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How do staff and team characteristics relate to ward safety incidents in adult inpatient mental health settings? A systematic integrative review.

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Systematic Review

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Abstract

Safety incidents on mental health wards can harm patients, staff and organisations. An extensive body of research to improve the understanding of this issue frequently focuses on patient characteristics and staffing numbers. Exploration of the impact of staff and team characteristics may generate valuable new insights. The review aimed to describe the international evidence around the relationships between safety incidents on mental health wards, and staff and team characteristics, to answer the question, “How do staff and team characteristics relate to safety incidents in adult inpatient mental health settings?”. Systematic integrative review of the published literature focused on adult inpatient mental health settings globally. CINAHL, Cochrane, Embase, Medline, PsycINFO and Web of Science were searched (1999 onwards). Data were analysed using inductive narrative synthesis, comprising data reduction, display and comparison. Quality appraisal was conducted using the Mixed Methods Appraisal Tool. 135 papers (80 quantitative; 46 qualitative; nine mixed methods studies) across 33 countries met the eligibility criteria. Most reported staff perspectives of incidents (n = 54) or retrospective analysis of routine hospital data (n = 40). Four themes were developed: (1) Team profile: composition, working patterns and culture; (2) Personal and professional profiles of individual staff; (3) Impact of staff communication and behaviour; (4) Factors affecting staff communication and behaviour. Evidence was most consistent around the impact of staff’s verbal and paraverbal communication, availability to patients and empathy. There was more evidence around the impact of staffing numbers, demographics of staff and staff experience but this was largely inconsistent, making the direction of impact unclear. This review examined a large body of international evidence demonstrating inconsistent findings around staffing numbers and demographic characteristics. An emerging body of evidence focused on the impact of interpersonal characteristics and team culture offers potential explanations for the discrepancies surrounding fixed characteristics and team numbers. This suggests possible reasons why focusing on staffing ratios, for instance, may not yield the expected safety outcomes.

Introduction

Patients admitted to mental health wards should be safe but safety incidents can happen that impact wellbeing and recovery (1). A safety incident refers to an unexpected or unintended event that has happened, or failed to happen, that could have or did lead to harm (2). Mental health patients can be harmed by conflict behaviours such as aggression, substance misuse, self-harm or absconding (3, 4). Such incidents are less common on other types of hospital wards (5). Safety may also be compromised when staff attempt to mitigate or prevent safety incidents through restrictive practices such as restraint and seclusion (6). Evidence that restrictive practices are themselves detrimental to patients (7) highlights the complexities inherent to maintaining mental health ward safety.

Reviews have previously discussed various staff and team characteristics that could be implicated in safety incidents, focusing primarily on staff demographics, team skill-mix and staffing levels (8–11). Most reviews report inconsistent findings related to staff demographics (11–13) and experience (14). Additionally, few reviews have reported on the impact of staff attitudes and behaviours on incidents (12,

15, 16). However, previous reviews are limited; most focus on specific incidents such as violence and aggression by patients (9, 13, 17) towards staff only (8, 14, 18, 19) or restraint and coercion (11, 12, 14). Papers reviewing incidents more broadly, tend to focus on understanding what patient safety is in inpatient mental health settings (6, 20, 21). Additionally, many reviews focus on studies reporting quantitative methodologies.

As evidenced, there is a broad range of safety incidents that may be common on mental health wards. These may occur as linked events, whereby the occurrence of one incident leads to other incidents occurring (22, 23). The extensive work that has been undertaken to improve ward safety is indicative of a complex and difficult problem that is often siloed. Rather than using a specific focus to examine each safety incident, the application of a broad lens may generate useful new insights.

Despite longstanding concerns (4, 15), patient safety in mental health inpatient settings remains poorly understood (6). There is scant knowledge regarding the influence of staff and team characteristics on safety incidents (4, 24, 25). The current evidence base lacks a synthesis of different methodologies investigating links between staffing and team factors and safety incidents. Additionally, there is limited understanding of incidents beyond violence, aggression and restrictive practices which limits understanding of safety as a complex phenomenon. The current review therefore aimed to address the identified evidence gaps by reporting the international evidence around the relationships between safety incidents on adult inpatient mental health wards and the characteristics of ward staff and teams.

Aim

This review aimed to explore the question, “How do staff and team characteristics relate to safety incidents in adult inpatient mental health settings?”.

Materials and Methods

Patient and Public Involvement

Individuals with lived experience of inpatient mental health care advised on research decisions during design and conceptualisation, contributed to extraction, analysis and interpretation of the findings. This included expert by experiences within the research team; a project-specific Lived Experience Advisory Group (LEAG) that advised on decisions and contributed to interpretation; and two external groups of experts by experience who advised on decisions regarding scope and search terms.

Design

Systematic integrative review informed by Whittemore and Knafl (26) applying a systematic approach to inductive searching, retrieving and synthesising diverse research literature. The protocol for this review has been registered (27) and published (28). This review is reported according to the Preferred Reporting

Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Table S1 in online supplementary material).

Defining the Condition or Domain Being Studied

The focus of this review is on exploring staff and team characteristics and their relationship to safety incidents that occur in adult inpatient mental health wards. The following definitions have been developed, based on previous literature and collaboration with people with lived experience of mental health services. Staff characteristics refers to anything personal or professional within and about the individual staff member providing care, for example gender, ethnicity, personality and experience. We use the term 'team' in this review to mean all of the people who together provide support to patients in an adult inpatient mental health setting. Thus, 'team characteristics' refers to the interaction of qualities, behaviours and skills of the people providing care, within the team context. A safety incident refers to something unexpected or unintended that has happened or failed to happen, that could have or did lead to harm. This definition includes harm to anyone on the ward, including staff.

