

The Determinants of Patient Safety Culture; A Systematic Review

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Abstract

Background: Patient safety culture is a cornerstone of high-quality healthcare, shaping patient outcomes and workforce performance. Despite global initiatives to improve safety, adverse events, underreporting of errors, and staff burnout persist, indicating gaps in the effective implementation of safety culture. Understanding its determinants is critical for guiding organizational strategies and policy interventions.

Objective: This systematic review synthesizes empirical evidence on the prevalence, determinants, and outcomes of patient safety culture, with emphasis on behavioral, organizational, and contextual influences.

Methods: The review followed PRISMA 2020 guidelines. Major electronic databases were systematically searched for studies examining patient safety culture among healthcare professionals. Eligible studies included quantitative research, systematic reviews, scoping reviews, and meta-analyses across diverse healthcare settings. Data were extracted and narratively synthesized using a structured review matrix.

Results: Thirty studies were included. Patient safety culture was generally reported at low to moderate levels. Key determinants included leadership support, teamwork, communication openness, adequate staffing, training, and non-punitive responses to error. Strong safety culture was associated with reduced adverse events, improved incident reporting, higher patient safety ratings, and better staff well-being. Conversely, weak safety culture was linked to burnout, job stress, and increased turnover intentions.

Conclusions: Patient safety culture is a multidimensional construct shaped by behavioral, organizational, and contextual factors. Enhancing leadership engagement, promoting teamwork and open communication, and addressing systemic workplace challenges are essential for improvement. A holistic, systems-based approach is necessary to achieve sustained gains in patient outcomes and workforce sustainability.

Keywords: Patient safety culture; safety climate; healthcare quality; leadership.

1. Introduction

Patient safety culture has become a foundational concept in healthcare quality improvement, reflecting the shared values, beliefs, norms, and practices that influence how healthcare professionals perceive and act upon patient safety within their organizations. Rather than being limited to individual knowledge or compliance with procedures, patient safety culture represents a collective organizational mindset that shapes behaviors related to error prevention, communication openness, leadership engagement, teamwork, and continuous learning. Evidence indicates that when patient safety culture is strong, healthcare professionals are more likely to engage in safe practices, report incidents, and contribute to system-level improvements. This systemic perspective is reinforced by findings showing that non-punitive reporting systems, safety training, and supportive work environments are strongly associated with more positive safety culture perceptions among healthcare staff (Ismail & Khalid, 2022).

Despite its recognized importance, patient safety culture remains inadequately developed in many healthcare settings worldwide. Empirical studies consistently report moderate to low levels of patient safety culture, particularly in domains related to staffing adequacy, working conditions, communication openness, and non-blaming responses to error. Assessments conducted in teaching and tertiary hospitals have highlighted persistent structural and organizational weaknesses that undermine safety culture, even in systems with established accreditation and quality frameworks (Kakemam et al., 2022). Similar challenges have been documented in Middle Eastern healthcare contexts, where awareness of patient safety culture among healthcare workers has been reported as low, signaling gaps between policy intentions and frontline practice (Albaalharith & A'aqoulah, 2023). These findings suggest that deficiencies in patient safety culture represent a widespread and enduring challenge rather than isolated institutional failures.

Research examining the determinants of patient safety culture has revealed that leadership and management support are among the most influential organizational drivers. Leadership behaviors signal safety priorities, allocate resources, and shape the psychological environment in which healthcare professionals operate. Empirical modeling has demonstrated that management leadership exerts both direct and indirect effects on patient safety culture through mediating factors such as teamwork climate, working conditions, and stress recognition (Huang et al., 2024). In addition to leadership, teamwork and interprofessional collaboration have been identified as critical determinants, as effective collaboration enhances shared accountability, communication quality, and mutual support among healthcare professionals. Studies focusing on physician–nurse collaboration show that higher levels of collaborative practice are consistently associated with stronger patient safety culture across multiple domains (Amarneh & Al Nobani, 2022).

