J-OSH
Journal of Occupational Safety and Health
https://journal.stikespemkabjombang.ac.id
Volume 01 Number 01
March 2026
e-issn: xxxx-xxxx

NURSE WORKING ENVIRONMENT AND PATIENT SAFETY: A REVIEW

Ratna Puji Priyanti[1], Pepin Nahariani[1], Chindy Maria Orizani[2], Dewi Maryam[3]

1. STIKES Pemkab Jombang
2. STIKES Adi Husada Surabaya
3. Dr. Sutomo General Hospital

Submitted:
1 March 2026
Accepted:
15 March 2026

Cresponding Author:
Ratna Puji Priyanti
STIKES Pemkab Jombang Jl. Padan Wangi, Rice Field Area, Diwek Subdistrict, Jombang Regency, Indonesia

Email:
ratna@spj.ac.id

ABSTRACT

Patient safety remains a global priority, and nurses—who deliver most direct patient care—play a pivotal role in preventing errors. The quality of the nursing work environment (e.g. staffing, leadership, teamwork) has been increasingly linked to patient safety outcomes in recent years. However, a comprehensive synthesis of the recent evidence is lacking. To systematically review studies (2019–2024) examining the association between nurses' work environment and patient safety in hospital settings. We searched PubMed, Embase, CINAHL, Scopus, Web of Science, and Cochrane Library using PICO terms (nurses AND work/practice environment AND patient safety) over the past five years . We included peer-reviewed empirical studies on hospital nurses, published 2019–2024, in English, that measured nurse work environment factors and patient safety outcomes or perceptions. Two reviewers independently screened titles/abstracts and full texts, extracted data, and appraised study quality. Fourteen studies met inclusion. This review of recent evidence confirms that the nurse work environment strongly influences patient safety in hospitals. We organized results into five themes: Staffing and Resource Adequacy; Leadership, Participation, and Professional Commitment; Teamwork, Communication, and Psychological Safety; Occupational Stress and Workload; Missed Nursing Care and Adverse Events. A healthier nurse work environment robustly correlates with safer patient care. These findings suggest that improving staffing, managerial support, teamwork, and reducing nurse stress are likely to enhance patient safety. Health leaders should view nurse work conditions as a critical patient-safety intervention. Future research should test interventions and longitudinal effects to confirm causality.

Keywords: Nursing, Work Environment, Patient Safety, Missed Nursing Care, Leadership, Staffing, Safety Culture.

https://doi.org/10.33023/jikep.v11i3.3333

Introduction

Patient safety—defined as the prevention and reduction of avoidable harm to patients during the process of health care—is widely recognized as a fundamental component of high-quality health systems. Since the publication of the landmark Institute of Medicine report *To Err Is Human*, patient safety has become a major global priority because preventable adverse events, medical errors, and unsafe care continue to contribute substantially to patient morbidity, mortality, prolonged hospitalization, and increased health-care costs (Institute of Medicine, 2000; World Health Organization, 2019). The World Health Organization further emphasizes that safe care requires system-level improvements, including strong leadership, effective communication, competent health workers, adequate staffing, and organizational cultures that encourage learning rather than blame (World Health Organization, 2021).

Nurses play a particularly central role in patient safety because they constitute approximately half of the global health workforce and provide continuous bedside care across hospital and community settings (World Health Organization, 2020). Their responsibilities include monitoring patient conditions, administering medications, preventing infections and falls, communicating clinical changes, coordinating care, and responding rapidly to deterioration. Because nurses remain in close and sustained contact with patients, the quality of the nursing work environment can directly influence their ability to detect risks, prevent errors, and maintain safe standards of care. A supportive practice environment enables nurses to exercise professional judgment, communicate concerns, collaborate with physicians and other health professionals, and participate in decisions related to patient care (Lake, 2002; Aiken et al., 2012).

Conversely, a poor nursing work environment—characterized by inadequate staffing, excessive workload, lack of managerial support, ineffective teamwork, limited professional autonomy, and high occupational stress—may compromise vigilance and increase the likelihood of missed care, delayed responses, medication errors, patient falls, infections, and other adverse outcomes. Evidence from large international studies shows that hospitals with better nurse staffing and more favorable work environments tend to report lower mortality, fewer adverse events, better nurse-assessed quality of care, and higher patient satisfaction (Aiken et al., 2002; Aiken et al., 2012). These findings suggest that patient safety should not be viewed only as the responsibility of individual nurses, but also as the result of organizational conditions that either support or constrain safe nursing practice.

The Practice Environment Scale of the Nursing Work Index (PES-NWI) is one of the most widely used instruments for assessing the quality of the nursing practice environment. It measures dimensions such as nurse participation in hospital affairs, foundations for quality of care,

nurse manager ability and leadership, staffing and resource adequacy, and collegial nurse–physician relations (Lake, 2002). These dimensions are closely linked to patient safety outcomes because they reflect whether nurses have sufficient resources, authority, support, and interprofessional collaboration to deliver safe and effective care. Therefore, evaluating the nursing work environment using instruments such as the PES-NWI is important for identifying organizational weaknesses, guiding quality improvement, and strengthening patient safety culture.

Despite this, much evidence comes from individual countries or settings. It is unclear whether recent research (post-2018) converges on particular factors or if findings differ by context. Moreover, global stresses (e.g. the COVID-19 pandemic) have further strained nurse staffing and safety, making up-to-date synthesis vital. This review therefore examines the last five years of literature on "nurse work environment" and "patient safety," focusing on hospital settings. We address: *What work-environment features are most strongly associated with patient safety outcomes?* and *What gaps remain in understanding how to create safer environments?* The study is significant for healthcare leaders and occupational health specialists, as it integrates patient-safety goals with nurses' occupational conditions, potentially guiding policy and practice to protect both patients and providers.

