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Relationship between staff experience and patient outcomes in hospital settings: an overview of reviews

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ABSTRACT

Objectives This review aimed to investigate the relationship between staff experience and patient health and experience outcomes in hospital inpatient settings.

Design Systematic review of reviews.

Methods Searches were performed in Medline (OVID), CINAHL and Google Scholar using key terms from relevant review articles. The search was conducted on 28 August 2023. Inclusion criteria were systematic or narrative reviews in English from 2020 onwards, focusing on inpatients in hospital and related tertiary care facilities, examining the relationship between staff experience and patient outcomes. A review of reviews approach was used, with broad definitions for staff experience (eg, hospital culture, stress and burnout) and patient outcomes (eg, adverse events and patient experience). Independent screening and quality appraisal were conducted by two researchers. An evidence map of links between staff experience and patient outcomes was created. The methodological quality of systematic reviews was assessed using the AMSTAR 2 tool and narrative reviews with the SANRA tool.

Results From 2365 citations, 21 reviews (18 systematic, 3 narrative) were included. Review quality ranged from moderate to high. Mapping revealed 66 associations between staff experience and patient outcomes. Common associations included burnout, stress and fatigue with adverse events (six reviews); communication with patient satisfaction (four reviews) and teamwork with patient satisfaction (four reviews).

Conclusions Staff burnout, teamwork and communication practices directly impact adverse events and patient satisfaction. These findings guide hospital managers and clinicians in improving health service policies and practices. Further research is needed to strengthen the evidence base.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ Preregistration of a detailed review protocol on Open Science Framework.
⇒ Systematic search, dual independent screening and quality appraisal of included reviews.
⇒ Visual representation of reported links between staff experience and patient outcomes using a 'heatmap' enabling an 'at a glance' view of the key findings.
⇒ The heatmap is a high-level representation of complex relationships and therefore should be interpreted as a preliminary exploration.
⇒ Variables explored in reviews, but not reported to be associated with each other were not mapped.

INTRODUCTION

Exploring the link between staff experience and outcomes has been a focus of organisational culture research across numerous industries including hospitality,[1] business[2] and construction.[3] In the case of healthcare, this relationship is especially critical given that poor staff experience can have potentially devastating consequences on both patients and staff. For example, long working hours of resident physicians were associated with greater patient mortality based on meta-analysis of the impact of implementation of resident physician work hour guidelines.[4]

While many factors can impact on patient outcomes and experiences in hospital (eg, the nature of an illness or injury; clinical care resources and equipment and the built environment and catering), a key factor is suggested to be staff experience. Exploring the relationship between staff experience and patient outcomes is complex as both 'staff experience' (broadly representing an 'independent variable') and patient outcome ('dependent variable') are conceptually broad. For example, in relation to staff experience, a recent review reported lack of consistent definitions of 'safety culture' but identified a broad range of distinguishing features including behaviours and relationships of staff, open communication and involvement of those who use health services.[5] Similarly, with regard to patient outcomes, although it has been established that good relationships between providers and patients can optimise healthcare outcomes, the breadth of both 'good relationships' (eg, communication practices) and

these outcomes (eg, patient satisfaction) is wide. In addition to physical and mental health, patient outcomes can encompass presence and intensity of symptoms such as pain and other clinical manifestations, treatment adherence, patient-reported outcomes such as quality of life and healthcare utilisation. At the extreme, as illustrated above, these outcomes encompass mortality. Additionally patient outcomes encompass their *experience* of their care—for example satisfaction, perceptions of provider–patient communication partnership and quality of health information provided.[6]

For the purpose of this review

- *Staff experience* was defined as any measure of hospital culture, attitudes, beliefs, interactions with colleagues, stress/burnout and patient management practices gathered from frontline clinical hospital staff (ie, those with direct contact with patients, rather than in administrative roles).
- *Patient outcomes* were broadly defined to include clinical *outcomes* that is, outcomes of patient care recorded in charts and/or hospital records (eg, health status, adverse events, complications and death) and/or measures of patient *experience* gathered from patients (eg, satisfaction with care, attitudes, beliefs and quality of life).

This review was conducted within the context of a project conducted at a major metropolitan public hospital with the aim of optimising staff and patient experience through baseline experience measures aligned with key performance indicators (KPIs) for ongoing evaluation. Therefore, an understanding of how these concepts have been defined and explored was needed. The aim of this review was to address the question:

What is the relationship between staff experience and patient health and experience outcomes in hospital inpatient settings?