Individual-level factors also play a significant role in shaping perceptions of patient safety culture. Staff well-being, burnout, and job stress have been increasingly recognized as integral to safety culture dynamics. High levels of burnout have been linked to poorer

safety perceptions, reduced engagement in safety behaviors, and increased vulnerability to errors. Large-scale empirical evidence has shown that patient safety culture functions as an organizational resource that can mitigate burnout and enhance work–life balance among healthcare workers, reinforcing the reciprocal relationship between staff well-being and patient safety (Lu et al., 2022). These findings highlight that patient safety culture is not only a determinant of patient outcomes but also a key factor influencing workforce sustainability.

Beyond determinants, patient safety culture has been associated with a range of critical healthcare outcomes, including adverse events, incident reporting, and care quality indicators. Systematic syntheses demonstrate that stronger patient safety culture is associated with lower levels of missed nursing care, suggesting that safety culture plays a protective role in maintaining care continuity and completeness (Labrague & Cayaban, 2025). Similarly, scoping evidence indicates that higher patient safety culture scores are frequently linked to reduced adverse event rates, although methodological heterogeneity remains a concern (Vikan et al., 2023). While these associations are well documented, the existing literature remains fragmented, with studies often focusing on isolated determinants, specific professional groups, or single outcomes.

Given the breadth and diversity of factors influencing patient safety culture, a comprehensive and methodologically rigorous synthesis is required. Although previous reviews have identified multiple influencing factors, including leadership, workload, organizational learning, and teamwork, they often lack an integrated framework that captures the interplay between behavioral, organizational, and contextual determinants (Bauty & Dhamanti, 2023). Therefore, this systematic review aims to synthesize existing empirical evidence on the determinants of patient safety culture across healthcare settings. By systematically examining and categorizing these determinants, the review seeks to provide a clearer understanding of the mechanisms shaping patient safety culture and to inform evidence-based leadership strategies, policy development, and future research directions aimed at strengthening patient safety and care quality.

2. Methodology

This systematic review was conducted using a transparent, rigorous, and reproducible approach consistent with internationally accepted standards for evidence synthesis in patient safety research. A systematic review design was selected to comprehensively identify, appraise, and synthesize empirical evidence on the determinants of patient safety culture across diverse healthcare contexts. This approach is particularly appropriate given the multidimensional nature of patient safety culture and the wide variation in organizational, behavioral, and contextual factors reported in the literature. Previous systematic and meta-analytic reviews have demonstrated that structured synthesis is essential for clarifying how patient safety culture influences both professional behaviors and patient outcomes (Labrague & Cayaban, 2025).

A comprehensive literature search was conducted across major electronic databases commonly used in healthcare and patient safety research, including PubMed, CINAHL, Scopus, Web of Science, and ScienceDirect. The search strategy incorporated combinations of keywords related to *patient safety culture*, *safety climate*, *determinants*, *leadership*, *teamwork*, *incident reporting*, *burnout*, *staffing*, *organizational learning*, and *working conditions*. The search was intentionally broad to capture studies conducted in different healthcare settings and geographical regions, acknowledging that patient safety culture is shaped by both local organizational practices and broader system-level influences (Ismail & Khalid, 2022). To ensure completeness, reference lists of all included studies were manually screened for additional relevant publications.

Studies were included if they explicitly examined patient safety culture or safety climate as a primary construct and reported determinants, predictors, or associated organizational or professional factors. Quantitative, qualitative, and mixed-methods studies were eligible for inclusion, as well as systematic reviews and meta-analyses that provided determinant-level insights. Studies conducted in hospital, primary care, and specialized healthcare settings were considered to ensure contextual diversity. Articles were excluded if patient safety culture was not clearly defined or measured, or if safety outcomes were examined without reference to organizational culture. This eligibility approach aligns with prior scoping and systematic reviews emphasizing conceptual clarity and methodological rigor in patient safety culture research (Vikan et al., 2023).

All retrieved records were imported into a reference management system, and duplicate entries were removed prior to screening. Titles and abstracts were screened for relevance, followed by full-text assessment of potentially eligible studies. The screening process was guided by predefined eligibility criteria to minimize selection bias and enhance consistency. The study selection process followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 framework, ensuring transparency in reporting decisions and facilitating reproducibility. The flow of studies through identification, screening, eligibility assessment, and final inclusion is illustrated in Figure 1. Data extraction was performed using a standardized literature review matrix to ensure consistency across studies. Extracted information included author and year, country and setting, study design, sample characteristics, measurement instruments, determinants of patient safety culture, and reported outcomes.

