How many nurses do we need: what does the evidence say?

Keywords Registered nurses/ Healthcare assistants/Patient safety

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- Results of a review of studies conducted in NHS settings
- Ongoing uncertainties on ‘safe’ levels of nurse staffing

Key points
- Low nurse staffing limits the ability of nurses to deliver high-quality care
- Current evidence does not answer the question of how many nurses to deploy on a ward
- In the US and Australia minimum staffing levels are 4-7 patients per nurse
- A 1:8 nurse-to-patient ratio is a level at which risk is known to be increased
- Required levels of nurse and healthcare assistant staffing still need to be determined

Authors
Peter Griffiths is chair of health services research; Chiara Dall’Ora is research associate; Jane Ball is principal research fellow; all at NIHR CLAHRC Wessex, Faculty of Health Sciences, University of Southampton.

Abstract
There is plenty of research showing that low nurse staffing levels in hospital wards are associated with worse outcomes for patients and staff, but little practical guidance for those who want to set ‘safe’ staffing levels. Much of the evidence comes from health systems that are different to the UK’s. This article summarises evidence derived from studies conducted in the NHS. Although the evidence does not give us an optimal ‘safe’ staffing level, it reinforces that a ratio of one registered nurse to eight patients is a level at which risk is known to be increased.

Citation

There is ample evidence demonstrating associations between nurse staffing levels in hospital wards and important patient and staff outcomes; reviews have concluded that the evidence is consistent, with low registered nurse staffing causing worse outcomes. However, much of the evidence is from health systems that are very different from the NHS and gives little indication of the actual staffing levels that should be deployed. This article considers evidence derived from the NHS that identifies the levels of staffing on wards that were associated with the outcomes reported.

Why this review?
Although there is a large amount of research showing that low nurse staffing levels in hospital wards are associated with worse outcomes for patients and staff, inconsistency in results and limitations in methods have led some to question its validity. Nonetheless, summaries of the evidence as a whole concur with the common sense conclusion: low nurse staffing limits the ability of nurses to deliver high-quality care, which can lead to low job satisfaction, errors or omissions in care and, in some cases, adverse outcomes for patients (Griffiths et al, 2016a; Shekelle, 2013).

The evidence offers little direct guidance for those wishing to set staffing levels on wards. Most studies simply offer an estimate of the average effect of changing staff levels. The estimates are prone to bias and, crucially, give no clear indication of the actual staffing levels to be achieved. In effect, the answer to the question of how many nurses to deploy on a ward is: more.

While the relationship between nurse staffing and outcomes has been observed in a range of countries, differences in the configuration of services and composition of the workforce make it unlikely that the same staffing level would apply in all settings. Our review considers evidence derived from the NHS to determine whether it indicates safe staffing levels in general wards.

Sources
We searched MEDLINE, CINAHL, EMBASE, the Cochrane Library and other databases using the comprehensive search
strategy from Griffiths et al (2014). We selected studies undertaken in NHS settings that established associations between nurse staffing levels on general wards and any quality or outcome measure. We focused on studies that reported outcomes associated with specific ward staffing levels, rather than general associations or whole-hospital nurse staffing.

We found 10 papers about seven studies: Griffiths et al (2016b), Ozdemir et al (2016), Ozdemir et al (2015), Ball et al (2014), Bray et al (2014), Griffiths (2013), Shuldham et al (2009), Rafferty et al (2007), Sheward et al (2005) and Jarman et al (1999). All were observational, with all but one involving large numbers of hospitals or trusts (range 2-183), mainly in England. Samples were often large, ranging from 2,971 to 8,888 nurses and from 9,877 to over 12 million patients.

Results

All but one study (Shuldham et al, 2009) showed significant associations between higher registered nurse (RN) staffing levels and improved quality and/or outcomes. Although the relationship was not always significant in multivariate analyses (for example, Jarman et al, 1999), most analyses showed a significant relationship with outcomes including mortality, staff burnout and incomplete nursing care.

Five papers reported associations between specific ward-based staffing levels and some measure of quality or patient or nurse outcome. One study (reported in a single paper) focused on staffing in stroke units in 2011-12 (Bray et al, 2014) while two studies (each reported in two papers) examined staffing in general medical/surgical wards in the late 1990s (Rafferty et al, 2007; Sheward et al, 2005) and 2010 (Griffiths et al, 2016b; Ball et al, 2014).

The odds of death for surgical patients were increased by 26% in the hospitals with the lowest staffing on general wards (>12 patients per RN hospital-wide) compared with the highest (≤8 patients per RN) (Rafferty et al, 2007). For medical patients, the odds of death were reduced by 11% in hospitals where average staffing on medical wards was ≥6 patients per RN (Griffiths et al, 2016b). A similar association was seen for patients in surgical wards but it was not statistically significant. Stroke units with ≥6.7 beds per RN on weekdays had a 31% higher mortality compared with units with ≤3.3 beds per RN (Bray et al, 2014); the difference was even greater for weekend staffing levels.

Nurses were significantly more likely to report poor or declining quality in hospitals with the lowest staffing on general wards (>12 patients per nurse) compared with the highest (≤8 patients per nurse) (Rafferty et al, 2007). The odds of nurses reporting missing care were reduced by 66% in better-staffed wards (≥6 patients per RN) compared with the worst (≤1 patients per RN) (Ball et al, 2014). Odds of reporting dissatisfaction and emotional exhaustion were reduced by 43% and 39% in the best staffed wards (≥4 patients per RN) compared with the worst (≤3 patients per RN) (Sheward et al, 2005).

Five studies considered the relationship between support worker staffing and outcomes in addition to RN staffing (Griffiths et al, 2016b; Ball et al, 2014; Bray et al, 2014; Griffiths, 2013; Jarman et al, 1999). In three of them there was some indication that higher levels of support worker staffing or lower skill mix were associated with worse outcomes, although studies reporting relationships with healthcare assistants (HCAs) deployed on wards found no association (positive or negative) with the outcomes studied (Griffiths et al, 2016b; Ball et al, 2014).

Thresholds

While the odds of adverse outcomes were generally increased when the average staffing ratio fell below 1:8, better outcomes were often associated with higher staffing levels and ratios of ≤1:7. In some services, significant increases in risk occurred well below this threshold.

Mandatory staffing policies in the US and Australia impose minimum staffing levels that are equivalent to between 4 and 7 patients per nurse in general acute wards during daytime (Royal College of Nursing, 2012). The National Institute for Health and Care Excellence identified a threshold of >8 patients per RN as associated with increased risk (NICE, 2014). While not giving an optimal ‘safe’ staffing level, the evidence we looked at reinforces that a 1:8 ratio represents a level at which risk is known to be increased.

Conclusions

The evidence from the NHS is consistent with international research: lower nurse staffing levels are associated with worse outcomes in a variety of settings, but it is hard to discern a clear threshold and the staffing levels reported are averages. For several of the studies we reviewed, significant differences in outcomes were only observed when comparing the best with the worst-staffed wards. The evidence is specific to RN staffing: when other staff groups were considered, there was no evidence to support substituting HCAs for RNs. The required levels of HCA staffing are unclear and must be determined in addition to required RN staffing levels. NT

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References