METHODS

This review was conducted using accepted methods of rapid desktop evidence synthesis.[7–9] 'Rapid reviews' are a form of evidence synthesis in which traditional systematic review processes are accelerated through modifications to review parameters to reduce the time taken to perform the review. This approach was chosen as review findings were required to inform future stages of a research project and a full systematic review would not have been feasible within the overall project timelines. Consistent with published literature on rapid review approaches, the changes made to a longer form review of this topic were to focus on reviews and exclude non-review study designs (ie, primary studies), restrict the year range for eligible reviews to 2020 onwards and search a relatively small number (3) of databases.[8–10] Our decision to undertake a review of reviews was also based on preliminary searches that identified a substantial number of existing relevant reviews on this broad topic. Synthesising the findings across these reviews was deemed more appropriate than compiling all primary evidence. Therefore, retaining a broad, landscape-level focus was more relevant to subsequent project stages than exploring a narrowly defined type of provider–patient interaction addressing a more specific problem (eg, the relationship between staff satisfaction and medical errors in an empirical study). It is important to emphasise that although our search was limited to reviews published from 2020 onwards (plus any earlier reviews identified in Google Scholar in which the first 100 records by relevance were harvested), the date restriction did not apply to studies within the included reviews. Online supplemental file 3 contains information on the date range searched across the included reviews. Of the 22 reviews that reported on date range, 14 either searched databases with no date limits or included articles from 2000 or earlier. This indicates that the reviews provide a comprehensive coverage of primary studies, with the majority including primary studies from at least the last 24 years.

Other review parameters and approaches consistent with traditional systematic reviews (eg, use of a comprehensive search strategy; using two independent reviewers for eligibility screening and quality appraisal) were retained. Our methods were detailed in a preregistered review protocol submitted to Open Science Framework on 11 September 2023 (DOI 10.17605/OSF.IO/VCXFU) and are summarised below in accordance with the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines.[11]

Patient and public involvement

There was no patient or public involvement in this research.

Search and selection

A search specialist with experience in health reviews (VD) developed a search strategy using key terms from an initial 'gold set' of known relevant review articles identified by the author team.[5 6] Three electronic databases were searched:

- Medline (OVID)
- CINAHL
- Google Scholar

The search strategies for Medline (Ovid) (which was adapted for CINAHL) and Google Scholar are presented in online supplemental file 1. Database searches were restricted to reviews published in 2020 onwards to identify the latest available relevant reviews and manage yield in a short timeframe. No date restrictions were applied for Google Scholar; however, the first 100 citations were screened, sorting by relevance consistent with recommendations for searching Google Scholar[12] and the methods used in previously published reviews.[13]

Citations from searches were imported into Covidence, a web-based collaboration software platform that streamlines the production of systematic and other literature reviews.[14] Two reviewers independently screened titles and abstracts, and full-text publications against

Table 1 Inclusion and exclusion criteria

	Include	Exclude
Publication type	Review (systematic or narrative)	Primary studies
Language	English	
Population	Inpatients of hospital and related tertiary care facilities (eg, residential rehabilitation/subacute care)	Outpatients (including those that attend a hospital or rehabilitation setting), community and social care settings (eg, primary care settings such as medical and allied health practices)
Study focus	Primary focus is exploration of the relationship between staff experience and patient clinical and experience outcomes. The review must have reported/examined the relationships between measures of *both* staff experience and patient outcomes: ► Staff experience and culture: any measure of hospital staff experience, culture, attitudes, beliefs, stress/burnout and patient management practices undertaken by clinical hospital staff (ie, those with a day-to-day role that interfaces with patients, with non-clinical staff (eg, management, administration) as secondary interest). ► Patient outcomes: any measure of patient experience, attitudes, beliefs and/or clinical outcomes (eg, satisfaction with care, quality of life, health status, adverse outcomes, complications, death and readmission). These may include objective measures recorded in patient records and charts or subjective measures reported by patients (including those recorded in medical records).	Studies focusing only on staff experience or patient outcomes, or that did not examine the relationship between staff and patient experience. Organisational aspects of hospital care provision such as staffing levels, equipment, knowledge resources (ie, not at the level of staff experience) Proxy measures by clinicians/staff of subjective patient experience, including patient safety culture or staff impressions/descriptions of patient outcome, could not be used in place of measurement at the level of patients and/or their families and carers
Date range	2020—present (2023) except for Google Scholar which was sorted by relevance	

the prespecified inclusion and exclusion criteria listed in table 1. Disagreements were resolved by consensus between the two reviewers, with input of a third review where required. The GROOVE tool[15] was used to identify the number of studies included in more than one review.

Quality appraisal and data extraction

The following information was extracted from eligible reviews by one reviewer:

- Citation (first author, year).
- Quality appraisal score.
- Review aim.
- Staff experience measures (indicating whether it was the primary or secondary measure if relevant).
- Patient outcome measures (indicating primary and secondary if relevant).
- Main findings.
- Authors' conclusions.

