What staffing structures of mental health services are associated with improved patient outcomes? A rapid review.

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Focus of the review

The focus of this rapid review is to summarise the best available evidence on safe staffing structures of mental health teams to inform the development of specific sustainable safe staffing guidance for the National Safe Sustainable Staffing Guidance Programme Board. The starting point for the review was evidence from mental health settings. If this evidence proved to be limited, the scope was broadened to include non-mental health settings.

The overarching review questions were as follows:

1. *What staffing factors (including skill mix, staff relationships, working structures) in mental health services are associated with improved patient outcomes (including safety, effectiveness and experience)?*
2. *What staffing structures in non-mental health services are associated with improved patient outcomes (including safety, effectiveness and experience)?*

We included studies from any Organisation for Economic Co-operation and Development (OECD) member country of inpatient and community mental health settings in the following domains: adult mental health; child and adolescent mental health; forensic mental health; learning disabilities and neurodevelopmental disorders; and older people's mental health and dementia. Any staffing model was deemed relevant to the review including service re-design, specific interventions and staff training and development models. Outcomes of interest encompassed *patient and staff safety* (e.g. violence on wards, suicide and self-harm, re-admission rates, service utilisation), *efficacy* (e.g. relapse, remission, quality of life) and *patient experience* (experience of, and satisfaction with, care). This review took a top-down approach by initially only including systematic reviews. In the absence of high-quality systematic reviews, non-systematic literature reviews were included.

Method

Outline of the search strategy

Due to time constraints a rapid review strategy was adopted. Preliminary evidence gathering involved searching internet resources such as Google Scholar and websites of key organisations for relevant review articles. The aim was to use a snowballing process, whereby reference lists of identified studies and reports were tracked and used to identify further relevant reviews and so on. While this approach can prove effective in identifying relevant literature, we found a limited number of articles that would directly answer our review questions. The second step in our search strategy was to conduct a more comprehensive literature search in PubMed using the terms outlined in Table 1 and their variants. Finally, we supplemented the previous steps with hand-searches of included reviews and by contacting an expert in the field, Professor Fiona Nolan, to inform us of any relevant reports or published studies.

Following a meeting with the mental health workstream sub-group (who lead the development of the safe, sustainable and productive staffing improvement resource in mental health settings) about the initial search strategy, it was agreed that the search terms used in the first database search were too focused on nursing and excluded the broader multidisciplinary team who work within mental health services. A second database search was therefore conducted, updating the first search to include the additional terms outlined in Table 2. The steering group also felt that there was a lack of information in the report about patient experience of mental health services, therefore an additional rapid search of internet sources was conducted to fill this gap. From these searches a systematic review on this topic was located and added to the review.

Table 1. Search terms for the first database search

	OR	OR	OR
AND	Systematic review Literature review Review	Mental health Mental health services Psychiatric Psychiatric services Nursing Health practitioner	Leadership Nursing leadership Administration Hospital Hospital organisation Personnel management Management Organisation Client staff ratio

Studies identified

The first electronic database search identified 1,798 records. Through hand-searching and contact with a topic expert a further 39 studies were located. Of these, 1,694 were excluded after a title screen and a further 92 excluded after a screen of the abstract. In total, 51 full-text articles were reviewed, of which 17 were included in the review (see Figure 1 for further details).

The second electronic database search identified 1,335 records. Of these, 1,278 were excluded after a title screen (this included studies that had been previously identified and included in the first search [*n*=13] and a further 27 were excluded after a screen of the abstract. An additional four studies were identified through further hand searching and discussion with the steering group. In total 34 full-text articles were reviewed, of which 10 papers were included in the review.

The total number of studies used in development of this report were as follows:

a) Reviews of mental health settings = 21

b) Reviews of non-mental health inpatient settings = 6

Table 2. Search terms for second database search

	OR	OR	OR	OR
AND	Systematic review Literature review	Mental health Mental health services Community mental health services Psychiatric services	Multidisciplinary team Nursing Allied health professional Psychologist Occupational therapist Therapist Psychiatrist	Nursing leadership Leadership Hospital organisation Administration Personnel management Client staff ratio Safe staffing

Total = 27

Synthesis of the evidence

Given the broad scope of this review, and to facilitate a synthesis of the evidence, we developed and revised a framework that we had previously used for structuring reviews on patient experience[1] and organisational interventions in health[2] and educational settings[3]. The output of the reviews was grouped under the following headings: *general (non-mental health) settings* and *mental health settings*. Within each group we summarised the findings of the evidence and set out draft recommendations and potential implications for practice (see the evidence tables on pages 7 – 13).