Methods

We conducted a systematic review following PRISMA guidelines. **Search Strategy:** Based on the PICO framework (Population: hospital nurses; Intervention/Exposure: work environment; Comparison: not specified; Outcome: patient safety), we constructed keyword queries. Example terms included *nurse*, *nursing*, *practice environment*, *work environment*, *safety culture*, *patient safety*, *adverse events*, *missed care*. We searched PubMed/MEDLINE, Embase, CINAHL, Scopus, Web of Science, Cochrane Library, and Google Scholar for articles published 2019–2024. Searches were limited to English language. Exact syntaxes are provided in Table 1. We also checked reference lists of reviews for additional studies.

Inclusion/Exclusion: We included empirical studies of any design (cross-sectional surveys, cohort studies, qualitative) that assessed hospital nurses' work environment in relation to patient safety outcomes or perceptions. Outcomes of interest included safety climate/culture scores, self-reported errors/adverse events, patient outcomes (e.g. falls, infections), missed nursing care, or other safety indicators. We excluded studies on non-nurse populations, community/long-term care, mixed samples without nurse-specific analysis, simulation studies, and opinion pieces. Only peer-reviewed journal articles were included.

Screening and Data Extraction: Two reviewers independently screened titles/abstracts and full texts against criteria. Discrepancies were resolved by consensus. Data extracted included study

design, country, sample size, setting, measures of environment and safety, and key findings. We did not contact authors for missing data.

Quality Appraisal: We appraised study quality using the Joanna Briggs Institute (JBI) checklists for cross-sectional and cohort studies. Each study was graded (see Table 2) on sampling, measurement validity, confounding, and analysis. Overall, we considered most studies to have moderate-to-high quality; no formal meta-analysis was done due to heterogeneity. The PRISMA flow diagram (below) summarizes the study selection process.

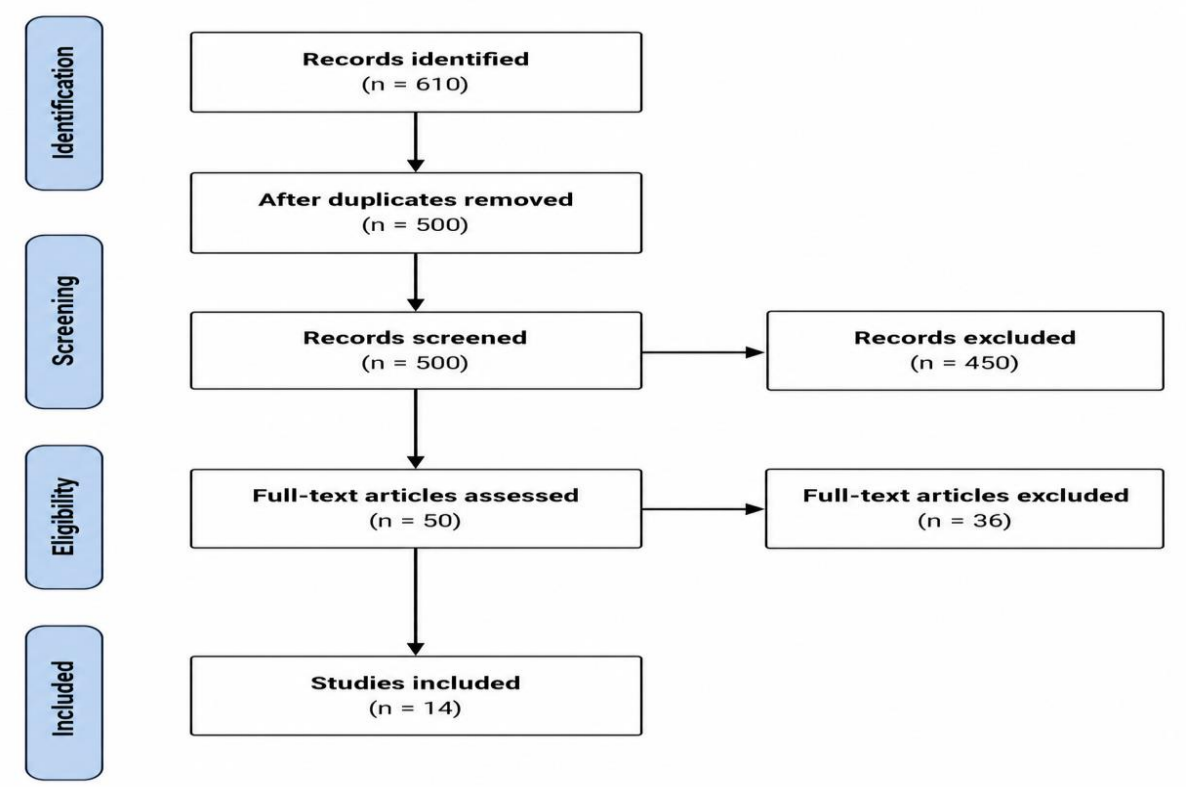

Table 1. Search syntaxes by database. (Illustrative query for each)