Methodological quality of eligible systematic reviews was evaluated using the AMSTAR 2 tool.[16] The SANRA tool was used to evaluate quality of narrative reviews.[17] Quality appraisal was undertaken by one reviewer, with a second reviewer also appraising three (13% of included) articles to aid in reducing bias. Data were narratively synthesised with an emphasis on key findings and themes within and across included reviews, taking into account review quality. Consistent with previous reviews, studies fulfilling 50% or more of applicable criteria were considered higher quality, and those fulfilling less than 50% were considered lower quality.[18 19]

Mapping of the relationship between staff experience and patient outcomes

Following data extraction, a high-level evidence map of established links between staff experience and patient outcomes was created. The purpose of the mapping was to visualise the relative strength of evidence across the many possible clinician experience and patient outcome pairings. To create the map:

- Staff experience variables reported in the review as being related to patient outcomes were represented as columns. This was a subset of the total number of staff experience variables explored across the reviews—that is, staff experience variables explored in the reviews but not found to be associated with patient outcomes were *not* represented on the map.
- Patient outcomes reported in the review as being related to staff experience variables were represented as rows. Similar to staff experience, patient outcomes explored but not found to be associated with clinician experience were not mapped.
- Each included review was allocated a number and placed in the cell representing the reported relationship between staff experience and patient outcome variables. For example, Bleazard *et al*[20] reported that burnout among nurses was associated with patient

satisfaction, adverse events and patient safety. Therefore, its reference number, 5, was placed in three rows under the column 'burnout/stress/fatigue' representing these three patient outcomes.

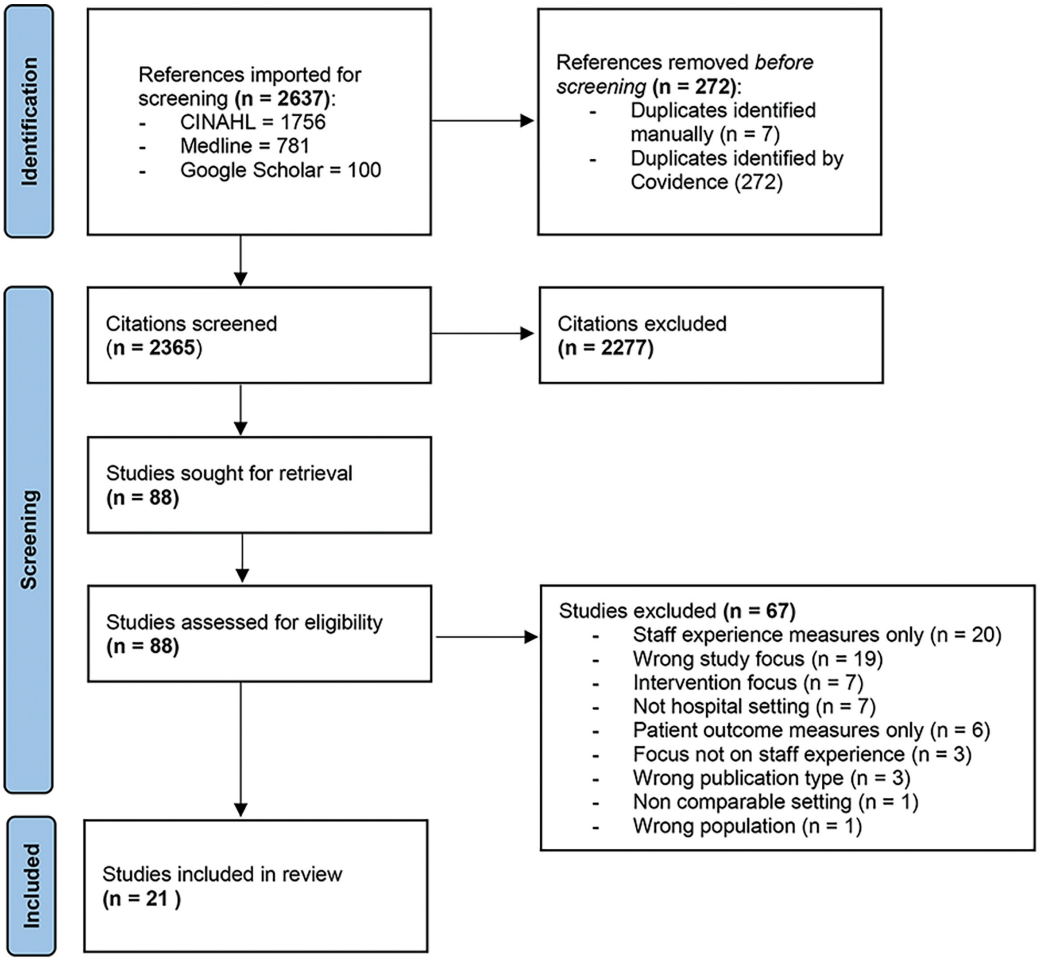
- The *direction of the reported relationship* was also recorded in the map. Where the clinician experience variable was reported to influence patient outcomes, the publication number was placed in the relevant outcome rows. Where the patient outcome was reported to have influenced clinician experience, the number was placed in square brackets and bold text was used.
- Relationships between staff experience variables (for example burnout associated with leadership), or between patient outcome variables (for example patient satisfaction associated with adverse events) were not mapped as the focus was the relationship between staff experience and patient outcomes only
- Once the map was populated, rows were ordered from left to right, and columns from top to bottom in descending order of frequency of representation of studies. This resulted in more frequently reported associations clustering towards the top left of the map, and less frequently reported associations towards the bottom right of the map.
- Shading of cells was used to highlight the frequency of reported associations, where white cells were no reported association and darker cells progressively more associations.