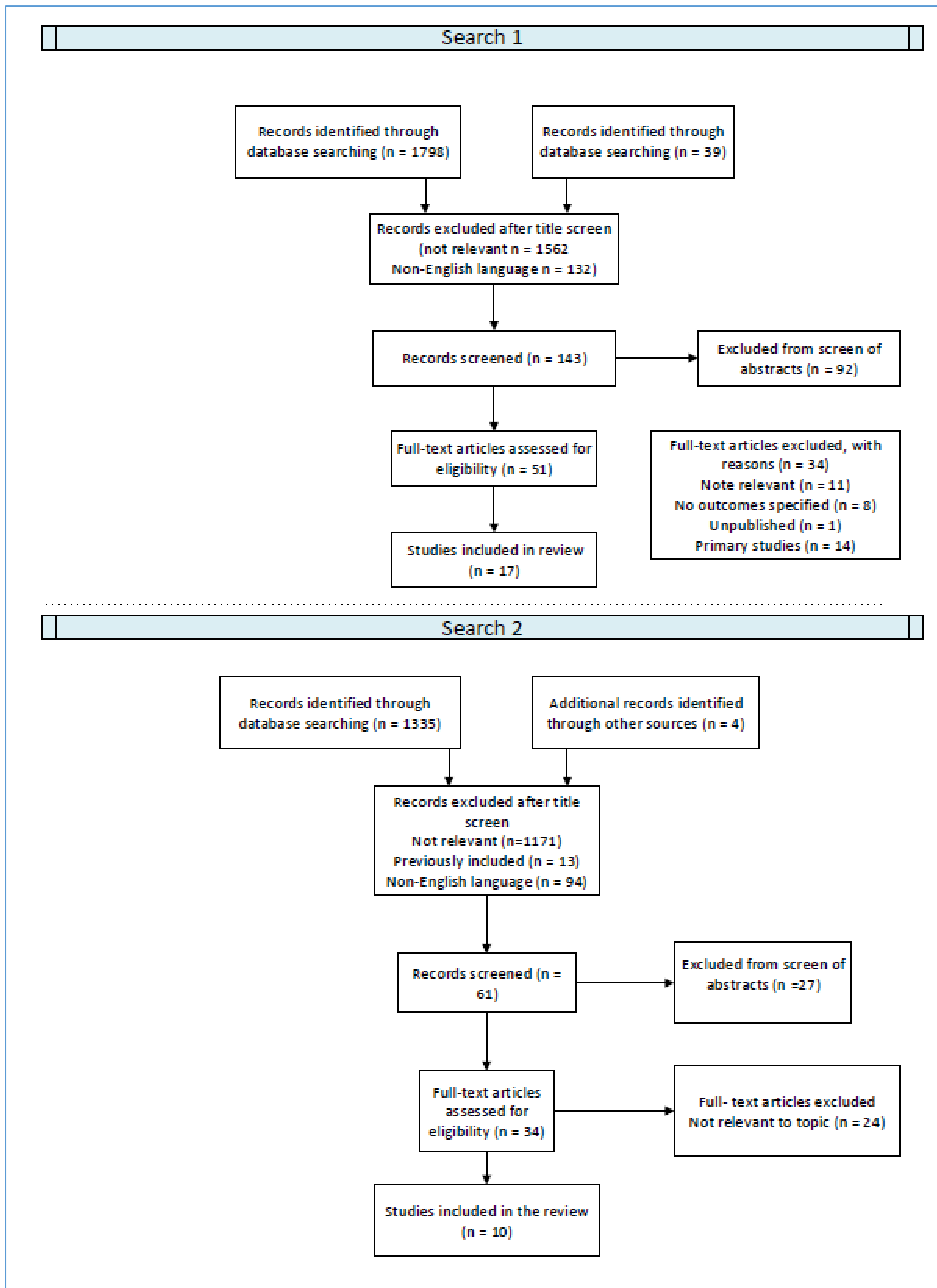

Figure 1. PRISMA diagram

Quality of the evidence
Included reviews were assessed using the AMSTAR tool (A Measurement Tool to Assess Systematic Reviews)[4]. Evidence was graded as high quality (++), moderate quality (+) or low quality (-) as follows:

- ++ indicates that all or most of the checklist criteria have been fulfilled (and where they have not been fulfilled the conclusions of the review are very unlikely to alter)
- + indicates that some of the checklist criteria have been fulfilled (and where they have not been fulfilled, or not adequately described, the conclusions of the review are unlikely to alter)
- – indicates that few or no checklist criteria have been fulfilled (and the conclusions of the review are likely or very likely to alter).

Study characteristics

The reviews included in the mental health evidence matrix drew on findings from a range of studies, examining different issues in mental health staffing from both quantitative and qualitative data. The most common methods for data collection within the studies included in the reviews were interviews and surveys. Various measurement tools and surveys were used, which made comparisons between studies difficult. Studies were mainly conducted in the UK, Australia and the United States.