Information sources

Six databases (PsycINFO, MEDLINE, CINAHL, Web of Science, Embase and Cochrane) were searched September 2025 to identify relevant studies. These databases were selected based on alignment with the topic area and Cochrane contains relevant reviews for hand searching. Following preliminary testing the following concepts were used for searches: workforce, setting [inpatient mental health] and incidents [both psychological and physical safety, staff and patient]. The full search strategy is available online (29). MeSH subject headings, abstract and title keyword searches and a date limiter for literature published post-1999 were applied for each database search. No other limiters were used. Reference lists of relevant papers and reviews were also screened. The search was not restricted by language.

Inclusion Criteria

Papers were eligible for inclusion if they were published post-1999 and: reported extractable quantitative, qualitative, or mixed-methods data; examined staff and/or team characteristics in relation to safety incidents; focused on adult inpatient mental health settings (ages 18–65). Post-1999 was decided on to align with the global focus on patient safety after the UK National Service Framework was introduced (30).

Exclusion Criteria

Non-empirical publications (including grey literature), studies without an English-language abstract and conference abstracts were excluded. Intervention studies, whereby staff and team characteristics were manipulated during the study period were also excluded. Research focused on older adult or child and

adolescent psychiatric services was excluded. Reviews, editorials, and book chapters were screened to facilitate reference list searches but were not eligible for inclusion.

Selection process

Identified papers were imported into Rayyan, a web-based systematic review management tool. Duplicate entries were identified using Rayyan's automation tool and were manually checked and removed by KG. Screening and subsequent processing were undertaken by the review team (KG, BG, SK). Two reviewers (KG and BG) each independently screened 50% of potentially eligible records by title and abstract, categorising them as 'include', 'exclude', or 'undecided'. To ensure consistency, each reviewer also screened 10% of the other's allocation. Kappa scores were not calculated; instead, discrepancies were resolved through discussion and/or in consultation with the third reviewer (SK).

Full texts were then retrieved for records judged potentially eligible. Where potentially eligible papers were not available in English, they were translated in-house and reviewed by the team before eligibility decisions were made. Full-text screening was conducted independently by the review team (KG, BG, SK), with 'undecided' studies discussed until consensus was achieved. Reasons for exclusion were recorded. Reference lists of included reviews were screened for additional studies, alongside papers identified through professional networks.

Data Evaluation

The Mixed Methods Appraisal Tool (MMAT) was used for quality appraisal of the included academic literature. The tool is suitable for the appraisal of diverse literature, including the critical appraisal of quantitative, qualitative and mixed-methods studies (31). While poorer quality papers were not removed from the synthesis, the quality of each study was mapped to the analysis stage for reference (scoring either quantitative or qualitative papers out of 5 and mixed methods papers out of 15 where 'yes = 1').

Data Synthesis

The large number of eligible studies and their conceptual diversity required an inductive, iterative process. Data synthesis therefore comprised of data reduction (extraction), display and comparison following Whittemore and Kafl's (26) method for synthesis in integrative reviews.

Data Reduction and Display. Data extraction was shared between the review team (BG, KG, SK), using a shared data extraction spreadsheet. This was formulated to incorporate common variables across all papers enabling the organisation of heterogenous data; author, year, country of data collection, sample profile, study design, safety incident or non-incident. Staff and team characteristics were extracted and coded to a developing matrix inductively, following the inductive approach outlined in guidance for integrative methodologies (26). Data were extracted from the original papers results. BG, KG and SK met frequently to discuss, merge and refine sets of staff or team characteristics, to rationalise the sets without losing the granularity of findings.

Data Comparison and Synthesis. Following data reduction, the review team discussed the incidents and non-incidents, and staff and team characteristics. The extracted data were displayed as taxonomies, narratives and process models allowing them to be grouped and compared. The process was interactive and iterative and led to the team summarising primary source data within 15 initial categories. The categories were displayed as groupings of similar characteristics (for example, 'Personal Profile' comprising a narrative synthesis of studies reporting on age, gender, ethnicity and marital status) and developed narratives around how each group related to incidents. Data synthesis was an iterative process of comparing categories to develop the themes further; considering the study methods used to understand how each characteristic related to different incidents. This enabled discovery of similarities and overlapping concepts between and within categories which eventually led to the generation of four themes and related sub-themes.

Positionality and Reflexivity

The research team are a collection of experienced researchers with backgrounds in mental health nursing, psychology, psychiatry and people with lived experience of mental health services. We acknowledge that this likely shapes our perspective of patient safety. Expecting that our understanding of safety and what characteristics could be implicated would be shaped by our experience, we regularly met to discuss our decisions on included papers and interpretations of the original authors results. We also consulted our lived experience advisory group prior to, and throughout, the analysis process. The groups reflections of the researcher's approach and resulting paper are included in a separate commentary (Lived Experience Commentary File 1).

Results

Summary of Study Characteristics

A total of 10,705 records were identified through database searching, after duplicates were removed. After screening, 135 eligible papers that focused on adult inpatient mental health settings were included in the review. The full selection process is detailed in Fig. 1. The studies were carried out across 33 countries and predominantly European (n = 73). Figure 2 includes the individual countries of data collection. Seven papers did not report the country of data collection and in these cases the review team used authorship to interpret the study location (England (32, 33); Germany (34); Taiwan (35); Australia (36); Turkey (37); USA (38)).

Where clearly reported, study settings were acute settings (n = 29), forensic settings (n = 16), admission wards (n = 3), psychiatric intensive care units (n = 2), emergency wards (n = 1) and across several units/wards including acute settings, forensic settings, PICUs and admission wards (n = 9). Most studies described their study setting as a psychiatric hospital or ward or psychiatric unit of a general hospital (n = 75). Most studies reported the staff perspective of incidents (n = 54) or retrospectively analysed hospital data related to staffing and incident data (n = 40). Forty papers included patient perspectives of the staff that cared for them. Thirteen papers are presumed to have used the same data in multiple

papers, most notably papers using data from the City-128 study (39–45) and papers by Cutler et al. (46, 47), Doedens et al. (48, 49) and Weltens et al. (50, 51).