RESULTS

Search and selection

Following screening of 2365 citations and 88 full-text publications, 21 reviews were eligible for inclusion, comprising 18 systematic reviews[21–38] and 3 narrative reviews[20 39 40] (figure 1).

Using the GROOVE tool,[15] a total of 569 individual studies were identified across the 18 systematic reviews and one narrative review[39] that had a clear table of included studies. A total of 569 individual studies were identified across the 19 analysed reviews. Of these, four individual



Source: Page MJ, et al. BMJ 2021;372:n71. doi: 10.1136/bmj.n71.

Figure 1 PRISMA flow chart. Source: Page *et al*.[51] PRISMA, Preferred Reporting Items for Systematic reviews and Meta-Analyses

studies were identified in two reviews. The remaining 565 studies were all contained in only one review. This overlap of under 1% of all included studies indicates that there is almost no redundancy in the results reported in this review, including the heatmap.

Quality appraisal

Online supplemental file 2 contains results of quality appraisal. Overall, the quality of the included reviews was moderate to high. Twelve of the 18 systematic reviews fulfilled 50% or more of applicable items when evaluated using the AMSTAR 2 tool.[16] These systematic reviews fulfilled between 9 and 11 AMSTAR criteria. The remaining six systematic reviews only fulfilled between four and six criteria. The three narrative reviews all met more than 50% of applicable criteria in the SANRA tool,[17] meeting 8, 11 and all 12 of the 12 criteria in this tool. Based on quality appraisal, reasonable to high confidence can be placed in the findings across the 21 included reviews.

Characteristics of included studies

Online supplemental file 3 contains details of all included reviews in descending order of quality appraisal score for systematic reviews (2a) and narrative reviews (2b).

Included reviews spanned a broad array of aims, populations, staff experience and patient outcome variables.

Study design

Overall, the reviews encompassed a wide variety of research review designs and methodologies. This was reflected by high variability in the number of studies included in each included review. For instance, Alanazi *et al*[21] synthesised findings from nine cross-sectional studies, while Campbell *et al*[24] reviewed seven intervention studies. Conversely, reviews by Bell *et al*, Crossland *et al*, Crubezy *et al*, and Quigley *et al* each analysed over 30 studies, utilising various quantitative, qualitative and mixed-methods approaches.[23 27 28 36] Notably, Hodkinson *et al*'s review of the association between burnout and career engagement in physicians included 170 observational studies.[30] While most included reviews examined the impact of these staff experience parameters on patient outcomes, three reviews examined the relationship from the opposite direction, specifically how missed nursing care[25] and patient satisfaction[36] impacted job satisfaction; and the positive impact of bedside nursing handover on staff teamwork and relationships.[26]

Study setting and patient population

The studies included in this review examined healthcare delivery in a variety of hospital settings from those with a more acute care focus[21 23 25] to transitional care experiences such as following a hip fracture.[22] Broadly, the acuity of the setting was reflected by the review focus, with more acute settings examining issues such as fatigue, burnout and missed care[21 23 25] and less acute settings exploring bedside handover[26] and patient–staff interactions.[28] Patient populations across the reviews reflected the broad array of settings and included those who had hip fractures;[22] children with complex medical needs[20] and maternity care.[27] Many studies in hospital settings did not specify a particular condition or population.[21 23–26 28 31–33 37–39] Additionally, some reviews had a specialised focus on specific interactions or non-clinical issues. Specifically, Dodsworth *et al*[29] focused on patient interaction with medical students, and Hu[40] investigated racial disparities in black patients undergoing knee replacement surgery.

Clinical population

Reflecting the hospital and tertiary care focus, many included reviews focused on nurses and physicians. Seven reviews with a focus on nursing encompassed the impact of nurses' attitudes, fatigue and burnout,[21 23 32 33 38] their leadership styles[33] and teamwork and communication with nursing assistants.[24] A further three reviews focused on physicians, exploring burnout,[30] communication with patients[34] and collaboration within healthcare teams.[31] Other clinician groups represented across included studies were midwives and obstetricians,[27] medical students,[29] surgeons[40] and social workers, physical therapists and doctors.[31] Several studies including two scoping reviews[22 28] did not explicitly specify the clinical population.