Of the included reviews, the majority focused on adult inpatient settings (*n*=12), five covered community settings ([5,6,7,8,9]) and four covered inpatient, community and mixed settings ([10,11,12,13]).

Thirteen reviews focused on mental health nursing and eight studies looked at all professions (including nursing). Several reviews, although focusing on one particular professional group, considered other groups in their discussions and conclusions as evidence had arisen throughout their research. ([5,14,15,16]).

After assessment with AMSTAR, 13 mental health reviews were judged as low quality, seven as moderate quality and one as high quality (Bee at al. 2008). See Appendix A for further details.

Limitations and gaps in the evidence

There were considerable limitations in the available data. The reviews were sparse and predominantly of low quality. Despite the fact that our search terms included a broad set of professions, the focus of the evidence was on nursing staff rather than on other disciplines such as allied health professionals or medics. This may reflect the fact that mental health nurses make up the largest proportion of the UK NHS mental health services workforce (Bee et al, 2008). Another limitation lies in type of studies reviewed: the inclusion of primarily cross-sectional studies in the reviews made it difficult to ascertain the causal pathway of reported outcomes. There was limited evidence for child and adolescent mental health services (CAMHS), forensic services and community mental health teams. No reviews were found that looked at staffing issues in CAMHS settings; the only studies found in this area were at the primary level, and have not been included in this report. Only one paper looked at forensic inpatient settings ([17]) and for patient experience there was also only one review. Finally, the findings reported in this review are based on a number of primary level studies, some of which were conducted outside of the UK, therefore their application to the NHS needs to be considered with some caution.

Evidence tables

The evidence tables, which include recommendations, are organised as follows:

- Section 1: Recommendations for safer staffing in mental health services
    - **Adult inpatient services**
    - **Forensic services**
    - **Community**
    - **Patients' views and expectations of UK-registered mental health nurses: a systematic review of** empirical research [10]
    - **Conclusions**

- Section 2: Recommendations for safer staffing in non-mental health inpatient settings
    - **Conclusion**

Section 1: Recommendations for safer staffing in mental health services

Adult inpatient services	
Findings	**Implications**
Staff qualifications/skills Staff skills in providing reassurance, knowledge of treatments, maintenance of dignity, privacy and confidentiality and decision making, among others, are important for patient care.[18] Mental health nurses are required to transform and change in line with the requirements of society, the mental health service organisation and patients.[11]	**Staff qualifications/skills** Training for all staff should encompass skills in reassurance, maintenance of dignity, privacy and confidentiality and decision making.[18] Skills recommended for nursing in close observation areas include: assessment, risk assessment, management of aggression, prevention of violence, pharmacological management and collaboration.[24]
Staff composition (number; ratio; gender) Staffing characteristics such as an increased number of nurses on shift, greater male-female staff ratio, level of education and variability of work experience, or a combination of all these factors were all associated with the use of seclusion and the number of patients secluded.[19] One programme reported on increasing staff numbers that saw a substantial reduction in seclusion and restraint.[20]	**Staff composition (number; ratio; gender)** Services should ensure an adequate number of skilled staff for the provision of therapeutic mental health nursing care.[24] Increased staff numbers may have a positive impact on reducing the use of seclusion and restraint.[20]
Staff-patient interaction/ therapeutic relations Some of the literature infers a relationship between ward rules and patient violence, and a link between nurse-patient interaction and rule implementation. However, the evidence is weak and most studies fail to specify the aspects of nurse-patient interaction that are involved.[21] Patient factors that can make a therapeutic relationship more challenging include younger age, gender (evidence is conflicted), psychiatric diagnosis (those that result in impaired cognitive processes), and history of violence.[14] Staff factors should also be considered, for example work experience, demographics, education, work culture and role.[14] A poor therapeutic alliance at the time of admission may be linked to inpatient violence.[14] Periods of aggression occurred when there were fewer staff members in the milieu, there was an absence of regular staff, or when patients were unfamiliar with the staff.[14]	**Staff-patient interaction/ therapeutic relations** Consider times of increased risk in inpatient settings. Increased staff vigilance to methods of engagement with patients during periods of turbulence or change on wards, such as new admissions, may be of benefit.[14] Consider the staff-patient interaction when organising a team. Ensure that regular staff are in the majority for a shift. In addition to increasing the number of regular, qualified staff, team managers should ensure that staff who have existing relationships with patients prioritise engagement over administrative tasks, which are best allocated to new/unfamiliar staff.[20] The therapeutic relationship should be explicitly recognised as integral to the process of care planning and delivery.[23] A metric for therapeutic engagement would be most useful if transferable across all mental health settings. This could be a basic level measurement of whether mental health nurses are engaging in 1:1 time with patients, and how this is perceived by both