Thirteen studies did not explicitly report their study design and as such, inferences were made based on described methodologies and analysis. There were 80 quantitative studies, 46 qualitative studies and nine mixed methods studies. The most common data collection methods included interviews (n = 49), questionnaires/surveys (n = 46) and retrospective analysis of hospital data (n = 42).

Appraisal Findings

Table S2 (see supplementary file) summarises the MMAT results. Reporting quality was most consistent in qualitative studies and least consistent in quantitative studies. Common limitations included insufficient reporting of nonresponse bias and unrepresentative samples.

Incidents

Most studies reported on incidents of violence and aggression (n = 38 violence and aggression generally and n = 16 violence and aggression from patients directed at staff specifically) and restrictive practices (n = 35). Other incidents/outcomes included: conflict behaviour/adverse events (n = 9), safety incidents (n = 8), conflict and containment (n = 8), prevention of violence and aggression/restrictive practices (n = 6), suicide and self-harm (n = 5), medication errors (n = 5), patients' feelings of safety and psychological safety (n = 4) and falls (n = 1). Considerable variation and overlap were evident in how these outcomes were defined and operationalised across studies (see the study characteristics table, Table S3., in the supplementary file).

Findings

Four themes were generated from the synthesis of 135 papers: 1) Team profile: team composition, working patterns and culture; 2) Personal and professional profiles of individual staff; 3) Impact of staff communication and behaviour; 4) Internal factors affecting staff communication and behaviour. These themes are not mutually exclusive, as they may contain characteristics that overlap in theory and we recognise that the underlying concepts are difficult distinguish. Each theme describes an identified characteristic and its relationship to safety incidents on wards. A summary of the relationships is provided in Fig. 3. The term 'safety incidents' is used throughout the findings unless specified to cover the range of incidents explored. The relationship between characteristics and specific incidents is included in Supplementary Material File S4.

1) **Team Profile: Team Composition, Working Patterns and Culture**

1.1 Working Patterns

Twenty-three papers explored the relationship between working patterns and safety incidents. Findings create an inconsistent narrative with a large proportion of papers reporting no relationship.

Time of Day/Shift. Most papers found incident rates are lower at night (34, 49, 52–59). Two found restrictive practice use was higher at night (60, 61); and one paper reported medication errors during the morning round (62). One found night worsened patient sense of safety (63), while one reported that there was poorer shift climate during the day shift (64) and another found no significant difference between daytime or nighttime (51).

Days of the Week. Most papers reported no association (55, 58, 59, 61, 65–68). Two reported more events or longer seclusion on weekends (69, 70).

Time of Year. Limited findings reported with inconsistent months showing increased rates of restrictive practices (58, 59).

Ward Round Day. A single study reported no association (69).

Shift Pattern. One study reported that staff that worked on rotating shifts experienced more violent incidents (71).

1.2 Team Composition

Sixty-two papers reported on the impact of team composition on safety incidents, demonstrating that while higher staffing numbers appears to reduce incidents, the findings relating to skill-mix and demographic-mix are inconsistent.

Staffing Levels. Most papers reported that higher staffing numbers reduce the number of safety incidents on wards and vice versa (34, 52, 56, 57, 61, 65, 66, 68, 72–91). However, some papers reported that higher staffing levels increased the occurrence of incidents (23, 39–41, 43, 92–94) and created a poorer shift climate (64). Three papers reported no relationship between staffing levels and incidents (58, 59, 95).

Skill Mix: Staff Education and Proportion of Registered Nurses. Eight papers reported that having a ‘sufficient number’ of qualified staff or increased staff education (qualifications) reduced the number of incidents (45, 80, 82, 96–100).

Accumulated Job Experience. Findings were mixed. Five papers reported a higher proportion of experienced staff on shift being associated with reduced incidents (23, 73) and vice versa (85, 101, 102). However, five papers reported that more staff experience relates to more incidents (103–107). Six papers reported no relationship between staff experience and restrictive practice use (59, 61, 80, 108–110) and one paper reported contradicting qualitative evidence (76).

Gender Mix. Findings were mixed. Three studies report that a higher proportion of male staff is associated with increased use of restraint and seclusion (40, 59, 106) while three studies suggest that greater male presence may reduce seclusion use or duration (61, 67, 111).

Ethnicity Mix. Three papers reported that a higher proportion of white British staff were associated with increased use of restrictive practices (39, 41, 43). All three papers appear to use data from the City-128 study in England.

Presence of Temporary (Agency) Staff. Four papers reported that having more temporary staff on wards increased incidents (40, 62, 80, 112) while one paper reported no significant association (113). Patients have reported that they felt uncomfortable about developing rapport with temporary staff (77) and that permanent staff members instilled a sense of psychological safety (114).

1.3 Team Culture

Nineteen papers reported the impact of team culture on safety incidents. While there are fewer published papers exploring these factors, the findings are more consistent than the impact of team composition and working patterns.

Teamwork and Team Cohesion. Increased teamwork and cohesion appeared to reduce incidents (39, 106, 113) and improve perceptions of safety and care for patients (77, 96, 115–117). Poor teamwork was reported to have contributed to, and increased the number of, incidents (62, 73, 96, 118).

Consistency in Approach. Six papers reported that an organised and consistent team approach reduced incidents (35, 39, 72, 87, 115, 119).

A Combination of Individual Staff Characteristics. Five papers reported that staff personality and psychological safety impacted the team and in turn incidents (49, 79, 86, 119, 120).

2) Personal and Professional Profiles of Individual Staff

2.1 Staff Personal Profile

Fifty-two papers reported on personal profile characteristics. Most quantitative findings were inconsistent, and in some cases, qualitative papers provided additional context.