Staff experience parameters

A range of staff experience parameters were explored across the included reviews including safety attitudes,[21 39] fatigue,[23] burnout,[20 30 32 38] staff engagement,[37] teamwork,[24] leadership styles,[33 38] job satisfaction[25 36] and employee engagement.[37] Communication experiences explored across included reviews included patient–staff interactions[28] and the impact of language barriers.[39]

Patient outcome parameters

Consistent with the inclusion criteria, patient outcomes encompassed both clinical and subjective parameters. Clinical parameters included patient safety defined in broad terms[24 32 37–39] as well as more focused outcomes such as adverse events[20 21 23 25 30 32 33 38] and medication errors.[21 23] Subjective measures included patient satisfaction,[20 22 30 32 34–36 39] patient experience,[20 26–29] quality of care provided[25 26 31–33 39] and perceptions of interactions with staff.[20 28 39]

Mapping of the relationship between staff experience and patient outcomes

Table 2 contains the results of mapping with reference to specific studies; figure 2 is the same data represented in a simpler heatmap.

Frequently reported staff experience and patient outcome variables

Of reviews that established links between staff experience and patient outcomes\staff experience variables frequently associated with outcomes were burnout/stress/fatigue (18 reported associations across 7 outcomes in 8 reviews;

Table 2 Map of links between staff experience and patient outcomes as reported by included reviews

	Burnout/stress /fatigue	Communication	Teamwork /coworker relationship	Staff attitude (respect/safety /meaningfulness)	Leadership	Job/career satisfaction	Shared decision-making/partnership	Relationships with patients (eg, level of trust)	Employee engagement	Total no associations
Patient satisfaction (PEO)	12, 15, 5	17, 18, 3, 2	6, 13, 3, **8**	18, 1	16, 18	**19**, 15	18	18		**19**
Adverse events (PCO)	12, 15, 4, 21, 1, 5	6	1, 6	1	16, 21	5, 6, 12			20	**16**
Patient experience (PEO)	8, 10, 5	9, 19	10, 8	9, 10	10		9, 11, 3	9, 11		**15**
Patient safety (not defined) (PCO)	5, 15	6, 2	21	21	21, 16		21	11	21, 20	**12**
Acceptance of treatment (PEO)		9		9			9	9		**4**
Mortality (PCO)	15		1	1					20	**4**
Care quality (PEO)	15	2	8		16					**4**
Missed care (PCO)		7	7, 6			**7**				**4**
Near misses (PCO)	4									**1**
Patient complaint (PEO)		19								**1**
Total no associations	**18**	**13**	**13**	**8**	**8**	**6**	**6**	**5**	**4**	

Columns represent staff experience categories; rows represent patient experience outcomes (PEO), defined as measures that require participation of patients; and patient clinical outcomes (PCO), defined as clinical measures, eg, complications, mortality, missed care that can be measured and/or quantified without participation of the patient; numbers in cells correspond to reported associations between staff experience and patient outcomes by citation, with numbers corresponding to the reference list below; numbers and cells in (*bold and brackets*) represent associations in which the patient outcomes have reportedly influenced staff experience.

References to included studies represented on the map by number: (1) Alanazi *et al*[21] (2022). (2) Al Shamsi *et al*[39] (2020). (3) Asif *et al*[22] (2020). (4) Bell *et al*[23] (2023). (5) Bleazard[20] (2020). (6) Campbell *et al*[24] (2020). (7) Chaboyer *et al*[25] (2021). (8) Clari *et al*[26] (2021). (9) Crossland *et al*[27] (2020). (10) Crubezy *et al*[28] (2022). (11) Dodsworth *et al*[29] (2023). (12) Hodkinson *et al*[30] (2022). (13) Hoff *et al*[31] (2021). (14) Hu *et al*[40] (2022). (15) Jun *et al*[32] (2021). (16) Lee *et al*[33] (2023). (17) Moslehpour *et al*[34] (2022). (18) Pentecost *et al*[35] (2020). (19) Quigley *et al*[36] (2021). (20) Scott *et al*[37] (2022). (21) Wang *et al*[38] (2021).

Notes on operational definitions: *Staff experience parameters*: *employee engagement*—'Operationally, employee engagement is a positive work-related mindset, where staff are physically, mentally and emotionally connected to work … engagement was identified as having a "protective role", where employee engagement protected patient safety from being diminished by external events'[37] (pp1–3). *Adverse events included patient safety incidents* encompassing general references to medical errors as well as more specific incidents such as patient falls, infections and pressure injuries.[21] *Teamwork/coworker relationship* incorporated one review focusing on nursing handover[26]—'The term "handover" refers to a routine nursing activity during which information, professional responsibility and accountability for the care of patients are transferred due to a transition in care in different ways. Handovers can be performed and occur up to three times per day across different settings when patients are admitted, transferred or discharged from or within healthcare providers' (page e51)[26]; *patient outcome parameters*: *patient satisfaction* encompassed a broad range of subjective measures of the care experience including satisfaction with care[21 31] or nursing care,[33] information provision,[22] how language barriers were dealt with,[39] interactions/communication,[31] including with physicians[34] and references to patient satisfaction not otherwise defined.[24 30–32 36] *Patient experience* encompassed the overall experience of care delivery,[20] patient perceptions of positive/negative outcomes relating to specific care scenarios such as childbirth[27] and bedside nursing handover,[26] experiences relating to interactions with students[29] and general references to patient experience that were not defined.[37] *Care quality* encompassed patient[26 39] and nurse[32 33] perceptions of the quality of care delivered.