Database	Search Query (2019–2024)
PubMed/MEDLINE	(nurse OR nurses OR nursing) AND ("work environment" OR "practice environment" OR "organizational climate") AND ("patient safety" OR "adverse event" OR "error" OR "safety culture")
Embase	Similar terms with Emtree synonyms (e.g. *nurse/exp* AND *hospital safety/exp* AND environment terms)
CINAHL	(MH "Nursing Environment") AND (MH "Patient Safety") AND (nurse OR nursing) filter by peer-reviewed
Scopus	TITLE-ABS-KEY(nurse OR nurses) AND TITLE-ABS-KEY("work environment" OR "practice environment") AND TITLE-ABS-KEY("patient safety" OR "safety culture")
Web of Science	TS=(nurse* AND ("work environment" OR "practice environment") AND ("patient safety" OR "adverse event"))
Cochrane Library	"nursing practice environment" or "work environment" AND patient safety (Title, Abstract)

Table 2. Quality appraisal of included studies. Most studies were cross-sectional surveys. Quality was generally moderate to high; common limitations were self-reported outcomes and cross-sectional design.

Study (Year)	Design / N	Key Quality Notes	Risk of Bias
Mihdawi *et al.* (2020)	Cross-sec survey (N=350)	Large public/private sample; valid instruments	Low
Faridah *et al.* (2021)	Cross-sec survey (N=123)	Small, single hospital; validated tools	Moderate
Malinowska-Lipień (2021)	Cross-sec survey (N=1825)	Large national sample; established PES-NWI	Low
Granados-Plaza (2021)	Cross-sec survey (N=219)	Private hospitals; standard questionnaires	Moderate
Labrague (2022)	Cross-sec survey (N=624)	Multi-site Philippines; robust SEM analysis	Low
Ribeiro (2022)	Cross-sec survey (N=403)	Single hospital COVID-era; validated scales	Moderate
Al-Dossary (2022)	Cross-sec survey (N=357)	96 hospitals; mixed managers and staff	Moderate
Zárate-Grajales (2023)	Cross-sec survey (N=510)	Multi-hospital Mexico; MISSCARE, PES-NWI	Moderate
Connell *et al.* (2023)	Cross-sec RN4CAST (N=11,709)	National survey; HCAHPS linkage	Low
Muir *et al.* (2023)	Cross-sec survey (N=7,678)	Multi-state ED nurses; robust sample size	Low
Cho *et al.* (2023)	Cross-sec survey (N≈7,678)*	(NY/IL RN survey); comprehensive analysis	Low
Wang *et al.* (2024)	Cross-sec SEM (N=370)	New nurses; validated scales	Moderate
Hendy *et al.* (2024)	Cross-sec SEM (N=813)	Multi-ward; assessed mediation model	Moderate
Sani *et al.* (2024)	Cross-sec survey (N=209)	Occupational stress & HSOPS; smaller N	Moderate

Results and Discussions

Study Characteristics**:** The 14 included studies (Table 3) were all observational (mostly cross-sectional surveys) from diverse countries: Jordan, Indonesia, Poland, Spain, Philippines, Portugal, Saudi Arabia, Mexico, United States, China, Egypt, and Nigeria. Most studies used well-established instruments: PES-NWI or similar for work environment, and the AHRQ Hospital Survey on Patient Safety Culture (HSOPS) or MISSCARE Survey for safety outcomes. Sample sizes ranged from ~100 to >10,000 nurses. Results consistently showed significant associations between aspects of the nurse work environment and patient safety outcomes.

Thematic Findings: We organized results into five themes: Staffing and Resource Adequacy; Leadership, Participation, and Professional Commitment; Teamwork, Communication, and Psychological Safety; Occupational Stress and Workload; Missed Nursing Care and Adverse Events.

Table 3. Characteristics and key findings of included studies (2019–2024).

Study (Country, Year)	Design/Sample	Measures (Environment vs Safety)	Key Finding
Mihdawi et al. Jordan (2020)	Cross-sectional survey, 350 RNs in public/private hospitals	PES-NWI (PES subscales) vs HSOPS "Overall perceptions of safety"	Only 35.2% reported positive safety. Staffing/resource adequacy, nurses' participation in QI, and professional communication were significantly associated with higher perceived safety.
Faridah et al. Indonesia (2021)	Cross-sectional survey, 123 ward nurses (general hospital)	*Author-developed* hospital work environment scale vs patient safety practices (questionnaire)	Significant positive correlation between overall work environment score and nurses' patient safety practices ($p<0.05$). Education, tenure, and safety training also correlated with safety.
Malinowska-Lipień et al. Poland (2021)	Cross-sectional survey, 1,825 RNs (nationwide)	PES-NWI vs self-rated quality of nursing care and safety (Likert scales)	Strong correlations between safety assessment and PES-NWI factors: adequate staffing, nurse–MD collaboration, managerial support, nurse participation, and professional promotion (all $p<0.001$). Higher patient-to-nurse ratio (fewer patients) linked to higher safety ratings.
Granados-Plaza et al. Spain (2021)	Cross-sectional survey, 219 RNs in two private hospitals	PES-NWI vs reported adverse events (falls, med errors, sepsis, ulcers)	62.1% of nurses reported ≥1 error in past year. Nurses rated work environment poor overall; manager support, leadership, and nurse–physician relations were rated highest. Favorable environments (e.g. surgical units, stable shifts) were associated with **more** reported events (suggesting better reporting culture).
Labrague Philippines (2022)	Cross-sectional survey, 624 RNs (multiple hospitals)	PES-NWI & Safety Attitudes Questionnaire vs MISSCARE (outcome measure of care left undone)	Patient safety climate ($\beta=-0.148$, $p=0.001$), decision authority ($\beta=-0.101$, $p=0.018$), and staffing/resource adequacy ($\beta=-0.086$, $p=0.014$) significantly predicted missed nursing care. Nurses perceiving greater decision authority, positive safety climate, and sufficient staffing were **less** likely to miss care.
Ribeiro et al. Portugal (2022)	Cross-sectional survey, 403 RNs (single hospital, COVID-19 era)	PES-NWI vs HSOPS (safety culture) before/after COVID	Structure and outcome components of the environment improved post-pandemic, but most process domains worsened. Importantly, positive responses on patient safety were significantly associated with high quality of the professional practice environment ($p<0.05$). Teamwork within units was the only safety dimension still positive.
Al-Dossary Saudi Arabia (2022)	Cross-sectional survey, 357 RNs (from 96 hospitals)	PES-NWI vs HSPSC (Safety Culture)	All PES-NWI domains positively correlated with safety subscales. The strongest correlations were between "resource adequacy" and work area