Gender. Findings create an inconsistent narrative about the relationship between the gender of staff and incidents on wards. Twelve papers reported no relationship between the gender of staff and incidents (51, 54, 56, 58, 65, 73, 108, 109, 112, 121–123). Seventeen papers reported that male staff were associated with experiencing and being involved in more incidents (37, 40, 53, 57, 59, 71, 98, 99, 106, 124–131). However, female staff were associated with more incidents in three papers (37, 132, 133) and three papers reported that restrictive practice use was lower when more male staff were present (61, 67, 111). Findings from interview studies add that female staff were often seen as soft, maternal and better at de-escalation, while male staff provide protection from incidents (104, 134, 135). Additionally, male staff tended to be the ones to respond to violent incidents which created an association of male staff with uncomfortable situations (101) and created fear for some female patients (63).

Age. Ten papers reported no significant association between staff member's ages and incidents (51, 54, 57, 59, 73, 108, 109, 121, 123, 136). However, three papers report that older staff age is associated with experiencing more incidents (37, 71, 137), while five papers report that younger staff age is associated with experiencing more incidents (65, 66, 107, 132, 138). Additionally, two papers report an association between staff age and occurrence of incidents but the direction of these results is unclear (112, 125).

Ethnicity. While one paper reported that ethnicity was not a significant risk factor for verbal or physical violence (54), others reported that minority ethnic staff are more likely to be victims of severe physical violence (124) and are associated with high conflict, low containment wards (41).

Marital Status. There was no conclusive evidence for marital status impacting incidents: four reported no relationship (57, 65, 112, 123), two reported that not being married was a risk factor for workplace violence (73, 132) and one reported that being married was a risk factor for workplace violence for female nurses (139).

Cultural Background and Religion. Findings were limited. Two quantitative papers reported no relationship between staff's religion and experiencing incidents (65, 123). One qualitative paper reported that language and cultural differences (related to localities and socio-economic status) could potentially trigger aggressive episodes (72).

Health and Wellbeing. A small amount of evidence around characteristics relating to staff member's health and wellbeing was reported: physical stature of the staff on shift (72, 108), physical health (124), sleep quality (50) and fatigue (140).

Previous Experience of Violence and Aggression. While two papers reported that staff on wards who experience higher incidents of violence might be more prone to using restrictive practices (76, 141), two additional papers reported no relationship between staff's previous experience of violence or aggression and experiencing further incidents (121, 142).

2.2 Professional Profile

Thirty-nine papers reported on the impact of staff's professional profile characteristics (job role, experience and education) on incidents. Patient-facing staff, with more experience, reported the most experience with violent incidents.

Job Role. Most papers reported that patient facing staff (nurses, healthcare assistants and psychiatrists) were often victims of violence, aggression and involved in restrictive practices (37, 53, 56, 69, 73, 84, 90, 99, 107, 116, 123, 125, 126, 133, 143, 144). One paper reported that non-registered staff were associated with higher levels of medication refusal (84) and one paper reported that most medication errors involved nursing staff (62), while another reported no relationship between job role and medication error (112). One paper reported that the presence of the lead nurse was not significantly associated with seclusion use (58), while another reported that having more nurses on the ward was correlated with less time that patients were in seclusion and restraint (67).

Staff Experience and Job Tenure. Several papers reported that more staff experience was associated with violence and aggression (37, 51, 54, 73, 123–128, 133) and prescribing errors (145), whereas some reported less experience was a risk factor for experiencing violence and aggression (65, 66, 132, 137, 139) and making medication errors (62, 112). However, four papers reported no association between length of experience and experiencing violence (56, 121, 133, 137). In one paper, more experienced nurses discussed the importance of relational aspects of caring for suicidal patients (146) and one paper reported that some uncaring staff were often students or less experienced staff (129). In comparison, one paper reported that more experience can result in de-skilled staff and incompetence when it comes to de-escalation skills (86).

Level of Education. Findings around education level (qualifications) were inconsistent. Four papers reported no relationship with incidents (57, 121, 128, 139). However, two papers reported higher education being associated with incidents (71, 125) and a further two papers reported less education being associated with incidents (112, 132). Additionally, one paper suggested that the education of staff could contribute to the decision to seclude patients (89).

Seniority. Evidence was limited and demonstrates no clear relationship between seniority of staff and experiencing incidents (57, 147).

3) **Impact of Staff Communication and Behaviour**

3.1 Communication

Twenty-one papers reported on aspects of communication from staff that might impact incidents. These papers were often qualitative studies using interview data.

Verbal Communication. Eleven papers suggested that the content of staff-patient communications (i.e., what is said) influences incidents. Negative verbal communication (for example, reprimands, derogatory remarks and teasing, exclamations, lying and refusal of requests) and problematic interactions between staff and patients are cited as a potential contributor to incidents (36, 47, 72, 148–152). Involvement in decisions and staff engaging with patients was reported to reduce the need for restrictive practices and reduce emotional harm from incidents (102, 150, 153).

Paraverbal and Non-Verbal Communication. Communication style was reported as a contributing characteristic to whether incidents happen (75, 79, 131). Tone of voice was also reported; specifically a patronising tone of voice (90) or one that conveys disrespect (72). Adopting an open body posture (154) and being calm and confident (88, 101, 155) was reported as important for de-escalating potential incidents. Additionally, an approach based on respecting people's rights to express emotions without taking them personally, and responding in a calm, non-judgemental manner supported the reduction in need for restrictive practices (119). In comparison, staff that were visibly anxious (tense and high alert) can unsettle patients (134) and lead to negative perceptions of staff (87).

3.2 Attitudes and Behaviours

Thirty-seven papers reported that staff's attitudes and behaviours impacted how they were perceived by people on the ward and in turn contributed to incidents. Most findings were based on qualitative studies.