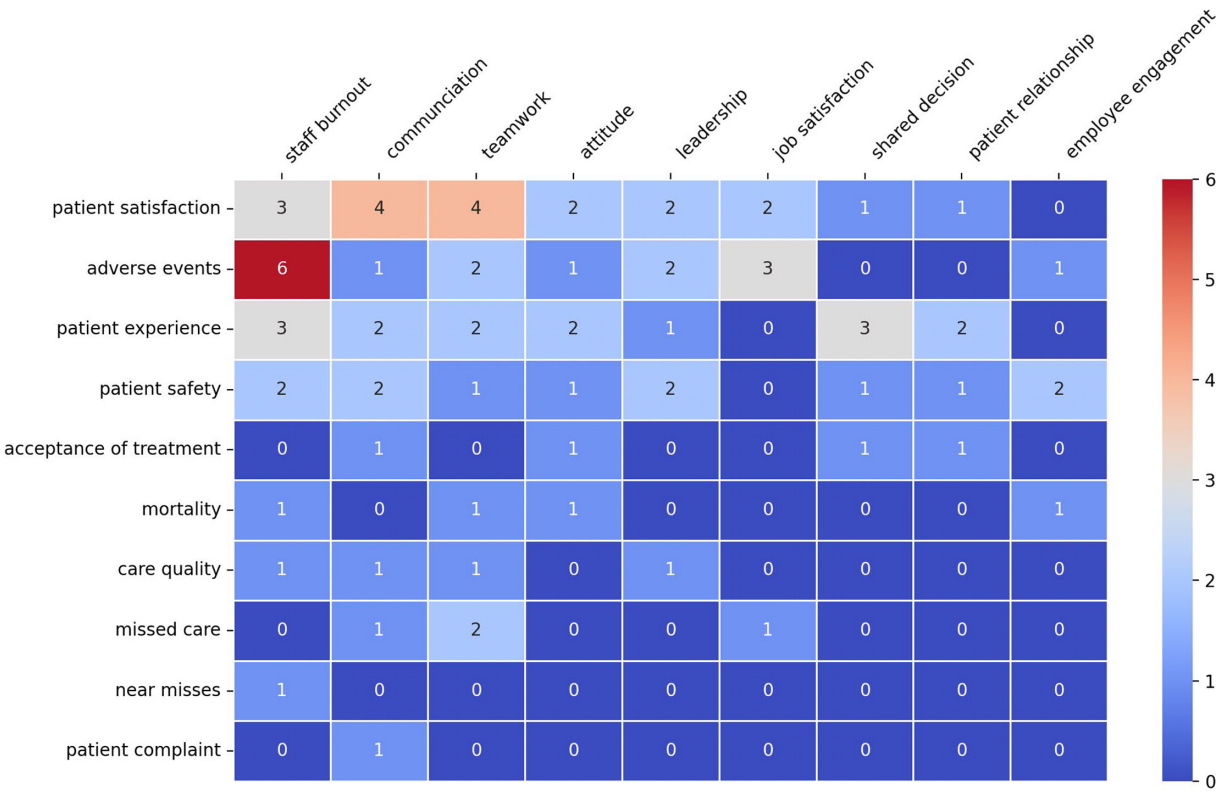


Figure 2 Simplified representation of the reported associations between staff experience and patient outcome parameters.

communication (13 associations, 8 outcomes, 8 reviews) and teamwork/coworker relationship (13 associations, 7 outcomes, 8 reviews). The most frequent outcomes that were the subject of reported associations were patient satisfaction (19 associations, 8 staff experience categories, 13 reviews), adverse events (16 associations, 7 staff experience categories, 10 reviews), patient experience (15 associations, 7 staff experience categories, 7 reviews) and patient safety (12 associations, 8 staff experience categories, 8 reviews).

Associations between staff experience and patient outcome variables

A total of 66 associations between staff experience and patient outcomes were reported across the 21 included reviews, comprising:

- One association reported by six reviews.
- Two associations reported by four reviews.
- Four associations reported by three reviews.
- 14 associations reported by two reviews and
- 26 associations reported by one review.

In this section, details of associations reported by at least four reviews are presented.

