**Title**: Physical environment: staff perceptions of safety and aggressive incidents within UK mental health services (PESSA-UK)

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**Introduction**

Safety at work is a fundamental issue for mental health staff working on inpatient units, especially in the context of high levels of violence and aggression towards nurses. It has wide ranging implications for service user care, staff wellbeing and economics. Aggression and safety are multi-faceted phenomena, resulting from complex interactions between individual characteristics and contextual features, such as the ward environment (Abderhalden et al., 2008; Bowers et al., 2011). An employee’s sense of safety is also likely to reflect organisational factors related to safety management and climate which interacts with the overall physical environment (Christian et al., 2009).

The current theoretical base regarding factors that could affect staff perceptions of safety is limited and inconclusive (Papoulias, 2014). Research in this area is often conducted opportunistically, following ward or unit refurbishment and as such numerous variables are changed simultaneously and results are confounded. Despite this, certain ward characteristics have been identified as potentially associated with staff safety; these include ward occupancy rates (Nijman & Rector, 1999), crowding (Ng et al., 2001) and lighting (Curtis et al., 2007).

This study attempted to establish predictors of perceived safety amongst staff working on mental health wards. Areas under investigation included the physical and relational ward environment, as well as organisational climate and recorded violence.

**Method**

A cross sectional design was employed across 101 forensic and non-forensic mental health wards, over seven National Health Service (NHS) trusts in England. Independent variables included:

1. The *Ward Features Checklist (WFC)* – developed by the research team in line with expert consultations and recent academic literature. The WFC captures general and physical environment characteristics. This was completed by two researchers visiting the wards included in the study using a number of tools designed to capture the ward environment.
2. *Recorded incident data* – anonymised aggregated incident data captured by each NHS trust in their electronic patient record systems was requested for each ward. This included property damage, verbal and physical aggressive incidents recorded in the six months prior to the researchers’ visit.
3. The *Work Safety Scale (WSS*, Hayes et al., 1998) – a valid measure of five constructs of work safety. These relate to job role, colleagues and organisational policies and procedures.
4. A modified version of the *Perceptions of Prevalence of Aggression Scale (POPAS*, Nijman et al., 2005a) - capturing individual experience of violence and aggression at work. This was modified to appropriately reflect the psychiatric environment.
5. The *Perceived Violence Climate Measure (PVCM*, Spector et al., 2007) - capturing organisational violence climate. Outcomes include organisational attitude, policies and procedures.

The *WSS*, modified *POPAS*, and the *PVCM* were captured in an online survey completed by staff working on the wards which were previously visited by researchers to complete the WFC.

The dependent variable, *perceived safety at work (PSW)* was measured by an individual item included in the online survey, i.e. “Please indicate how safe do you feel while at work on the ward on a scale of 1 to 10”.

**Analysis**: categorical principal component analysis (CATPCA) and ordinal regression analyses were undertaken.

**Results**

In total 191 staff from 60 wards were included in the regression analysis. This includes the staff who completed the online survey and who worked on the wards which were visited by the researchers to complete the WFC. Of these, approximately half were female, a quarter were male and a quarter did not state. The majority were either qualified nurses (45.5%) or nursing assistants (30.4%). Of the staff that provided their age, the most frequent category was 25-34 (27.2%).

Non forensic wards reported statistically significantly higher levels of physical violence in the previous six months than forensic wards. The most frequent modes of violence experienced by staff were verbal aggression and aggressive splitting behaviour. Higher proportions of forensic staff reported feeling relatively unsafe at work (26.3% forensic staff compared to 20.5% non-forensic staff) and a much higher proportion of non-forensic staff reported feeling safe at work (30.1% of non-forensic staff compared to 17.8% of forensic staff). Organisationally, respondents across both forensic and non-forensic wards generally reported positive perceptions of their services violence prevention provision.

A number of factors were found to be significant predictors of staff perceived safety. Increased perceptions of safety predictors included positive views in the WSS (*OR* = 5.28); PVCM (*OR* = 1.85) and ward brightness level with the lights on (*OR* = 1.53). Unexpectedly, staffing and space (comprised of more beds; lower staff to patient ratios; less dayroom and bedroom space; and fewer toilets per patient) (*OR* = 0.65); and views of built-up structures (compared to greenery) (*OR* = 0.33) were predictors of decreased (lower) perceptions of safety. Perceptions of safety were lower on wards with higher reported levels of verbal incidents (*OR* = 0.98) and property incidents (*OR* = 0.90).

Other ward characteristics which common sense may have been assumed to be significant predictors of perceived safety at work were not. These included staff characteristics (gender age, role), type of ward (forensic vs non-forensic), and physical ward features such as number of windows and ward colour.

**Conclusions**

This study adds to a limited area of research and demonstrates that certain ward characteristics and the presence of aggression on the ward can affect staff perceptions of safety. A number of findings reflected positively on organisations including an overall positively reported safety climate and staff being encouraged to report aggressive incidents.

Some findings were counter-intuitive and contradicted existing research, highlighting a need for further research in this area. Qualitative research exploring staff and service user views and perceptions could aid further understanding of the results. Findings may have clinical implications for existing training initiatives aimed at reducing coercive interventions in the management of ward violence and aggression.

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