Nurse-patient interaction is complex and the development of therapeutic relations is not limited to time spent with patients conducting ‘therapeutic interventions’.[22]

Good relationships between patients and care providers appear to have a direct impact on the patients' quality of life.[15]

Increased interaction between staff and patients may be associated with lower rates of seclusion or restraint and this reduction increases the amount of time that staff have to engage with patients in a more productive way, which may lead to better outcomes.[20]

Despite evidence on the benefits of therapeutic interaction, there have been consistent reports of low activity and social engagement for patients on wards for the past 35 years and there is some evidence that nurses spend only a limited amount of time in direct contact with patients.[16]

Evidence suggests patients value positive attitudes, being listened to, and trusting those who provide care. Mental health nurses value their ability to relate through talking, listening and expressing empathy.[23]

Team/service level organisation

Many unit level factors are associated with violence including characteristics of the physical environment and the organisational responses to patients’ needs. Structure, clear boundaries and teamwork identified as important.[14]

Education, a supportive unit context and institutional culture, along with an adequate number of skilled staff, was identified in the literature as being essential for the provision of therapeutic mental health nursing care.[24]

the staff member and the patient.[23]

Team/service level organisation

Create a unit culture that promotes meaningful and predictable activities and in which patients know which staff will be on duty.[14]

Attitudinal changes are an important component of attempting to reduce seclusion rates.[19]

The dignity and integrity of patients must be constantly prioritised throughout every level of the organisation.[11]

A major shift in many current working practices that have been established through highly prescriptive nursing routines may be required in order to reorganise the priorities of patient care, with an emphasis on building therapeutic relationships.[23]

Barriers developing and maintaining therapeutic relationships should be considered, these include: time constraints; lack of suitable training and skills; and more severely unwell patients admitted to acute wards than in the years before the introduction of home treatment teams.[23]

Leadership style

Positive unit leadership has been identified as a factor in decreasing violence; unit leaders who value a climate where both staff and patients are treated with dignity and respect can produce more humane environment which may result in calmer wards.[14]

The role of staff in inpatient care was found to be dependent on the opportunities created by the organisation management and culture; failures in communication between staff have been identified as a leading source of adverse events.[18]

The emotional capacity of sensitivity is an important and integral part of clinical wisdom and moral competency in mental health leadership and requires ethical and moral awareness and judgement.[11]

Mental health nurses' leadership and management are associated with organisational effectiveness and patient outcomes.[11]

Leadership style

To create an environment that supports an effective staff group it is important that management considers the following aspects of staffing: communication, staff knowledge and skills, workload, staff health and wellbeing.[18]

The effectiveness of mental health nursing leadership and management should be recognised and encouraged.[11]

Staff support, supervisions and training, wellbeing, workload and burnout

The review revealed that violence results from the complex interactions among the patient, staff, and culture of the specific unit. Characteristics of staff, including job satisfaction, locus of control and anxiety are associated with violence. Staff who were more authoritative and detached were more prone to violent encounters; staff who engaged with patients in early intervention, were psychologically available to patients, empathised and were compassionate had fewer violent encounters.[14]

Manageable workloads are necessary to maintain patient safety as excessive workload can lead to errors; staff's health and well-being deemed an essential component of patient safety.[16]

There are great demands on nurses in terms of both knowledge and interpersonal skills. It is also a great burden to deal with extreme behaviour and emotional reactions.[15]

There is a lack of empirical evidence relating to staff burnout and its effect - but ample evidence that a substantive burnout problem within the mental health workforce exists. There are consistently high levels on at least one factor of burnout among most of the workforce groups in behavioural health that have been studied; organizational and situational factors are more significant contributors to burnout than individual factors.[25]

Staff support, supervisions and training, wellbeing, workload and burnout

Increased staff training in de-escalation skills and developing therapeutic rapport with patients have been linked to decreased levels of violence.[14]

The skills necessary to build therapeutic relations and to manage the emotional aspect of the work should be given special attention in both nursing education and supervision.[15]

Burnout and staff wellbeing are issues that should be addressed by all mental health organisations.[25]

To manage stress in mental health staff it should be addressed at several levels:

- Prevention: management strategies should be proactive rather than reactive. There is a lack of research at organisational level.
- Minimise the negative effects of stress via education and management strategies
- Assist individuals who are experiencing the effects of stress.[12]

Future training initiatives need to be highly focused on particular target groups with an imperative to train workers with skills in interventions for which there is a sound research base.[13]