The most frequently reported association was between burnout/stress/fatigue and adverse events, which was reported by six reviews.[20 21 23 30 32 38] Four reviews focused on negative outcomes. The largest of these reviews was Hodkinson *et al*,[30] who conducted a meta-analysis of 170 observational studies of almost 240 000 physicians, reporting a significant association between burnout and patient safety incidents, especially in physicians aged 20–30 years and working in emergency medicine. The systematic review of Jun *et al* included 20 studies and reported association between nurse burnout and quality of care. Bell *et al* found that fatigue in nurses was a factor in medication administration errors and near misses in 82% of the 38 included studies.[23] Bleazard *et al*'s narrative review reported that compassion fatigue and burnout in nurses caring for children with complex medical needs was associated with medical errors.[20] Two reviews reported on positive outcomes. Wang and Dewing examined the relationship between nursing leadership and patient safety in 10 studies, reporting that nurses' perceived empowerment and relationship with leaders was associated with reduced adverse events and enhanced patient outcomes.[38] Similarly, Alanazi *et al*'s review of nine studies reported that a positive culture, including stress recognition, reduced adverse events such as falls, infections and pressure injuries.[21]

Four reviews reported an association between communication and patient satisfaction.[21 34 35 39] These included two reviews in which communication was a major focus. Al Shamsi *et al* reviewed 14 studies examining the effect of language barriers on healthcare, concluding that language barriers led to miscommunication between patients and medical professionals, lowering both patient and health professional satisfaction.[39] Moslehpour *et al* reviewed 11 studies focusing on the effect of physician communication on patient satisfaction, finding that time spent with the patient, indirect interpersonal communication and understanding demands of patients were all

physician-driven determinants of patient satisfaction; physician workload and availability of interpreters were two other determinants identified.[34] Pentecost *et al* identified communication as one of several fundamentals of care in a broad review that encompassed patient satisfaction[35]; Alanazi *et al*'s review also identified the association but had a broader focus.[21]

Four reviews reported an association between teamwork/coworker relationship and patient satisfaction. Hoff *et al* focused on the relationship between teams and patient satisfaction.[31] Their review of 24 included studies concluded that despite limitations in the research, a relationship between team functioning and patient satisfaction existed. They concluded that healthcare organisations should nurture social interactions within teams by 'creating favourable organisational conditions for team personnel to build relationships with patients as a collective, cultivate their group identity, and build greater trust between the team and the patient' (p.84).[31] Campbell *et al* focused on interventions to promote teamwork, delegation and communication, finding across seven included articles that high-functioning teamwork between registered nurses and nursing assistants enhanced both patient and job satisfaction.[24] Asif *et al* reviewed 11 articles focusing on the experience of care transitions following hip fracture, reporting that disorganised discharge planning, role confusion and lack of collaboration between providers, patients and caregivers contributed to poor care transition experiences.[22] Clari *et al*'s review focused on barriers and facilitators of bedside nursing handover, finding that optimal handovers that enhanced patient satisfaction were associated with positive staff relationships and team collaboration.[26]

There were four associations that were each reported by three reviews. These were as follows:

- Association between burnout/stress/fatigue and patient satisfaction.[20 30 32]
- Association between burnout/stress/ fatigue and patient experience.[20 26 28]
- Association between job/career satisfaction and adverse events.[20 24 30]
- Association between shared decision-making/ partnership and patient experience.[22 27 29]

DISCUSSION

Statement of main findings

This is the first known attempt to systematically catalogue relationships between staff experience and patient outcomes in hospital settings across multiple studies. Review quality was moderate to high. The included reviews were diverse in review approach, number of included studies (range 7–170) and staff experience and patient outcome parameters used. Due to the focus on tertiary care, the staff population predominantly included nurses and physicians, and the settings reflected different levels of acuity typical within hospital settings. Mapping of established relationships between staff experience and patient outcomes reported across the reviews revealed a total of 66 associations between staff experience and patient outcomes across the 21 included reviews. The most frequently reported associations, defined as being reported by at least four reviews, were between:

- Burnout/stress/fatigue and adverse events, reported by six reviews, including a major meta-analysis of 170 studies of physicians and two reviews indicating that positive nurse staff culture (including stress recognition) reduced the incidence of adverse events.
- Communication and patient satisfaction, reported by four reviews including two in which communication was a major focus. One of these reviews reported that physician time spent with patients, physician interpersonal communication with patients, physician workload and availability of interpreters were determinants of patient satisfaction.
- Teamwork/coworker relationship and patient satisfaction, reported by four reviews including two with a major focus on teamwork which highlighted that strong social connections and positive relationships within clinical teams improve communication, coordination, and overall patient care, leading to higher patient satisfaction.

Strengths and limitations of the review warrant mention. Strengths of the review were application of best-practice review principles of systematic search, dual independent screening and selection against predetermined inclusion criteria and quality appraisal of included reviews. The use of a 'heatmap' to identify patterns across the reviews builds on previous published work.[13 41] This approach is ideally suited to navigating complex topic areas. However, limitations of the mapping process should be borne in mind when interpreting study findings. First, it is important to acknowledge that the included reviews had diverse methodologies, encompassing traditional systematic reviews and meta-analyses, narrative reviews, integrative reviews, scoping reviews and reviews of reviews. Although this means that the unit of analysis was inconsistent across the included studies, this was offset by the focus of this review on key findings regarding high-level associations between staff experience and patient outcomes. The impact of this variation in review methodologies would be comparatively greater had this study focused on a more specific association or set of concepts.

