What do we know about the associations between registered midwife staffing levels and better care for women?

Growing research evidence suggests that there is a strong link between nurse staffing and patient outcomes in the acute sector. However, there is limited empirical evidence on the relationship between maternity staffing, maternity workforce characteristics and birth outcomes. Such evidence is urgently needed, given current policies aimed at improving maternity care. In this Policy Plus we draw on work undertaken by the National Nursing Research Unit that sought to assess the feasibility of using routinely available data to measure the impact that maternity staffing has on birth outcomes in maternity services at trust level in England (National Nursing Research Unit, 2010).

Why investigate maternity staffing and outcomes?

Government and NHS policies have staffing implications for the maternity service, including choice of place of birth, continuity of care, one-to-one midwifery support during labour, safety, improving productivity and efficiency of the health sector and NHS budgetary constraints. Other major concerns with staffing implications relate to rising birth rates and older mothers with complex health needs, age of the workforce, changes in graduate training and the European Working Time Directive, which affects the provision of 24-hour care.

National policy in England advocates “normal birth” (this is birth without medical intervention) as a desirable outcome (Department of Health, 2007) but inadequate midwife staffing levels have been consistently cited as an obstacle to achieving this goal (Page, 2003) and to safe care in general (Smith et al, 2009). Similar concerns are expressed in relation to medical staff; in particular over low numbers and lack of experience (Smith et al, 2009).

A key concern in the Care Quality Commission’s review of maternity services was that in some trusts “levels of staffing were well below average, indicating that they may have been inadequate” (Healthcare Commission, 2008). The review also found: wide variations in staffing levels between trusts even when standardised against the number of births; variations in provision of midwife supervisors within the trusts; variations in clinical outcomes; poor attendance at in-service training courses; and evidence of cultural differences between doctors and midwives.

How can existing data be used to investigate maternity staffing and outcomes?

In our study, we used Admitted Patients HES data from Dr Foster (April 2008–March 2009) and accessed data for 144 trusts out of 150, which provide maternity care in England (615,042 mothers). The following variables were included in our models: readmissions within 28 days of the birth to any hospital (outcome); age and ethnicity of mother; Carstairs deprivation index; Charlson co-morbidity index; delivery type; professional delivering; number of admissions in the previous 12 months, and pre-and post-birth length of stay.

We selected the staff variables from the Maternity Matters benchmarking dataset and matched them at trust level to the Admitted Patients HES data (National Nursing Research Unit, 2010). These included five levels of medical staff, two levels of midwife, registered nurses, nursery nurses and healthcare assistants, all expressed as full-time equivalents (FTE).

The study only explored “readmission within 28 days” as an outcome, defined as number of women being readmitted to any hospital within 28 days after discharge from the postnatal ward. Logistic regression analysis was undertaken at patient level and Poisson regression at trust level, using SPSS. Expected readmissions were estimated from the patient level model and used as an offset in the trust level model. The relative risk of being readmitted for each woman in each trust was calculated by dividing the actual number of readmissions at 28 days to expected readmissions, obtained from the logistic regression model.

Associations between readmissions and staffing

There was a significant relationship between all staffing variables and readmissions (p<0.001):

- Higher numbers of midwives FTE per births was associated with a lower probability of readmission;
- A higher ratio of consultant obstetricians and gynaecologists FTE to midwives FTE was associated with a lower probability of readmission, as was a higher ratio of consultant midwives FTE to midwives FTE;
- A higher ratio of registered nurses FTE to midwives FTE was associated with a higher probability of readmission.

However, risk adjustment was limited in the model and the possibility remains that further risk adjustment may alter the relationships.

The question remains whether the reasons for readmission are a direct consequence of the original procedure/
differing risk factors for other birth outcomes, more confidence could be placed in the conclusions if results were consistent across outcomes.

Future methods should include multi-level logistic regression at trust and patient level and should strive to incorporate additional variables such as midwifery and other maternity staff workforce characteristics, grades, skill mix, job relevant training, supervision and turnover. Additional maternal characteristics such as previous mode of birth, parity, multiple births, gestational age and co-morbidities, including diabetes, hypertension, renal disease, cardiac disease and obesity, should be considered to attempt to improve the predictive power of the risk model.

References


The National Nursing Research Unit is an independent unit that receives funding from the Department of Health’s Policy Research Programme. The views expressed in Policy+ are those of the authors, not the Department of Health.