Some studies revealed an excessive level of workplace stress for mental health nurses. The most frequently reported sources of stress were: administration and organisational concerns; client-related issues; heavy workload; inter professional conflict; financial and resource issues; professional self-doubt; home/work conflict; staffing levels; changes in the health service; maintenance of standards; giving talks and lectures; length of waiting lists; and poor supervision.[12] Factors associated with increasing stress levels included: job dissatisfaction; poor quality of social support; permanent day shift work; being younger; longer length of service; reduced time for patient contact; dissatisfaction with working conditions; levels of responsibility; being female; and working occasional night shifts.[16] The reasons associated with leaving psychiatric nursing were: low overall job satisfaction; dissatisfaction with the perceived quality of decisions made by those in managerial positions, dissatisfaction with the amount of in service training on offer; dissatisfaction with physical working conditions; burnout; type A personality; and being younger, less experienced and more highly qualified.[12]	

Forensic services	
Findings	**Implications**
Team/service level organisation There is some evidence that staff rotation between wards may protect against stress in forensic settings by enabling personal and professional development.[17]	**Team/service level organisation** Rotational posts should be established and encouraged within organisations to increase personal and professional development and reduce boredom and apathy.[17] The clinical autonomy of nurses should be increased with regards to decision making.[17]
Staff support, supervisions and training, wellbeing, workload and burnout Nurses' sense of power, decision-making and control are significant factors in providing a positive service and protecting against burnout.[21]	**Staff support, supervisions and training, wellbeing, workload and burnout** Forensic centres should create easy access to support systems and managers should foster an open and honest culture. Staff should be encouraged and provided with continuing professional education and development and involvement in research projects. This should include staff training in stress management, further training in use of seclusion and de-escalation as well as easy access to regular clinical supervision.[17]

Community

Findings	Implications
Staff-patient interaction/ therapeutic relations Many mental health community case managers report heavy workloads and an increase in administrative tasks, meaning less time available to spend with patients. Minimal research exists on how best to calculate caseloads.[6]	**Staff-patient interaction/ therapeutic relations** Further robust research is required on determining caseloads in community case management.[6]
Leadership style Effective leadership appears to be a protective factor against stress, dissatisfaction and burnout in staff.[8]	**Leadership style** Effective leadership should provide clarity concerning team aims and clarity of team member's roles in pursuit of these aims.[8]
Staff support, supervisions and training, wellbeing, workload and burnout Health professionals working as part of community teams are experiencing increasing levels of stress and burnout as a result of increasing workloads, increasing administration and lack of resources.[5] Identified stressors specific to community mental health nurses include: • time management; having to see inappropriate referrals; safety issues (involving violence and suicidal ideation and intent) • role based stressors included role conflict, uncertainty and changes in role and levels of responsibility. • stressors involving relationships with others included lack of supervision, and working within dysfunctional community mental health nurses • career development: no time for personal study. • organisational structure: NHS reforms and the implications for CMHNs, general working conditions and lack of funding and resources [5] Expert opinion around caseload has such wide variance (suggesting optimum caseloads of between 10 and 30[6] in generic community teams) as to be of little value. Evidence suggests that smaller caseloads do not necessarily equate to better outcomes. Determining caseloads using ratios of clients per case manager might be over simplistic.[6] Diagnosis alone is not a useful basis for developing a workload model and many aspects of community mental health care are not easily identified or quantified.[7]	**Staff support, supervisions and training, wellbeing, workload and burnout** Services should consider a range of factors to determine caseloads of case managers, including contact frequency, response difficulty, intervention type, competence/seniority of case manager, caseload maturity, complexity of care required, time needed, location of clients, and roles other than case management.[6] Factors that should be considered when developing a workload model for community mental health nurses include: the classification of the complexity of the case; frequency and duration of visits required; level of client's social support; level of dependency of the client; recognition of all activities carried out by mental health case workers including indirect care and activities not involved in case management; geographical location; admission and discharge practices; and the type of case management and care offered.[7] Services should aim to implement targeted, evidence-based training initiatives. An example of this could be training case managers within an assertive community treatment model ensuring that these individuals have skills in clinical interventions, such as medication management, cognitive behavioural therapy and family work.[13]