Determinants were subsequently grouped into behavioral, organizational, and contextual domains to support structured synthesis and comparison across studies. This classification approach has been widely used in patient safety culture research to accommodate methodological heterogeneity while preserving analytical depth (Bauty & Dhamanti, 2023). Given the heterogeneity in study designs, populations, and measurement tools, a narrative synthesis approach was adopted rather than a statistical meta-analysis. This approach enabled an in-depth interpretation of recurring patterns, relationships, and gaps in the literature. Methodological characteristics such as sampling strategies, validity of measurement instruments, and analytical techniques were critically examined during

synthesis to contextualize the strength of the evidence. Variability in measurement tools and reporting practices has been consistently identified as a limitation in patient safety culture research, reinforcing the importance of cautious interpretation and contextual analysis (Kakemam et al., 2022).

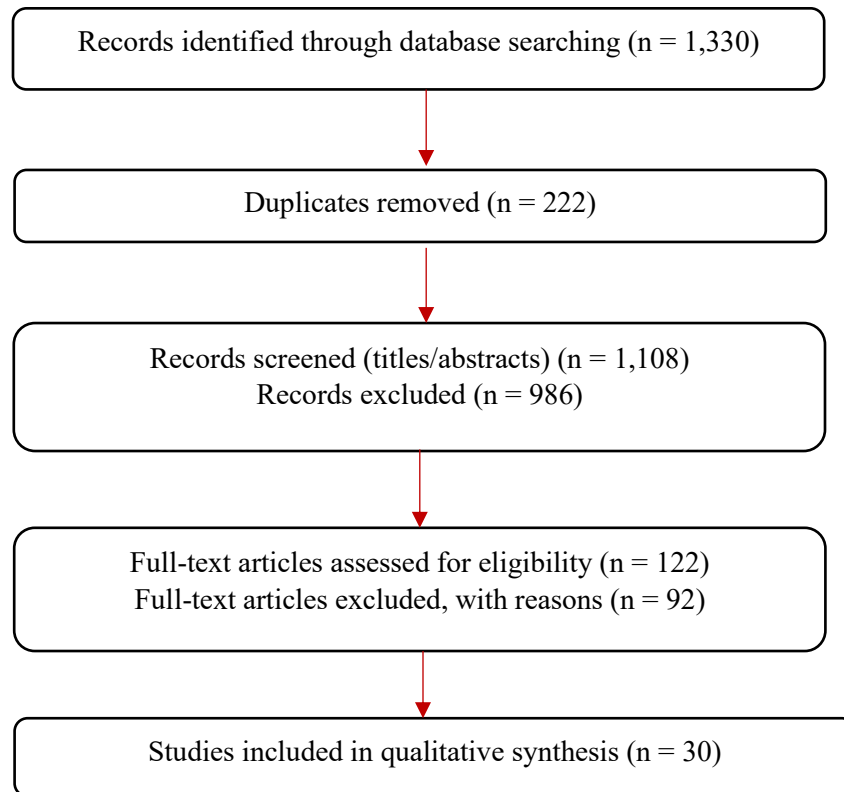


Figure 1. PRISMA 2020 Flow Diagram

3. Results

3.1 Study Selection and Characteristics

The systematic search and screening process resulted in the inclusion of 30 studies that met the predefined eligibility criteria and were deemed relevant to the objectives of this review. These studies were selected following the PRISMA 2020 framework and represent a diverse body of evidence examining patient safety culture across multiple healthcare contexts. The included studies comprised cross-sectional quantitative studies, systematic reviews, scoping reviews, and meta-analyses, reflecting methodological diversity within the patient safety culture literature (Ismail & Khalid, 2022). Most studies were conducted in hospital settings, including tertiary, teaching, and general hospitals, while a smaller number focused on primary healthcare and emergency care contexts (de Abreu Pereira et al., 2024).

