the supportive or complementary model. The substitutive model replaces skilled RNs with AINs (Health Policy Solutions, 2011), which decreases skill mix and results in fewer RN hours of patient care (Blegen et al., 2008; Duffield et al., 2014; McKenna et al., 2004; Roche et al., 2012). Changing the skill mix has been found to adversely impact patient outcomes, with studies showing that a poorer skill mix is associated with increased adverse outcomes for patients (Blegen et al., 1998; Needleman et al., 2002; Roche et al., 2012; Sovie and Jawad, 2001; Tourangeau et al., 2002; Thungjaroenkul et al., 2007; Twigg et al., 2011). For example, lower AIN staffing has been associated with decreased mortality (Griffiths et al., 2016).

The supportive or complementary model uses AINs as additional help and support to RNs, therefore maintaining the nursing hours of care available for patients (Carrigan, 2009; Health Workforce Australia, 2011; Roche et al., 2012). As such, this model directly addresses problems such as excessive workloads that have hampered RNs' capacity to provide quality nursing care, which can lead to hurried or incomplete nursing care and an increased risk of errors (Duffield et al., 2011a,b) . The impact on patient outcomes of the complementary model requires testing, as there are no research studies that have evaluated this model.