Staff value feeling effective and obstacles to this are a source of pressure and stress.[8] Factors that increase stress: large caseloads; reorganisation of community teams; increased workload; increased administrative duties; reduced time for patients; and reduced time for family contact.[12] Team work, clear leadership and opportunities for reflective practice appear to protect staff from burnout by providing an environment that shared and contained work-related anxiety.[8]	
Team/service level organisation Less time was spent in hospital following community mental health team (CMHT) management; total cost of care was less for those treated predominantly by a CMHT; changes in psychopathology show no difference between CMHT management and standard, hospital-oriented care; community-based care may reduce suicide and deaths under suspicious circumstances.[9] The most effective stress management strategies incorporated one-off approaches, such as workshops, with ongoing support. Positive peer interaction also helped bolster stress management.[9]	**Team/service level organisation** It is necessary to provide adequate resources for the development and support of strong community mental health teams.[5] Emphasis should be put on team work, clear leadership and opportunities for reflective practice.[8] The organisational context of the team and leadership, management, supervisory and mentoring relationships are essential in providing clear goals, delineating the roles of staff members, and putting in place efficient work and supervisory processes (including time for reflection, affirmation and personal support).[8]

Patients' views and expectations of UK-registered mental health nurses: a systematic review of empirical research [10]	
Findings	Implications
Staff-patient interaction/ therapeutic relationship • Particular problems were found within inpatient settings: a wide range of user views reported inpatient staff as confrontational or dismissive, and likely to be perceived as coercive. Nurses were perceived as having negative attitudes, lacking enthusiasm, being confrontational, failing to demonstrate respect and being inaccessible. These are factors that have the potential to negatively affect treatment adherence and outcomes • Patients expect and desire consistent relationships with mental health nurses	**Staff-patient interaction/ therapeutic relationship** Organisations should ensure that registered mental health nurses are equipped with both therapeutic clinical skills, including the ability to deliver a range of psychological interventions, as well as more generic skills, attributes and values associated with patient engagement, relationship building and interpersonal communication.
Staff qualifications/skills and training • Patients expect nurses to be equipped with skills to recognise symptoms and deliver effective interventions and treatment options • Expectations are of nurses to fulfil a multifaceted role including practical and social support alongside providing more formal psychological interventions • Perceived success in these multifaceted roles is influenced by whether nurses are judged as being able to listen, empathise and understand. There is equal, if not greater, emphasis on personal attributes of mental health nurses as on professional skills	**Staff qualifications/skills and training** Continued education and training should address the issues raised in relation to interpersonal and relational skills, particularly within inpatient settings.
Team/service level organisation • Inpatient staff have been perceived as inaccessible, with a limited quantity, quality and depth of interaction; this is attributed in part to rapid staff turnover, extensive use of bank and agency staff and low staff morale • The review found fewer criticisms of staff accessibility in the community settings, where issues were more focused on inherent service limitations resulting in a lack of nurse-user collaboration and inadequate provision of crisis care • The review highlights factors relating to the wider system of care, which is likely to account for the negative attitudes and behaviours of staff. These factors include short-staffing, high staff turnover, organisational reliance on bank and agency staff and low staff morale	**Team/service level organisation** The priority should be on actions that address the wider system issues. Training and education for staff may be unproductive if the organisational issues around recruitment and retention of nursing staff in particular are not addressed. There should be a greater provision of choice for patients and they should be involved in the assessment and planning of care as necessary.

Conclusions

It is evident from the review that the issue of safe and sustainable staffing in mental health is complex. No robust empirical studies have yet been carried out that can underpin national or local policies in this area. To date the national dialogue on 'safer staffing' has been heavily weighted towards numbers, skill mix and ratios. Of all the types of evidence examined through this review, the evidence to support specifying staff numbers and ratios was particularly weak. Major research is required before any conclusions or even robust recommendations can be made on this issue and/or such a focus should be replaced or supplemented by a greater emphasis on other factors such as training, staff wellbeing and attitudes, where there is at least some evidence that can create recommendations for actions. A challenge in developing recommendations for safe staffing in mental health settings as a whole is the range of settings that this encompasses. Staffing in inpatient, outpatient, day care, community, or forensic services will have common features but will face different challenges.

Given this dearth of evidence no recommendations around staffing in mental health settings can be currently provided. Some themes can be highlighted based on the outputs from surveys and qualitative reports that might guide a framework for the research that is urgently needed.

The findings from this review can be broadly categorised into four categories:

- Staff numbers and skills
- Staff productivity
- Staff wellbeing and support
- Unit culture/organisation and leadership.

In the absence of any evidence to guide numbers and ratios, other factors may be of limited value. However, those highlighted within this review include consistency of staff, use of staff time, staff skills and attitudes as well as patient factors that may influence decisions (e.g. age, gender, psychiatric diagnosis etc.). The skills required to foster effective therapeutic relationships is frequently highlighted as a key area that needs further investigation. This also links to staff productivity and the effective use of staff time and skills needed within a team. However weak the evidence is around nurse staffing in mental health, it is even weaker in relation to the actual and potential roles for allied health professionals and medics in staffing models. The majority of research rightly focuses on nursing, however there is considerable scope for investigating the potential for the wider clinical team to be engaged in inpatient staffing models. The research that is urgently needed to guide decisions in mental health settings around how many staff to deploy in relation to patients' needs and characteristics, should incorporate the skill mix of the multidisciplinary team.