Geographically, the included studies spanned a wide range of regions, including the Middle East, Asia, Europe, North America, and Latin America, highlighting the global relevance of patient safety culture research (Camacho-Rodriguez et al., 2022). Nursing staff constituted the primary study population in the majority of studies, although several investigations included multidisciplinary healthcare professionals such as physicians, pharmacists, and allied health workers (Amarneh & Al Nobani, 2022). Patient safety culture was most commonly measured using validated instruments such as the Hospital Survey on Patient Safety Culture and the Safety Attitudes Questionnaire, ensuring consistency and comparability across studies (Gleeson et al., 2023). A detailed synthesis of study characteristics, methodologies, measured constructs, and key findings is presented in Table 1.

Table 1. Literature Review Matrix

No.	Author(s) & Year	Patient Safety Culture	Leadership / Management	Teamwork / Collaboration	Job Satisfaction	Stress / Burnout	Work Environment / Practice Environment	Training / Education	Incident Reporting / Speaking-Up	Organizational / Policy Factors	Adverse Events / Errors
1	Ismail & Khalid (2022)	✓			✓		✓	✓	✓	✓	
2	Bauty & Dhamanti (2023)	✓	✓	✓		✓	✓			✓	
3	Labrague & Cayaban (2025)	✓	✓							✓	
4	Mistri, Badge & Shahu (2023)	✓		✓				✓	✓		✓
5	Vikan et al. (2023)	✓									✓
6	Huang et al. (2024)	✓	✓	✓	✓	✓	✓				
7	de Abreu Pereira et al. (2024)	✓	✓				✓			✓	✓
8	Hamdan et al. (2024)	✓	✓								
9	Seo & Lee (2022)	✓	✓						✓	✓	
10	Sankar et al. (2023)		✓								
11	Lu et al. (2022)	✓				✓			✓		
12	Alanazi et al. (2023)	✓		✓			✓				✓
13	Zabin et al. (2023)	✓				✓	✓				
14	Agbar et al. (2023)	✓						✓			
15	Alsobou et al. (2025)	✓							✓		

16	Albaalharith & A'aqoulah (2023)	✓	✓	✓					✓	✓	
17	Xu et al. (2025)	✓				✓					
18	Alsabri et al. (2022)	✓		✓				✓			✓
19	Montgomery et al. (2025)										✓
20	Alsulami et al. (2022)	✓						✓	✓		
21	Er & Gül (2024)			✓					✓		
22	Amarneh & Al Nobani (2022)	✓		✓							
23	Hafezi et al. (2022)	✓	✓	✓					✓		✓
24	Din et al. (2024)			✓							
25	Camacho-Rodriguez et al. (2022)	✓	✓	✓				✓	✓	✓	✓
26	Kaya et al. (2023)	✓	✓	✓	✓	✓	✓		✓		✓
27	Kakemam et al. (2022)	✓		✓							
28	Al-Surimi et al. (2022)	✓	✓	✓	✓						
29	Kim et al. (2023)	✓		✓		✓					✓
30	Gleeson et al. (2023)	✓	✓				✓		✓		

3.2 Prevalence and Determinants of Patient Safety Culture

Across the included studies, the prevalence of positive patient safety culture was generally reported as low to moderate, with substantial variation across settings, professional groups, and cultural contexts. Several large-scale cross-sectional studies reported that fewer than half of healthcare professionals perceived patient safety culture positively at an organizational level, indicating persistent challenges in establishing robust safety cultures (Ismail & Khalid, 2022). Similar findings were reported in multinational and regional reviews, which identified consistently low scores in dimensions such as non-punitive response to error, staffing, and communication openness (Kakemam et al., 2022). Determinants of patient safety culture were consistently categorized into organizational, behavioral, and contextual factors. Leadership and management support emerged as one of the most frequently reported organizational determinants. Studies demonstrated that supportive leadership behaviors, clear managerial expectations, and visible commitment to safety were strongly associated with higher patient safety culture scores (Huang et al., 2024).

Teamwork and interprofessional collaboration were also repeatedly identified as key determinants, with positive teamwork climates linked to improved perceptions of safety culture across hospital units (Amarneh & Al Nobani, 2022). In contrast, inadequate staffing levels and poor working conditions were consistently associated with weaker safety culture

perceptions (Al-Surimi et al., 2022). Behavioral determinants included communication openness, speaking-up behaviors, and attitudes toward incident reporting. Multiple studies showed that healthcare professionals were more likely to report errors and safety concerns in environments characterized by trust, psychological safety, and non-punitive responses to mistakes (Er & Gül, 2024). Training and education in patient safety were also identified as significant determinants, with systematic review evidence demonstrating that patient safety education interventions led to measurable improvements in safety culture scores (Agbar et al., 2023). Contextual and individual factors such as age, gender, professional role, years of experience, and work unit were reported as significant predictors in several studies, although their influence varied across settings (Alsulami et al., 2022).