Second, because evidence maps in complex areas aim to simplify concepts to enable pattern recognition, the considerable range in the number of included studies was not represented in the map and only the reported associations were shown. Relatedly, mapping complex and broad areas such as this requires judgements to be made about operational definitions of variables. In this case, grouping of similar staff experience and patient outcome categories was undertaken, with relevant operational definitions provided. Third, variables explored in reviews, but not reported to be associated with each other were not mapped. Mapping of all variables explored among 21 reviews collectively containing hundreds of primary studies was not feasible, but may have under-represented the consistency of the findings across

the literature. Finally, it is acknowledged that associations within the staff experience and patient outcome categories can mediate the relationship between staff experience and patient outcomes. The rationale for these compromises in producing the map is that there are no known efforts to identify the relative frequency of established relationships between staff experience and patient outcomes. Therefore, mapping of significant links between staff experience and patient outcomes was designed as a high-level 'first step' to identify signals (areas of relatively frequently reported associations) that can then be explored further in terms of specific groups, measures and conceptualisations. Given that both staff experience and patient clinical and experience outcomes are multifaceted concepts, we argue that this mapping approach is a practical first step in exploring relationships between them. We used this approach in a previously published review examining a similarly complex and broad topic area; media narratives of disadvantage across multiple groups.[13]

Comparison with literature

This unique review systematically identified relationships between staff experience and patient outcomes in hospital settings. While the systematic and narrative reviews included examined associations between staff experience and patient outcomes, these mainly focused on a single health profession and/or a specific staff experience or patient outcome measure. Our findings across a diverse body of literature highlight that staff experiences of burnout, team cohesion and patient communication have direct impacts on the incidence of adverse events and patient satisfaction, providing important directions for further investigation. Given the high prevalence, enduring nature, serious consequences and multifactorial causes of burnout, poor team cohesion and ineffective patient communication,[23 30 32 42 43] more detailed investigation into the relationships with patient outcomes is needed. Furthermore, the negative impacts observed in the present review extend beyond patient outcomes and include emotional, psychological and physical effects on staff, and higher healthcare costs through reduced staff productivity, higher staff turnover, career disengagement and longer length of stay.[23 30 32 38 44] These patient (and staff and fiscal) impacts are preventable harms,[45] but their causes are multifactorial and complex, necessitating a systems approach to address contextual factors for the individual (patient and staff), organisation and the wider healthcare system (eg, government and policy makers).[30 32 34 35 45]

To address the impacts of the complex relationship between staff experience and patient outcomes, multifaceted and tailored interventions will be required.[21 24 31 34 38] Potential interventions to reduce staff burnout and improve team cohesion and patient communication for improve patient outcomes have been identified in several of the included reviews. While suggestions were aimed at individuals and teams as well as service change, most were broad in scope, focused on an individual health profession and provided general and untested advice. To identify targeted and appropriate interventions for staff burnout, team cohesion and patient communication, stakeholder engagement can be used to appraise, tailor and prioritise existing evidence-based interventions for their local and system context. In the absence of appropriate interventions, stakeholders and researchers can codesign new interventions and associated research to test their feasibility and impact.[46]

Implications for research and practice

The findings of this review support prioritisation and investment in further understanding the relationship between staff burnout, patient communication, team cohesion and patient outcomes. Future research should involve more detailed examination of specific groups and factors underpinning these key associations. To make progress towards identifying causal links between staff experience and patient outcomes, the selection of appropriate methods and validated measures for data collection, and the use of standardised evaluations, are vital. Furthermore, with the correct measures in place, longitudinal analysis can be undertaken to provide new insights and understandings into the relationship over time. To build on the findings of this review and strategically design future research, it is vital to engage diverse stakeholders from all levels of healthcare. Through such engagement, appropriate metrics such as data collection measures and KPIs can be identified, prioritised and tailored to settings to drive implementable solutions and uptake.[47]

Part of effective, responsive and sustainable change in healthcare is using evidence to drive improvement.[48] To achieve this, the integration of routine data collection for the key associations between staff experience and patient outcomes would enable monitoring of this relationship and could provide real-time feedback through data visualisation at ward, service and organisational levels. The timely delivery of such data would support informed decision-making and rapid action in inpatient hospital settings.[49] Data hubs, as centralised platforms that store, manage and display up to date information from multiple sources exist in many countries, but typically staff and patient experience data are considered independently.[49 50] Data hubs that provide information about relationships between staff experience and patient outcomes over time would facilitate new insights and generate new evidence for quality and safety improvement practices.[48]

CONCLUSIONS

This review makes an important contribution to understanding of the relationship between staff experience and patient outcomes. Specifically, it highlights review-level evidence reporting that staff culture, teamwork and communication practices have direct impacts on patient outcomes, including adverse events and patient satisfaction. Regulators, funders, managers and clinicians in hospital settings should take these findings into account when identifying and addressing relevant health service policies and practices to improve patient outcomes. Robust research building on this evidence base is needed to further explore these high-level relationships and develop evidence-informed interventions and practice changes.

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