Unit culture and leadership are also key factors. Though the evidence is sparse, the findings point towards effective leadership instilling a culture that values the quality of all interactions between staff and patients and places emphasis on the therapeutic alliance. Strong leadership in mental health settings appears to work towards creating a climate where both staff and patients are treated with dignity and respect, which can have a positive impact on patient outcomes.[22]

Clarity of roles and of shared team goals are also important aspects of creating a sustainable workforce. Role clarity is related to job satisfaction and higher staff morale.[17] However, empirical research examining the methods to achieve a successful unit culture is needed. What comprises good leadership in mental health settings and how this can be fostered are areas for future research.

The emotional demands of working within mental health services is a recurring theme throughout the review. Promoting wellbeing and reducing the likelihood of burnout are essential to retaining staff, thereby creating a sustainable workforce. Potential interventions to address these issues should be tested within this staff group to bolster any prospective studies into numbers and skill mix.

The majority of research included in this review focuses on adult inpatient settings. From the community-based research, the key themes relate to burnout and community caseloads, and further research in this area would be useful. Lack of resources, or staff, is also highlighted as a core problem affecting community teams.

Patient views and expectations support the themes of the review emphasising the importance of personal attributes and values of staff which are felt to enable engagement and building therapeutic relationships. associated with user engagement, relationship building and interpersonal communication.

There is also a recognition of problems with the wider system and the suggestion that education and training for staff may be ineffective if organisational issues such as high turnover, short staffing, reliance on bank and agency staff and low staff morale remains the same.

This review has highlighted an almost complete absence of evidence to guide decision making around numbers of staff to employ in any mental health setting. Adequately powered studies with rapid outputs are needed in order to make appropriate recommendations on numbers, characteristics and skills of mental health staff. Further reviews of models of leadership and organisational support should then be evaluated in terms of effects on staff and patient outcomes.

Section 2: Recommendations for safer staffing in non-mental health inpatient settings

Findings	Implications for practice
Staff qualifications Statistically and clinically important association between RN staffing and adjusted odds ratio of hospital-related mortality, failure to rescue and other patient outcomes.[26] The relationship between nurse staffing and patient outcomes is associated more with registered nurse staffing levels and the proportion of registered nurses in the total staff mix; the quality of nursing care improved with increased ratios of qualified and further trained staff to patients and increasing grade mix.[27] Sufficient numbers of registered nurses may prevent patient-related adverse events that cause patients to stay longer than necessary.[28] Higher levels of care assistant staffing are not associated with improved outcomes.[31]	**Staff qualifications** To improve patient outcomes, organisations should focus on providing teams with a rich skill mix and increase the level of qualified staff.[27] A higher ratio of registered nurses to non-licensed personnel is recommended to achieve objectives of quality patient outcomes and cost containment.[28] Investments in more qualified nurses may improve cost effectiveness.[29]
Multidisciplinary teams A richer skill mix is associated with improved outcomes.[29]	**Multidisciplinary teams** Investments in a richer skill mix may improve cost effectiveness of patient safety in acute care.[29]
Team/service level organisation The evidence for specific minimum nurse-patient ratios for nursing units in acute care hospitals is minimal. There is some evidence for a relationship between richer nurse staffing and lower failure to rescue, lower mortality, and shorter length of stay.[30] Significant reductions in cost and length of stay may be possible with higher ratios of nursing personnel in hospital settings.[28] Evidence is broadly consistent with a protective effect for increased nurse staffing in relation to a range of patient safety outcomes, care processes and nurse outcomes.[29] No evidence for the effect of using tools designed to measure the requirement for nursing care at the patient level or any other approach to determining nurse staffing requirements.[29]	**Team/service level organisation** When setting a minimum staffing requirement consider: patient acuity, skill mix, nurse competence, nursing process variables, technological sophistication, and institutional support of nursing.[30]

Staff support, supervisions and training	Staff support, supervisions and training
In most studies, burnout and poor wellbeing were associated with poorer patient safety.[31]	Healthcare organisations should provide a work environment that fosters staff wellbeing and protects against burnout.[31]

Conclusion

This review also considered evidence from non-mental health settings to look for commonalities that can be applied across mental health settings. Overall the findings are similar, though there is a slightly stronger evidence base. Generally increased numbers of qualified staff (registered nurses) and a richer skill mix has a positive impact on outcomes. The outcomes assessed differ from those considered in mental health, including hospital-related mortality, failure to rescue, and prevention of patient-related adverse events. In terms of numbers, the evidence for the use of nurse-patient ratios was mixed. The stronger argument is for an increase in registered nurse numbers and a richer skill mix overall.