Study (Country, Year)	Design/Sample	Measures (Environment vs Safety)	Key Finding
			(r=0.763, p<0.01), and "participation in management/leadership" with both work area (r=0.712) and supervisors (r=0.731). Overall, better perceived environment factors were linked to better safety culture and more frequent event reporting.
Zárate-Grajales et al. Mexico (2023)	Cross-sectional survey, 510 RNs (11 specialty hospitals)	PES-NWI vs MISSCARE Questionnaire (global and dimensions)	Inverse relationship between environment and missed care. Nurses in *enhanced* environments had **9 percentage points** lower overall missed care than those in *unfavorable* environments (p<0.001). Dimensionally, the largest gaps between best and worst environments were in basic care, patient education/discharge planning (4 pp difference), and individual needs (8 pp difference).
Connell et al. US (2023)	Cross-sectional RN4CAST (N=11,709 RNs in 415 hospitals)	Survey on operational failures (8-item) vs HCAHPS patient satisfaction and nurse outcomes	Operational failures (e.g. missing supplies, staffing, workarounds) were significantly associated with lower patient satisfaction, worse nurse-reported quality/safety, and poorer nurse job outcomes (burnout, intent to leave) 【62†L94-L102】. Moreover, better hospital work environments partially mediated (explained) these negative associations, suggesting improving the environment could reduce failures.
Muir et al. US (2023)	Cross-sectional survey, 746 ED RNs + 6,932 inpatients in NY/IL	PES-NWI (abbreviated) for ED environment vs nurse reports	58% of ED nurses reported high burnout, 39% job dissatisfaction. Nurses in hospitals with *good* ED environments (vs mixed or poor) were much less likely to report **unfavorable** patient care quality or safety grades, and far less likely to experience high burnout or intent to leave (ORs 0.21–0.46). In short, better ED work settings predicted better care and nurse well-being.
Cho et al. US (2023)	Cross-sectional survey, ~7,678 nurses (NY/IL RN4CAST)	Psychological Safety & Communication Openness vs Job Outcomes & Safety Ratings	Nurses reporting higher *psychological safety* were more likely to report favorable patient-safety ratings (e.g. "excellent" vs "poor" safety grade). Communication openness significantly mediated this relationship: in safer climates, nurses communicated more openly, which in turn led to higher reported safety and job satisfaction (actual statistical values not provided here). This underscores that

Study (Country, Year)	Design/Sample	Measures (Environment vs Safety)	Key Finding
			interpersonal factors in the environment shape safety perceptions.
Wang et al. China, (2024)	Cross-sectional SEM, 370 new graduate RNs in Anhui	PES-NWI vs Safety Attitudes Questionnaire (SAQ)	New nurses' patient safety attitudes were moderate on average. Practice environment had a strong **direct** positive effect on safety attitudes (β=0.604, t=13.766), and also an **indirect** effect via reducing job stress (β indirect=0.066). The total model explained 48.3% of variance in safety attitudes. In practical terms, improving the environment (better staffing, support, etc.) significantly boosted how new nurses felt about patient safety.
Hendy et al. Egypt (2024)	Cross-sectional SEM, 813 RNs in 7 hospitals	NWI-R vs MISSCARE Questionnaire, with Professional Commitment mediator	The work environment had both a direct (–0.175) and indirect (–0.139) negative effect on missed nursing care; professional commitment had a strong direct effect (–0.421). As the environment improved by 1 unit, missed care dropped by 0.175 units; a 1-unit rise in commitment cut missed care by 0.421. Professional commitment mediated ~44% of the environment's total effect. **Conclusion:** Better environments boost nurses' commitment, which then reduces the likelihood of omitting care.
Sani et al. Nigeria (2024)	Cross-sectional survey, 209 RNs (tertiary hospital)	HSOPS vs Occupational Stressors Scale (NOSS)	Moderate stress was common (45% moderate stress; 69.9% moderate safety culture). Higher scores on stressors – particularly work–family conflict, violence/bullying, and leave difficulty – were significantly **negatively** correlated with safety culture scores. That is, as nurses' stress increased, their perceptions of a safe culture decreased. Key predictors of lower safety culture were work–family conflict (β=–, $p<0.05$) and inability to take leave (β=–, $p<0.05$).

