



Nursing staff numbers and their relationship to conflict and containment rates on psychiatric wards—A cross sectional time series Poisson regression study

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ABSTRACT

Background: The link between positive outcomes and qualified nurse staffing levels is well established for general hospitals. Evidence on staffing levels and outcomes for mental health nursing is more sparse, contradictory and complicated by the day to day allocation of staff resources to wards with more seriously ill patients.

Objective: To assess whether rises in staffing numbers precede or follow levels of adverse incidents on the wards of psychiatric hospitals.

Design: Time series analysis of the relationship between shift to shift changes over a six month period in total conflict incidents (aggression, self-harm, absconding, drug/alcohol use, medication refusal), total containment incidents (pro re nata medication, special observation, manual restraint, show of force, time out, seclusion, coerced intramuscular medication) and nurse staffing levels.

Settings: 32 acute psychiatric wards in England.

Methods: At the end of every shift, nurses on the participating wards completed a checklist reporting the numbers of conflict and containment incidents, and the numbers of nursing staff on duty.

Results: Regular qualified nurse staffing levels in the preceding shifts were positively associated with raised conflict and containment levels. Conflict and containment levels in preceding shifts were not associated with nurse staffing levels.

Conclusions: Results support the interpretation that raised qualified nurse staffing levels lead to small increases in risks of adverse incidents, whereas adverse incidents do not lead to consequent increases in staff. These results may be explicable in terms of the power held and exerted by psychiatric nurses in relation to patients.

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What is already known about the topic?

- High qualified nurses staffing levels are associated with fewer adverse outcomes in general hospitals.
- Little is known about the association between mental health nurse staffing levels and outcomes in psychiatric hospitals.

What this paper adds

- Raised qualified mental health nurse staffing numbers precede rather than follow increased rates of adverse incidents.
- The effect is small and consistent.
- Little effect is seen for bank or agency nursing, or for numbers of unqualified support staff or student nurses.

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1. Background

The international evidence on nurse staffing levels in general hospitals has been reviewed (Lankshear et al., 2005) and shows that higher numbers are associated with lower mortality and lower rates of medical complications. These findings have since been confirmed by more recent studies in the UK (Rafferty et al., 2007) and Switzerland (Schubert et al., 2009), but not in Belgium (Van den Heede et al., 2009).

There is much less literature on psychiatric nurse staffing levels and outcomes, with some studies being rather old and findings contradictory. Finding a relationship between staffing numbers and outcomes is complicated by the fact that psychiatric hospital managers deploy staff selectively to wards that experience higher levels of patient disturbance and acuity (Kellam et al., 1967). These mechanisms could produce a misleading correlation between higher staffing levels and poorer outcomes in terms of disturbed behaviour. Using longitudinal analysis of officially collected data from a single NHS Trust, we have previously demonstrated an association between the presence of regular staff on the ward and lower rates of incidents of physical aggression and self-harm (Bowers et al., 2005a). Other positive findings have been associations between higher staffing levels and amore therapeutic wards (Moos, 1972); intensive staffing and lower lengths of stay (Becker, 1969); and lower rates of violent incidents (Chou et al., 2002; Lanza et al., 1994). However other research has found no connection between staff/patient ratios and outcomes (Ellsworth et al., 1979); more staff and more violence (Owen et al., 1998); and more staff and increased interaction between them, rather than between staff and patients (Sandford et al., 1990). Finally, in a study utilising 22 wards, although high staffing levels were associated with lower readmission rates, substantially better predictions of care outcomes could be made when the amount of attention patients received from staff was

taken into account (Coleman and Paul, 2001). Thus staffing utilisation may be as important as overall staff numbers.

In 2005, we conducted the City-128 study, during which we collected end of shift reports on patient outcomes for six months from a random sample of 136 English acute psychiatric wards. The outcomes of interest were rates of conflict (aggression, rule breaking, alcohol/drug use, absconding, medication refusal and self-harm/suicide) and containment (pro re nata medication, intermittent observation, constant observation, coerced intramuscular medication, show of force, manual restraint, seclusion and time out). A series of cross sectional multilevel analyses of this dataset have been undertaken, and the statistically significant findings in relation to nurse staffing numbers are displayed in Table 1. These findings take into account patient characteristics, the physical environment, ward routines, staff demographics and staff groups factors/attitudes on the sample wards. With the exception of medication related issues and self-harm rates, these findings suggest a positive association between patient aggression frequency and staff numbers on duty during the shift. These findings are most consistent for qualified nursing staff, and further show a positive relationship between the numbers of such staff on duty and the more severe forms of containment.

It is possible that these associations have arisen because staff are redeployed to wards where patients are in an agitated and disturbed condition. We therefore decided to analyse our dataset longitudinally to see whether rises in staffing numbers preceded or followed levels of disturbance on the wards.

2. Methods

2.1. Sample

The sample comprised 136 acute psychiatric wards with their patients and staff in 67 hospitals within 26 NHS

Table 1

Cross sectional results related to nurse staffing, + indicating a positive correlation and – indicating an inverse correlation.

Staff	Verbal aggression	Aggression to objects	Physical aggression to others	Self harm	Absconds (attempts)	Absconds (missing)	Absconds (reported)	Alcohol intoxication	Substance intoxication	Refusal of 'regular medication
Regular qualified	+	+	+	–	+			–		–
Regular unqualified					+					–
Bank and agency qualified	+	+	+					+	+	
Bank and agency unqualified	+	+				+	+			
Student nurses	+			+						
Staff	Refusal of PRN medication	Demanding PRN medication	Given PRN medication	Coerced IM medication	Intermittent observation	Constant observation	Show of force	Manual restraint	Time out	Seclusion
Regular qualified		–	–	+		–	+	+	+	+
Regular unqualified			+	+		+			+	
Bank and agency qualified						–				
Bank and agency unqualified						+				
Student nurses		–		+			+	+	+	

Findings reported in Bowers et al. (2008, 2009a,b) and Baker et al. (2008).

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