Staff Attitude. Several studies reported that staff's negative attitudes can provoke incidents, generally (36, 74) or when demonstrated through confrontational behaviour (72, 88, 151, 156), responding to patients with hostility (47, 114, 155, 157, 158) and being disrespectful and demeaning to patients (33, 72, 150, 156, 159). Two papers reported that stigmatising attitudes from staff (i.e., the belief that patients with psychosis are dangerous) influence the decision to use restrictive practices over de-escalation strategies (76, 86).

Conversely, where staff were respectful and compassionate, patients' feelings of safety were enhanced (46) and were able to develop trust and hope in relation to suicidal feelings (91). Staff reported that colleagues being nice and trustworthy was a factor in a safe and therapeutic environment (115). However, one study reported that staff attitudes do not impact on self-harm rates (44).

Availability and Presence. Findings appear to demonstrate that availability and presence categorised by active engagement, listening and kindness were associated with more positive outcomes than staff proximity to patients. Staff being unavailable to patients was associated with increasing incidents (135, 150, 159–162). Staff being unavailable was reported to be caused by staff being too busy with other tasks (46, 63, 77) and administering nurses being distracted was reported as a contributing factor to medication errors (62). Qualitative papers described the importance of staff being available for patients to create interpersonal relationships that positively impact feelings of safety for patients (46, 77, 104) and create conditions for patients to disclose suicidal intent (146). Papers reported that staff should be caring, respectful, attentively present and actively connect with patients through kindness and politeness to maintain safety on wards (38, 115, 155) and provide reassurance to distressed patients (91). Listening was viewed as important for patient outcomes (77, 114).

However, nurses that were more present were associated with an increase in exposure to aggressive incidents (51) and constant presence from staff was not always experienced as supportive or comforting, impacting desire to abscond (161). Staff being physically present but ignoring patients' requests (36, 148, 163) and not listening to patients (72, 119, 164, 165) were cited as a contributing factor to incidents.

Empathy. Lack of empathy was reported as a factor in violence and aggression on wards (36, 119, 150, 160). Positive interpersonal connections between patients and staff (characterised as empathy, respect and supportive and friendly interaction) were reported to reduce incidents (85, 150) and promoted a safe and therapeutic environment for patients (47, 114, 115, 158).

4) **Internal Factors Affecting Communication and Behaviour**

Twenty papers reported on how internal factors, such as anxiety, anger and personality traits, impact on staff's behaviour, attitudes and decision making, and in turn incident occurrence. Quantitative papers

tended to report mixed findings.

Anxiety and Worry. Staff with higher levels of anxiety and worry about violence was associated with an increase in incidents (39, 103, 132, 134, 139) and negatively impacted how safe other people on the ward felt (101). However, two papers reported that when staff are afraid, they develop strategies to avoid incidents (i.e., talking to patients in open spaces) which was reported to improve feelings of safety and reduce the need for restraint (104, 130) and one quantitative paper reported no significant relationship between staff being worried about violence and incidents (121).

Anger and Aggression. Two papers reported that staff's anger (using the Novaco Anger Scale) was not a significant predictor for the use of restraint or seclusion (140, 166). However, one quantitative paper reported that greater expression of anger and aggression (measured using the expression of aggression and anger subscale of the Group Environment Scale) among staff members was a predictor of greater use of seclusion and restraint (167) and was thought to result in longer seclusion periods (103). One paper reported that staff who were aggressive and abusive cause feelings of distress and helplessness for patients that often culminated in a need to abscond from hospital and caregivers (161).

Staff Emotional Regulation. Staff who have limited emotional regulation were reported as a factor for incident occurrence (75, 86). However, in one paper, patients reported that hearing their caregivers express their emotions, resulted in an added negative experience for patients leading to them wanting to abscond (161).

Personality. There was limited evidence of the impact of personality traits on incidents. One paper reported that a less creative personality was found to be a predictor for initiation of coercion (136) and one paper reported that of the 'Big Five' personality traits, an association between staff openness and experiencing non-violent incidents was found (137).

Burnout. Increased burnout was reported to be associated with an increase in occurrence of restrictive practices (40, 103, 120).

Staff Morale. One paper reported an association between poor staff morale and increased conflict and containment on wards (113).

Discussion

Evidence from 135 studies investigating the relationship between safety incidents and staff and team characteristics on adult inpatient mental health wards was reviewed. The substantial body of evidence reflects considerable scholarly interest and highlights the diversity of research focus and methodological approaches applied to the topic. The results indicate a lack of consensus on the relationship between commonly identified characteristics, such a staffing levels and staff-mix and safety incidents. Despite this our results add to previous review findings that unhelpful staff attitudes and disengaged staff behaviours contribute to safety incidents (15), including increased use of coercive measures (12, 16),

and thus impede the development of therapeutic relationships (168). Taking a broad approach to included safety incidents and characteristics expands the literature that previously focused on individual incidents and limited characteristics under the label of 'staffing and skill-mix.'. This approach increases our understanding of the research area in several ways, discussed here.

Our use of a broad definition of safety incidents yielded new information. Previous reviews have tended to focus on specific categories of incident, for example: violence and aggression from patients (9, 13, 18, 169); or restraint and coercion (11, 12). Our broader approach demonstrated that staff and team characteristics are relevant across a wide range of incident types, including the escalation of incidents and feelings of safety. There may be an advantage in considering incidents as a whole rather than through focus on a single category (such as violent incidents). The findings of the review demonstrate these dynamics at a more granular level. For example, patients have explained that unpopular staff actions, such as reprimands, derogatory remarks and lying, feel aggressive and are experienced as provocative (46, 150); yet provocative behaviours of staff are not included in incident reports. However, the incidents that follow this, patients' reactions (often labelled as violence, aggression and conflict behaviours), restrictive practices and medication refusal are reported. This approach of investigating aggression by patients towards others, especially staff, echoes a widely held discourse about the dangerousness of people with mental illnesses (170). This perpetuates the idea that the onus of incident causation is on patients and staff involvement is minimised, thus limiting progression in understanding of how wards can be made safer for everyone.