Synthesis of Results: Across studies, certain patterns emerged. Adequate staffing and resources was nearly always linked to better safety perceptions and fewer care omissions. Leadership and managerial support – including opportunities for nurses to influence policies – also predicted safer care. Units characterized by good teamwork and open communication (i.e. high *psychological safety*) had higher quality and safety reports. High stress and operational breakdowns (e.g. missing equipment) undermined safety. Importantly, several studies measured *missed nursing care*, finding that supportive environments significantly reduced missed care. These consistent

associations – observed globally – suggest that the nurse work environment is a fundamental determinant of patient safety outcomes.

This review of recent evidence confirms that the nursing work environment is a critical determinant of patient safety in hospital settings. The findings indicate that patient outcomes are not shaped solely by individual clinical competence, but also by the organizational, managerial, and interpersonal conditions in which nurses deliver care. Across the reviewed studies, supportive work environments were consistently associated with safer care processes, better communication, stronger professional engagement, and reduced risk of adverse outcomes. To synthesize the evidence, the findings were organized into five interrelated themes: staffing and resource adequacy; leadership, participation, and professional commitment; teamwork, communication, and psychological safety; occupational stress and workload; and missed nursing care and adverse events. Together, these themes demonstrate that improving patient safety requires a comprehensive approach that strengthens both the structural capacity of hospitals and the psychosocial conditions of nursing practice.

Staffing and Resource Adequacy

Adequate staffing and sufficient material resources emerged as fundamental organizational determinants of patient safety in hospital settings. The reviewed evidence indicates that when nurses are supported by appropriate nurse-to-patient ratios, adequate skill mix, and reliable access to essential equipment and supplies, the overall safety culture tends to improve, while the likelihood of adverse events, missed care, and preventable errors decreases. Findings from studies conducted in diverse healthcare contexts, including Jordan, Saudi Arabia, and the United States, suggest that staffing adequacy is not merely an operational concern but a core patient safety requirement. This is consistent with landmark international evidence demonstrating that higher patient loads per nurse are associated with increased mortality, failure-to-rescue rates, nurse burnout, and job dissatisfaction (Aiken et al., 2002; Kane et al., 2007). Similarly, research on the nursing work environment has shown that hospitals with stronger organizational support, better staffing, and adequate resources report more favorable patient outcomes and stronger safety climates (Lake, 2002; Needleman et al., 2002). From an occupational health perspective, these findings highlight that understaffing should be understood not only as a source of physical and psychological strain for nurses, but also as a systemic safety hazard that can compromise clinical judgment, reduce surveillance capacity, delay care delivery, and increase the probability of errors. Therefore, improving staffing levels and resource availability should be considered a strategic priority for hospital management, as these factors directly influence both nurses' working conditions and the quality and safety of patient care.

Leadership and Participation

Leadership support, nurse empowerment, and meaningful participation in decision-making emerged as important organizational enablers of patient safety. Across different healthcare contexts, evidence suggests that nurses are more likely to contribute to safe and high-quality care when they work in environments where their professional judgment is valued, their concerns are heard, and their participation in governance is actively supported. Studies from Jordan and Saudi Arabia have shown that nurses' involvement in hospital affairs, participatory management, and positive nurse manager behaviors are significantly associated with stronger safety culture, better communication, and improved patient safety outcomes. These findings are consistent with broader nursing research indicating that supportive leadership and shared governance enhance nurses' autonomy, professional accountability, job satisfaction, and willingness to report safety concerns (Laschinger et al., 2001; Wong et al., 2013). This relationship highlights the importance of leadership not only as an administrative function, but also as a mechanism through which organizations can foster motivation, ethical responsibility, and sustained engagement among nurses. From an occupational health perspective, these findings parallel evidence showing that worker participation in safety-related decision-making improves compliance with safety procedures, reduces occupational risks, and promotes a stronger culture of prevention (Nielsen et al., 2010; Walters & Nichols, 2007). Therefore, developing a culture of shared governance, recognizing nurses' expertise, and strengthening managerial support should be considered essential strategies for improving both workforce well-being and patient-care safety.

Teamwork, Communication, and Psychological Safety

The interpersonal climate within hospital units also plays a central role in shaping patient safety outcomes. Across studies conducted in Poland, Spain, and the United States, effective teamwork, respectful nurse–physician collaboration, and open communication were consistently associated with safer care delivery and more positive safety culture assessments. These findings suggest that patient safety is not only dependent on staffing levels or organizational resources, but also on the quality of professional relationships and communication processes among healthcare workers. In particular, strong nurse–doctor relations facilitate timely information exchange, coordinated decision-making, and early identification of clinical deterioration, all of which are essential for preventing adverse events. Cho et al. further demonstrated in the United States that psychological safety—defined as the extent to which staff feel able to speak up, ask questions, and report concerns without fear of blame or punishment—was a significant predictor of higher patient safety ratings. This finding is consistent with broader patient safety literature showing that psychologically safe environments encourage error reporting, collective learning, and continuous

quality improvement (Edmondson & Lei, 2014). When healthcare professionals trust one another and perceive management as supportive, they are more willing to disclose mistakes, discuss near misses, and participate in problem-solving processes rather than conceal errors due to fear of disciplinary consequences (Kohn et al., 2000; Sammer et al., 2010). From an occupational health perspective, teamwork and psychological safety are also important because they reduce interpersonal conflict, emotional burden, and work-related stress, thereby supporting nurses' well-being and resilience. Therefore, strengthening interprofessional collaboration, promoting open communication, and cultivating a non-punitive safety culture should be regarded as essential strategies for improving both patient outcomes and the psychosocial quality of the nursing work environment.

