Higher nurse to patient ratio linked to reduced risk of inpatient death

Death rates 20 per cent lower in hospitals with 6 or fewer patients per registered nurse

A higher nurse to patient ratio is linked to a reduced risk of inpatient death, finds a study of staffing levels in NHS hospitals, published in the online journal **BMJ Open**.

In trusts where registered (professionally trained) nurses had six or fewer patients to care for, the death rate was 20 per cent lower than in those where they had more than 10.

Policies geared towards substituting registered nurses with healthcare support workers (healthcare assistants and nursing auxiliaries) should at the very least be reviewed, conclude the researchers

Previous research suggests that the nurse to patient ratio has some bearing on outcomes, but few studies have taken account of the impact of other members of medical staff.

They therefore included two measures over two years (2009-11) in their analysis: the number of beds per registered nurse, doctor, and healthcare support worker in 137 acute care trusts; and the number of patients per ward nurse, drawn from a survey of just under 3000 registered nurses in a nationally representative sample of 31 of these trusts (covering 46 hospitals and 401 wards).

They also calculated the predicted number of deaths for medical and surgical inpatients, taking account of influential factors, such as age, other underlying conditions, and number of emergency admissions during the previous 12 months.

The registered nurse headcount varied by as much as a factor of 4 between those at the top and bottom of the staffing scale. Even after taking account of all nursing staff, this variation only dropped to a threefold difference between those with the highest and lowest nurse headcounts.

Among patients admitted to medical wards, higher death rates were associated with higher numbers of occupied beds for each registered nurse and for each doctor employed by the trust.

By contrast, higher numbers of healthcare support workers were associated with higher rates of inpatient death.

When all staff groups were included in the statistical analysis of all 137 trusts, the associations remained significant only for doctors and healthcare support workers.

Among the subsidiary group of 31 trusts, death rates were 35.2/1000 medical admissions, out of a total of 1 260, 558, and 8.9/1000 surgical admissions, out of a total of 1 084 429.

But the death rate was 20% lower in those where each registered nurse cared for an average of six or fewer medical inpatients than in trusts were each registered nurse cared for 10 or more. These associations remained significant after further statistical analysis.

The results on surgical wards were similar, with higher registered nurse to patient ratios associated with a 17% lower inpatient death rate.

This is an observational study, so no firm conclusions can be drawn about cause and effect, added to which the findings on nurse to patient ratios are based on only 31 trusts.

"This [study] does not, in itself, provide a robust basis to identify safe staffing thresholds," they say. "However, given the overall strength of evidence for an association, it does seem feasible to identify staffing levels where risk to patients is likely to be increased," they suggest.

Economic pressures and the ageing profile of the nursing workforce internationally all point to a potential future with fewer registered nurses, they warn. But substituting them for less well trained staff may be unwise, they say.

"When determining the safety of nurse staffing on hospital wards, the level of registered nurse staffing is crucial, and there is no evidence to suggest that higher levels of healthcare support worker staffing have a role in reducing mortality rates," they write.

"Current policies geared towards substituting [these] workers for registered nurses should be reviewed in the light of this evidence," they conclude.