Team numbers and skill mix are a constant theme within the safety literature. However, our review reinforces previous reports that evidence relating to the staffing of wards (10, 11) is notably inconsistent. The findings generally demonstrate that more staff on wards results in fewer incidents, however there are papers that contradict this. What this review adds however is the importance of how staff are present, not just their physical availability but active engagement, listening, kindness and empathy. This could indicate that the Department of Health workforce planning approach is not sufficient for solving safety issues on mental health wards (171). Our examination of teams also included team culture through teamwork and cohesion. While there was less research interest in these characteristics, the findings were consistent. These findings reinforce earlier work suggesting a reciprocal relationship between individual behaviours and team culture (172, 173). Previous studies have examined the potential for individuals and team cultures to be mutually toxic (174, 175) and from a systems perspective it would be important to consider the impact on a team of toxic influences within the wider context.

Our findings also build on previous work by illustrating that how staff communicate, verbally or otherwise, strongly influences how patients experience the ward, via the therapeutic quality of staff-patient relationships, the overall milieu and feelings of safety (82, 134, 176). This demonstrates how patients are impacted by the whole demeanour of staff, i.e. how they present themselves on the ward, and how they use physical and emotional space, beyond fixed characteristics i.e., age, gender and job role. Exploring staff-patient communication from a more holistic perspective, considering specifically

how and what makes a positive patient-staff interaction, could generate valuable insights and learning and in turn mitigate incidents.

Despite the clear importance of subjective characteristics and how staff are perceived by patients, many papers focused on objective, demographic staff characteristics. Evidence around age and gender was often inconclusive and the evidence around ethnicity, cultural background and religion was small. Our findings add to existing safety research (177) by suggesting that subjectively perceived characteristics such as relational skills may have a particularly important influence on safety. Especially when compared with demographic characteristics which are arguably a narrow approach to interpreting staff behaviour. Furthermore, in some countries including the UK (178), many demographic characteristics are protected and so are arguably of limited value to practice in the sense they will not inform recruitment decisions. The nuances of subjective characteristics seem crucial to understanding. For instance, the evidence supporting careful skill mix, focused on how staff interact with people on the wards, seems more compelling than the evidence for increasing staffing numbers regardless of job role, education and skills.

Study Limitations

There are four limitations to note. First, the MMAT was used to report on the quality of the evidence included in this review. Exploring and reporting the quality of included papers allowed for reflection about the validity of findings and identified priorities for conducting future research in this area. However, as per the published MMAT guidance (31), low quality papers were retained for synthesis. The quality of the data may impact the validity of the review findings and highlights difficulties in establishing certainty. Second, there is the possibility for reporting bias based on the included studies. It is important to note that international perspectives are not evenly represented within the body of literature, due to the predominance of studies from Europe. Third, incident reporting systems are a possible factor affecting study results which could have limited the inclusion of patient defined harm in this review and research generally. Within the NHS there is a set of principles that individual providers apply (179) but ultimately the reported incidents are down to staff judgement. Although these are comprehensive from certain perspectives our lived experience advisory group suggested some issues important to patients, such as feelings of safety, or actions of self-harm not captured as severe, may not be reported consistently. We did not include grey literature, that could have captured this perspective as much of the discourse about patient experiences is held in informal spaces. Fourth, the study did not incorporate characteristics of the wider environment despite their obvious influence on safety incidents. The omission could mean that useful contextual information required to understand the causes of safety incidents could be missing.

Implications

Deeper understanding of the subtle elements of team composition, team culture and engagement from patient-facing staff could usefully inform staffing priorities and patient safety efforts. At present research on these team characteristics, alongside studies investigating the relationship between internal staff characteristics (such as burnout) and incidents is noticeably limited in comparison to research on staffing numbers and demographic composition of teams. Additionally, we identified limited evidence

around the impact of leadership on safety incidents. Previous work has highlighted that good ward leadership can tackle the influential toxic elements within a team (180). Exploring these concepts to understand the impact on incidents could add to the research on nuances in team composition.

We found a wide variety of terms for our core concept of safety incident. More consistency across the body of research and practice could facilitate evidence synthesis to inform practice recommendations. This is also the case for the research priorities around characteristics. The extensive list of characteristics listed in this paper, as well as the number of papers reporting conflicting evidence for the same characteristics, demonstrates the need for a more streamlined approach to research inquiry in inpatient mental healthcare. Most importantly, focusing on understanding the complexities of safety research in this setting.

Patient perspectives were relatively underrepresented in the included studies. Where reported, patient's perspectives in this review aligned with previous research (4, 172) and people with lived experience advising on the study. Unsurprisingly, patients share the view that they want kind, friendly and competent staff who treat them with respect and help them to get better. It seems remiss that much patient safety research does not appear to be driven by this persistent finding. Qualitative approaches could clarify the context for why some of these characteristics impact safety incidents. Qualitative methodologies are underused but can add value (181) to future research by 'capturing the nuance of realities' (182). This approach, combining qualitative methods and patient involvement could help to unpack the complexities between context, mechanisms and outcomes in this field of inquiry, and resolve inconsistencies in the evidence.

Conclusions

By applying a broad definition of team characteristics and methodologies to the current review we have been able to illustrate that subtle phenomena such as team cohesion, consistency in approach, availability and staff presence are highly influential on overall understanding of ward safety. This suggests possible reasons why focusing on staffing ratios, for instance, may not yield the expected safety outcomes. However, despite a sustained research contribution, there are gaps and inconsistencies in the evidence around how staff and team characteristics may influence safety incidents on mental health wards. Without a clearer body of evidence, mental health safety research cannot expect to develop effective evidence-based strategies to address the issues. Future research could consider working towards establishing an agreed set of core concepts and measures to facilitate this.