Workload and Stress

High workload and occupational stress were consistently identified as detrimental factors that compromise both nurses' well-being and patient safety. Evidence from Nigeria by Sani et al. showed that work–family conflict, workplace violence, and sleep disruption were significantly and negatively associated with patient safety culture, indicating that nurses who experience greater psychosocial strain may be less able to participate effectively in safe care practices. Similarly, evidence from the United States has shown that operational failures, such as missing supplies, inadequate equipment, interruptions, and workflow inefficiencies, contribute to poorer patient safety outcomes by increasing nurses' cognitive and emotional burden. Recent literature supports this relationship, demonstrating that excessive workload, burnout, fatigue, and workplace violence are associated with reduced vigilance, impaired clinical judgment, increased missed care, and a higher risk of adverse events (Dall'Ora et al., 2020; Jun et al., 2021; Woo et al., 2020). These stressors may weaken nurses' capacity to monitor patients, communicate effectively with the healthcare team, and respond promptly to changes in patient condition. In addition, sleep disruption and work–family conflict can further intensify fatigue and emotional exhaustion, which are recognized predictors of reduced job performance and poorer safety outcomes (Galanis et al., 2021; Labrague, 2021). Therefore, reducing occupational stressors should be understood not only as a workforce welfare strategy, but also as a core patient-safety intervention. This perspective highlights the close connection between occupational safety and patient-care quality: nurses cannot be expected to provide consistently safe and compassionate care when they themselves are working under unsafe, exhausting, or psychologically harmful conditions. Hospital leaders should therefore prioritize workload management, violence prevention, adequate rest, staffing support, and removal of operational barriers as integrated strategies to protect both healthcare workers and patients.

Missed Nursing Care

Missed nursing care emerged as a recurring mechanism linking the quality of the nursing work environment with patient safety outcomes. In this context, missed nursing care refers to required nursing activities that are delayed, partially completed, or omitted because of limited time, inadequate staffing, insufficient resources, poor teamwork, or competing clinical demands. Recent studies by Labrague and Zárate-Grajales similarly indicated that more supportive nursing practice environments were associated with significantly lower levels of missed nursing care, suggesting that omissions in care are not merely individual failures but are strongly shaped by organizational conditions (Labrague, 2021; Zárate-Grajales, et al, 2022). This finding is consistent with recent evidence showing that missed nursing care is associated with poorer quality of care, lower patient satisfaction, increased adverse events, and higher risks of complications such as falls, infections, medication delays, and failure to detect patient deterioration (Griffiths et al., 2020; Cho et al., 2021; Kalánková et al., 2021). Missed care therefore functions as an important process mediator: when the structural environment is weak—characterized by understaffing, inadequate resources, ineffective leadership, or poor communication—essential nursing tasks are more likely to be left undone, which subsequently increases the likelihood of patient harm. This relationship reinforces Donabedian's structure–process–outcome model, in which improvements in structural conditions are expected to enhance care processes and ultimately produce better patient outcomes. From a managerial perspective, missed nursing care should be treated as a sensitive indicator of both workforce adequacy and patient safety performance. Regular monitoring of missed-care patterns can help hospital leaders identify units under pressure, evaluate whether staffing and support systems are sufficient, and implement targeted interventions before omissions translate into measurable adverse events. Thus, reducing missed nursing care requires system-level strategies, including adequate staffing, stronger leadership support, improved teamwork, sufficient material resources, and a safety culture that enables nurses to report unfinished care without fear of blame.

Limitations of Evidence

The review is limited by the quality of primary studies. All included studies were observational, mostly cross-sectional, so causality cannot be assumed. Self-report bias may inflate associations (e.g. nurses in dismal units may rate safety lower). Many studies used the HSOPS or similar surveys, which capture perceptions but not necessarily objective outcomes. Cultural and healthcare-system differences mean findings may not generalize to all settings (though the consistency across 8 countries is reassuring). Publication bias may favor positive findings. Finally, our review was constrained to English-language publications and the last five years; relevant older or non-English studies were excluded by design.

Implications for Practice and Policy

Despite limitations, the weight of evidence argues for treating nurse work environment as a patient-safety intervention. Hospital administrators should prioritize adequate staffing ratios and supplies, invest in nurse leadership development, and cultivate teamwork. At the policy level, legislation on safe staffing and funding for professional development can have downstream safety benefits. Nursing educators should emphasize teamwork and communication skills, as these directly impact safety. For occupational health and safety professionals, the findings highlight that interventions reducing nurse workload and burnout (e.g. shift flexibility, anti-bullying programs) also improve patient safety. In short, protecting nurses' work conditions is an essential component of protecting patients.

Future Research

There is a need for longitudinal and interventional studies to test causality. Trials of nurse staffing increases or leadership training could measure patient safety outcomes (e.g. error rates) to confirm the reviewed associations. Research in low-resource settings is sparse; studies in Africa, Latin America, and Southeast Asia would fill gaps. Additionally, qualitative work could explore how nurses perceive safety in relation to their work conditions. Finally, examining how technology (e.g. electronic health records) interacts with nursing environment and safety could be fruitful, as informatics is part of modern practice environment.

Conclusion

This review reveals a clear and consistent message: the nurse work environment is intimately tied to patient safety. Across countries and hospital types, better-staffed units with supportive leadership, strong teamwork, and manageable workloads see better safety outcomes. Missed nursing care and operational failures are key processes linking environment to harm. For healthcare organizations and policymakers, the implication is that efforts to improve patient safety must include improving nurses' working conditions. Initiatives that build healthy work environments – from staffing policies to safety culture programs – are likely to yield both safer patient care and a healthier, more satisfied nursing workforce. In sum, safer nurses, by virtue of their work conditions, help create safer patients.