There is, as yet, limited evidence for the use of workforce measurement tools. It has been suggested that many tools fail to incorporate the complexity of staffing issues such as patient acuity, skill mix, nurse competence, technological sophistication, etc.

In line with the evidence from mental health settings, burnout and poor staff wellbeing are associated with poorer patient safety.

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Appendix A

AMSTAR quality assessment for mental health literature reviews

Study ID	Design 'a priori'?	Duplicate selection/ extraction?	Literature search?	Publication type?	List of studies?	Study charact-eristics?	Quality assessment?	Quality assessment considered?	Combine findings appropriate ?	Publica-tion bias assessed ?	COI stated?	Quality score
Alexander 2004	Yes	Can't answer	Yes	Can't answer	No	No	No	No	Can't answer	No	No	-
Bee 2008	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No	++
Blegen 2011	Yes	No	Yes	No	No	Yes	No	Can't answer	Can't answer	No	No	-
Cleary 2012	Yes	Yes	Yes	No	No	Yes	Can't answer	Can't answer	Can't answer	No	Yes	+
Dickinson 2008	Yes	Yes	Yes	No	No	Yes	Can't answer	No	No	No	No	+
Edwards 2000	Yes	Yes	Yes	Yes	Yes	Yes	No	Can’t answer	Yes	No	No	+
Edwards 2003	Yes	Yes	Yes	No	Yes	Yes	No	Can’t answer	NA	No	Yes	+
Hamrin 2009	Yes	Can't answer	Yes	Can't answer	No	No	No	No	Yes	No	No	-
Happell 2010	Yes	Can't answer	Yes	Can't answer	No	No	No	No	Can't answer	No	No	-
Happell 2012	Yes	Can't answer	Yes	Yes	No	No	No	Can't answer	Can't answer	No	Yes	+
Henderson 2008	Yes	Can't answer	Yes	Yes	No	No	No	Can't answer	Can't answer	No	No	-
Kanerva 2013	Yes	Can't answer	Yes	Yes	No	No	No	Can't answer	No	No	No	-
Lambert 1999	Yes	Can't answer	Can't answer	Can't answer	No	No	No	Can't answer	Can't answer	No	No	-
McAndrew 2014	Yes	Can't answer	Can't answer	Can't answer	No	No	No	Can't answer	Can't answer	No	No	-

Study ID	Design 'a priori'?	Duplicate selection/ extraction?	Literature search?	Publication type?	List of studies?	Study charact-eristics?	Quality assessment?	Quality assessment considered?	Combine findings appropriate ?	Publica-tion bias assessed ?	COI stated?	Quality score
Megens 2006	Yes	Can't answer	No	Can't answer	No	No	No	Can't answer	No	No	Can't answer	-
O'Brien 2003	Yes	Can't answer	Yes	No	No	No	No	No	No	No	No	-
Onyett 2011	Yes	Can't answer	Yes	Can't answer	No	No	No	Can't answer	Can't answer	No	Yes	-
Paris 2010	Yes	Can't answer	Yes	Can't answer	No	No	No	Can't answer	No	No	No	-
Scanlan 2010	Yes	Can't answer	Yes	No	No	No	No	No	Can't answer	No	No	-
Sharac 2010	Yes	Yes	Yes	No	No	Yes	No	Can't answer	Yes	No	No	+
Simmonds 2001	Yes	Yes	Yes	No	No	Yes	No	No	No	No	No	+
(++) High quality (+) Moderate quality (-) Low quality												

AMSTAR quality assessment for non-mental health systematic reviews

Study ID	Design 'a priori'?	Duplicate selection/ extraction?	Literat ure search?	Publication type?	List of studi es?	Study characteristics?	Quality assessment ?	Quality assessment considered?	Combine findings appropriate?	Publication bias assessed?	COI stated?	Quality score
Griffiths 2016	Yes	Can't answer	Yes	Can't answer	No	Yes	No	Can't answer	Yes	N/A	No	-
Hall 2016	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	N/A	Yes	Yes	++
Kane 2007	Yes	Yes	Yes	Yes	No	No	Can't answer	Can't answer	Yes	No	No	+
Lang 2004	Yes	Yes	Yes	Yes	Yes	No	No	No	Can't answer	No	No	+
Lankshear 2005	Yes	No	Yes	Yes	No	No	No	Can't answer	Yes	Yes	Yes	+
Thungjaroenkul 2007	Yes	Yes	Yes	No	No	Yes	No	Yes	Yes	Yes	Yes	++
Rutter 2015*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Can't answer	Yes	Yes	++
(++) High quality (+) Moderate quality (-) Low quality *Unpublished draft, not included in evidence tables												