Declarations

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Declaration of Competing Interest

s: None to declare.

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Figures

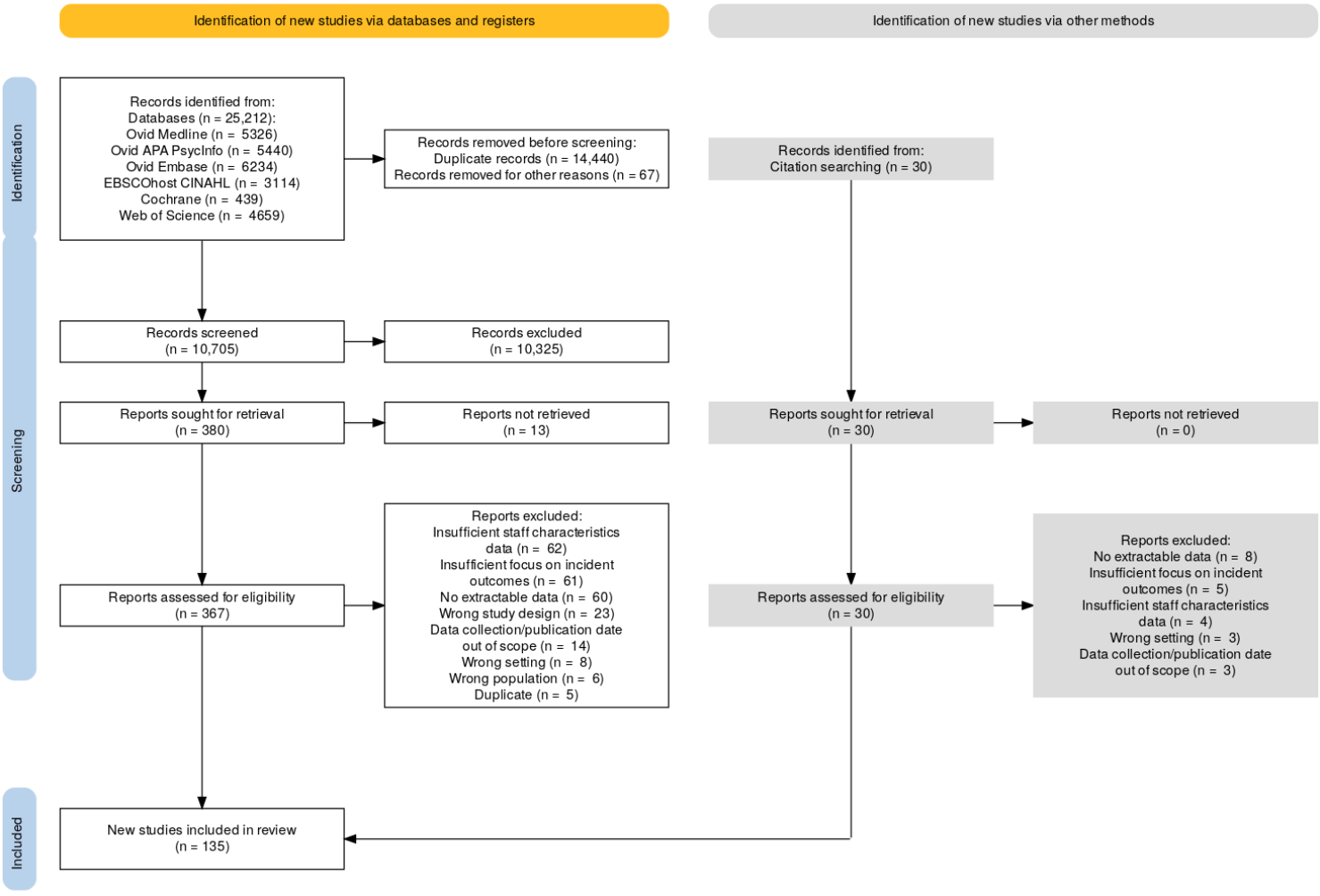
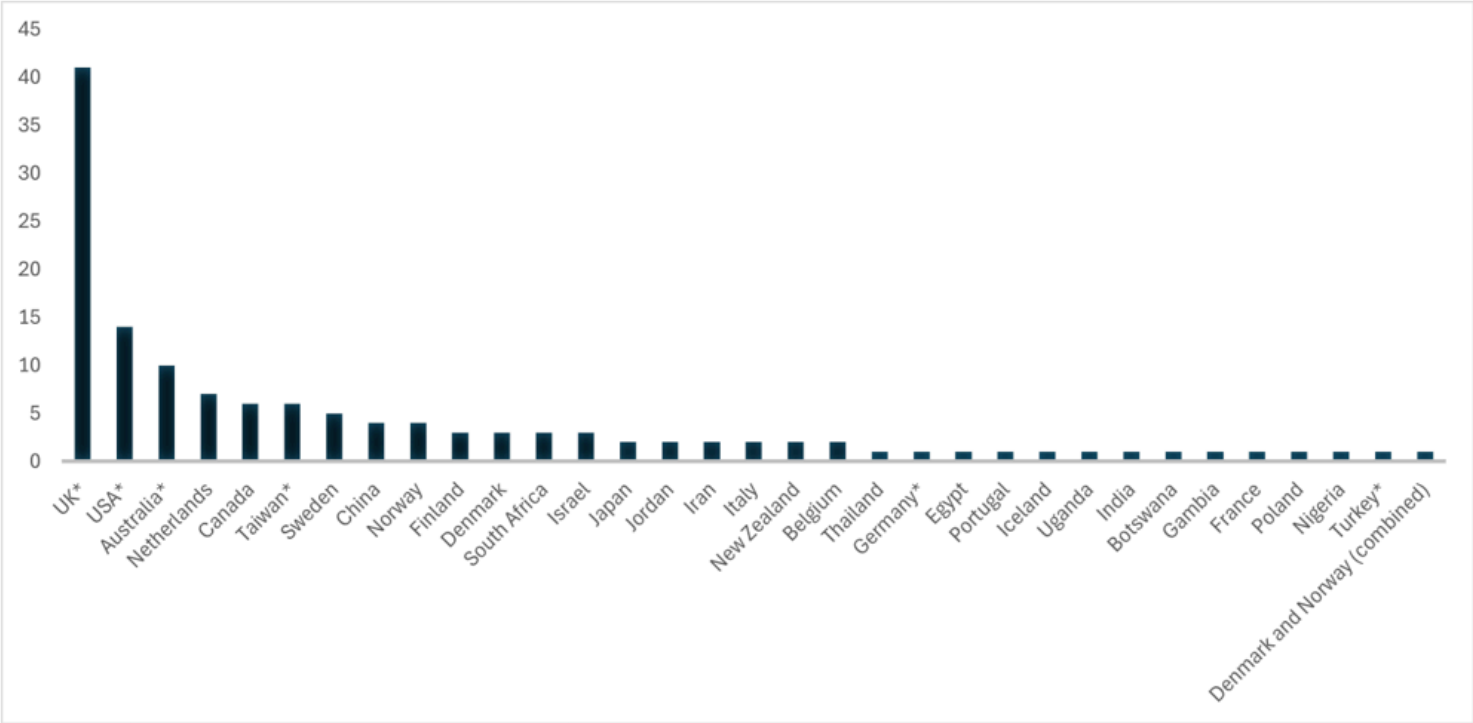