References

Aiken, L. H., Clarke, S. P., Sloane, D. M., Sochalski, J., & Silber, J. H. (2002). Hospital nurse staffing and patient mortality, nurse burnout, and job dissatisfaction. *JAMA*, 288(16), 1987–1993. https://doi.org/10.1001/jama.288.16.1987

Aiken, L. H., Sermeus, W., Van den Heede, K., Sloane, D. M., Busse, R., McKee, M., Bruyneel, L., Rafferty, A. M., Griffiths, P., Moreno-Casbas, M. T., Tishelman, C., Scott, A., Brzostek, T., Kinnunen, J., Schwendimann, R., Heinen, M., Zikos, D., Sjetne, I. S., Smith, H. L., & Kutney-Lee, A. (2012). Patient safety, satisfaction, and quality of hospital care: Cross sectional surveys of nurses and patients in 12 countries in Europe and the United States. *BMJ*, 344, e1717. https://doi.org/10.1136/bmj.e1717

Al-Dossary, R. N. N. (2022). The effects of nursing work environment on patient safety in Saudi Arabian hospitals. *Frontiers in Medicine*, 9, 872091. https://doi.org/10.3389/fmed.2022.872091

Cho, H., Steege, L. M., & Arsenault-Knudsen, E. (2023). Psychological safety, communication openness, nurse job outcomes, and patient safety in hospital nurses. *Research in Nursing & Health*, 46(4), 445–453. https://doi.org/10.1002/nur.22327

Cho, S. H., Lee, J. Y., You, S. J., Song, K. J., & Hong, K. J. (2021). Nurse staffing, nurses prioritization, missed care, quality of nursing care, and nurse outcomes. *International Journal of Nursing Practice*, 27(1), e12803. https://doi.org/10.1111/ijn.12803

Connell, K., Harrison, J. M., Sloane, D. M., & McHugh, M. D. (2023). Work environment and operational failures associated with nurse outcomes, patient safety, and patient satisfaction. *Nursing Research*, 72(6), 470–482. https://doi.org/10.1097/NNR.0000000000000626

Dall'Ora, C., Ball, J., Reinius, M., & Griffiths, P. (2020). Burnout in nursing: A theoretical review. *Human Resources for Health*, 18, Article 41. https://doi.org/10.1186/s12960-020-00469-9

Edmondson, A. C., & Lei, Z. (2014). Psychological safety: The history, renaissance, and future of an interpersonal construct. *Annual Review of Organizational Psychology and Organizational Behavior*, 1, 23–43. https://doi.org/10.1146/annurev-orgpsych-031413-091305

Faridah, I., Setyowati, S., Lestari, F., & Hariyati, R. T. S. (2021). The correlation between work environment and patient safety in a general hospital in Indonesia. *Enfermería Clínica*, 31(Suppl 3), S220–S224. https://doi.org/10.1016/j.enfcli.2020.12.026

Galanis, P., Vraka, I., Fragkou, D., Bilali, A., & Kaitelidou, D. (2021). Nurses' burnout and associated risk factors during the COVID-19 pandemic: A systematic review and meta-analysis. *Journal of Advanced Nursing*, 77(8), 3286–3302. https://doi.org/10.1111/jan.14839

Granados-Plaza, M., Gea-Caballero, V., Martí-Ejarque, M. D., & et al. (2021). Association of nursing practice environment on reported adverse events in private management hospitals: A cross-sectional study. *Journal of Clinical Nursing*, 30(21–22), 2990–3000. https://doi.org/10.1111/jocn.15806

Griffiths, P., Saville, C., Ball, J. E., Jones, J., Pattison, N., & Monks, T. (2020). Nursing workload, nurse staffing methodologies and tools: A systematic scoping review and discussion. *International Journal of Nursing Studies*, 103, 103487. https://doi.org/10.1016/j.ijnurstu.2019.103487

Hendy, A., Abel Fattah, H. A., Abouelela, M. A., & et al. (2024). Nursing professional commitment as a mediator of the relationship between work environment and missed nursing care among nurses: A cross-sectional analysis. *SAGE Open Nursing*, 10, 23779608231226063. https://doi.org/10.1177/23779608231226063

Institute of Medicine. (2000). *To err is human: Building a safer health system*. National Academies Press. https://doi.org/10.17226/9728

Jun, J., Ojemeni, M. M., Kalamani, R., Tong, J., & Crecelius, M. L. (2021). Relationship between nurse burnout, patient and organizational outcomes: Systematic review. *International Journal of Nursing Studies*, 119, 103933. https://doi.org/10.1016/j.ijnurstu.2021.103933

Kalánková, D., Bartoníčková, D., Žiaková, K., Kurucová, R., & Gurková, E. (2021). Missed, rationed or unfinished nursing care: A scoping review of patient outcomes. *Journal of Nursing Management*, 29(6), 1783–1797. https://doi.org/10.1111/jonm.13322

Kane, R. L., Shamliyan, T. A., Mueller, C., Duval, S., & Wilt, T. J. (2007). The association of registered nurse staffing levels and patient outcomes: Systematic review and meta-analysis. *Medical Care*, 45(12), 1195–1204. https://doi.org/10.1097/MLR.0b013e3181468ca9

Kohn, L. T., Corrigan, J. M., & Donaldson, M. S. (Eds.). (2000). *To err is human: Building a safer health system*. National Academy Press.