Figure 1

PRISMA flow diagram.



*Denotes where country of data collection has been interpreted by the research team.

Figure 2

Bar chart to demonstrate the number of studies conducted per country.

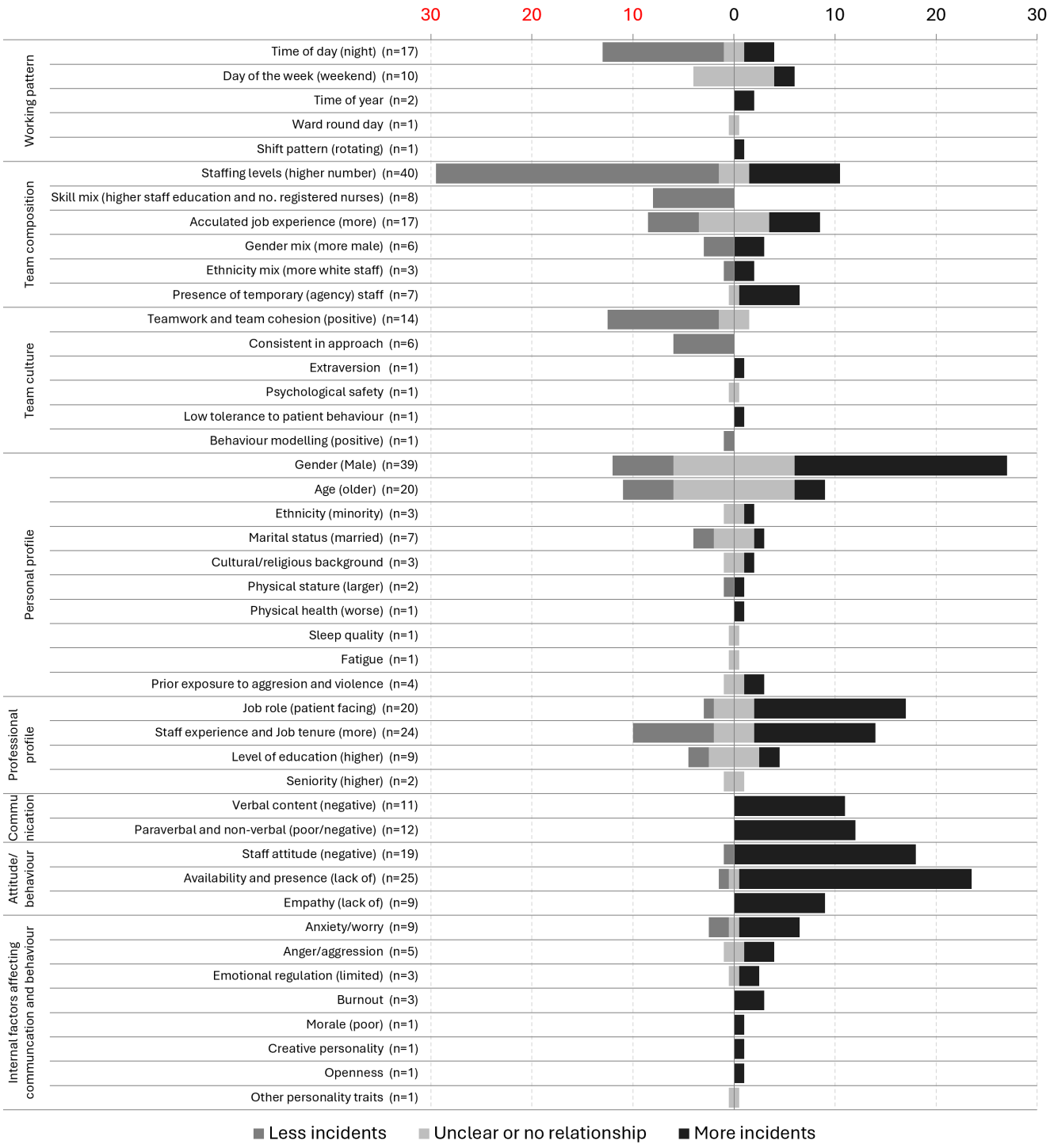


Figure 3

Divergent chart to represent the relationship between characteristics and incidents.

Supplementary Files

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- Appendices.docx