Labrague, L. J. (2021). Influence of nurse work environment and resilience on burnout, job satisfaction and turnover intention among nurses during the COVID-19 pandemic. *International Nursing Review*, 68(2), 123–131. https://doi.org/10.1111/inr.12662

Labrague, L. J. (2021). Pandemic fatigue and clinical nurses' mental health, sleep quality and job contentment during the COVID-19 pandemic: The mediating role of resilience. *Journal of Nursing Management*, 29(7), 1992–2001. https://doi.org/10.1111/jonm.13383

Labrague, L. J. (2022). Linking nurse practice environment, safety climate and job dimensions to missed nursing care. *International Nursing Review*, 69(3), 350–358. https://doi.org/10.1111/inr.12736

Lake, E. T. (2002). Development of the Practice Environment Scale of the Nursing Work Index. *Research in Nursing & Health*, 25(3), 176–188. https://doi.org/10.1002/nur.10032

Laschinger, H. K. S., Finegan, J., Shamian, J., & Wilk, P. (2001). Impact of structural and psychological empowerment on job strain in nursing work settings: Expanding Kanter's model. *Journal of Nursing Administration*, 31(5), 260–272.

Malinowska-Lipień, I., Micek, A., Gabryś, T., & et al. (2021). Impact of the work environment on patients' safety as perceived by nurses in Poland—A cross-sectional study. *International Journal of Environmental Research and Public Health*, 18(22), 12057. https://doi.org/10.3390/ijerph182212057

Mihdawi, M., Al-Amer, R., Darwish, R., Randall, S., & Afaneh, T. (2020). The influence of nursing work environment on patient safety. *Workplace Health & Safety*, 68(8), 384–390. https://doi.org/10.1177/2165079920901533

Muir, K. J., Sloane, D. M., Aiken, L. H., & et al. (2023). The association of the emergency department work environment on patient care and nurse job outcomes. *JACEP Open*, 4(5), e13040. https://doi.org/10.1002/emp2.13040

Needleman, J., Buerhaus, P., Mattke, S., Stewart, M., & Zelevinsky, K. (2002). Nurse-staffing levels and the quality of care in hospitals. *The New England Journal of Medicine*, 346(22), 1715–1722. https://doi.org/10.1056/NEJMsa012247

Nielsen, K., Randall, R., Holten, A.-L., & González, E. R. (2010). Conducting organizational-level occupational health interventions: What works? *Work & Stress*, 24(3), 234–259. https://doi.org/10.1080/02678373.2010.515393

Ribeiro, O., Trindade, L., Fassarella, C., & et al. (2022). Impact of COVID-19 on professional nursing practice environments and patient safety culture. *Journal of Nursing Management*, 30(5), 1105–1114. https://doi.org/10.1111/jonm.13617

Sammer, C. E., Lykens, K., Singh, K. P., Mains, D. A., & Lackan, N. A. (2010). What is patient safety culture? A review of the literature. *Journal of Nursing Scholarship*, 42(2), 156–165. https://doi.org/10.1111/j.1547-5069.2010.01333.x

Sani, M. M. S., Jafaru, Y., Ashipala, D. O., & Sahabi, A. K. (2024). Influence of work-related stress on patient safety culture among nurses in a tertiary hospital: A cross-sectional study. *BMC Nursing*, 23, Article 81. https://doi.org/10.1186/s12912-023-01695-x

Walters, D., & Nichols, T. (2007). *Worker representation and workplace health and safety*. Palgrave Macmillan.

Wang, X., Liu, M., Xu, T., & et al. (2024). New nurses' practice environment, job stress, and patient safety attitudes: A cross-sectional study based on the job demands-resources model. *BMC Nursing*, 23, Article 473. https://doi.org/10.1186/s12912-024-02135-0

Wong, C. A., Cummings, G. G., & Ducharme, L. (2013). The relationship between nursing leadership and patient outcomes: A systematic review update. *Journal of Nursing Management*, 21(5), 709–724. https://doi.org/10.1111/jonm.12016

Woo, T., Ho, R., Tang, A., & Tam, W. (2020). Global prevalence of burnout symptoms among nurses: A systematic review and meta-analysis. *Journal of Psychiatric Research*, 123, 9–20. https://doi.org/10.1016/j.jpsychires.2019.12.015

World Health Organization. (2019). *Patient safety: Global action on patient safety*. World Health Organization. https://apps.who.int/gb/ebwha/pdf_files/WHA72/A72_R6-en.pdf

World Health Organization. (2020). *State of the world's nursing 2020: Investing in education, jobs and leadership*. World Health Organization. https://www.who.int/publications/i/item/9789240003279

World Health Organization. (2021). *Global patient safety action plan 2021–2030: Towards eliminating avoidable harm in health care*. World Health Organization. https://www.who.int/publications/i/item/9789240032705

Zárate-Grajales, R. A., Benítez-Chavira, L. A., Hernández-Corral, S., Serván-Mori, E., & et al. (2023). Nursing practice environment and missed care at highly specialised hospitals in Mexico: A cross-sectional observational study. *International Journal of Health Planning and Management*, 38(3), 628–642. https://doi.org/10.1002/hpm.3606

Zárate-Grajales, R. A., et al. (2022). Nursing work environment and missed nursing care: Implications for patient safety. *Journal of Nursing Management*, 30(8), 4150–4158. https://doi.org/10.1111/jonm.13862