3.3 Outcomes Associated with Patient Safety Culture

The included studies provided consistent evidence that patient safety culture is closely linked to a range of clinical, organizational, and workforce outcomes. Stronger patient safety culture was associated with reduced rates of adverse events, including medication errors, patient falls, pressure ulcers, and other safety incidents (Hafezi et al., 2022). Systematic and scoping reviews further demonstrated that higher patient safety culture scores were generally associated with lower adverse event rates, although methodological variability limited the strength of causal inference (Vikan et al., 2023). Patient safety culture was also strongly associated with healthcare professional outcomes. Several studies reported that positive safety culture perceptions were linked to lower levels of burnout, reduced job stress, and improved staff well-being (Lu et al., 2022).

Conversely, poor safety culture was associated with higher emotional exhaustion, increased workplace violence, and greater intention to leave among healthcare workers (Kim et al., 2023). Organizational outcomes such as improved incident reporting rates and higher overall patient safety grades were also consistently associated with stronger safety culture dimensions, particularly teamwork, management support, and communication about errors (Kaya et al., 2023). At the care delivery level, patient safety culture was shown to influence nursing practice quality and care processes. Evidence from systematic reviews and meta-analyses indicated that stronger safety culture was associated with lower levels of missed nursing care and improved adherence to safety practices (Labrague & Cayaban, 2025). Collectively, these findings underscore the central role of patient safety culture as a foundational determinant of both patient outcomes and workforce sustainability within healthcare systems.

4. Discussion

4.1 Interplay of Behavioral, Organizational, and Contextual Determinants

The findings of this systematic review demonstrate that patient safety culture is shaped by a dynamic and interdependent interplay between behavioral, organizational, and contextual determinants rather than by isolated factors. At the behavioral level, communication

openness, speaking-up behaviors, and attitudes toward incident reporting repeatedly emerged as central mechanisms through which safety culture is enacted in daily clinical practice. Studies consistently show that when healthcare professionals feel psychologically safe to raise concerns and report errors, perceptions of patient safety culture improve substantially, reinforcing shared accountability and learning-oriented behaviors (Er & Gül, 2024). These behavioral determinants are not independent but are strongly influenced by the organizational environment in which staff operate.

Organizational determinants, particularly leadership style and management support, play a pivotal role in shaping behavioral norms related to patient safety. Evidence indicates that transformational and supportive leadership fosters trust, teamwork, and constructive responses to error, which in turn strengthens safety culture perceptions among healthcare workers (Huang et al., 2024). Conversely, weak leadership engagement and punitive responses to mistakes undermine communication openness and discourage incident reporting, thereby eroding safety culture. Teamwork and interprofessional collaboration further bridge organizational structures and individual behaviors, as effective collaboration enables shared decision-making, mutual respect, and coordinated care processes that reinforce safety values across professional boundaries (Amarneh & Al Nobani, 2022).

Contextual determinants, including staffing levels, workload, work environment, and national or organizational healthcare contexts, further modulate the relationship between organizational practices and individual behaviors. Studies from diverse regions consistently highlight that inadequate staffing and high workload constrain the ability of healthcare professionals to adhere to safety practices, even in organizations with stated commitments to patient safety (Al-Surimi et al., 2022). Individual characteristics such as age, professional role, and years of experience also influence how safety culture is perceived and enacted, suggesting that safety culture is experienced differently across workforce subgroups (Ismail & Khalid, 2022). Collectively, these findings support a systems perspective in which patient safety culture emerges from the continuous interaction of behavioral actions, organizational structures, and contextual conditions.

4.2 Policy, Practical, and Theoretical Implications

From a policy perspective, the findings of this review underscore the need for healthcare systems to prioritize patient safety culture as a strategic quality and safety objective rather than a peripheral initiative. Policies that mandate regular assessment of patient safety culture using validated instruments can help organizations identify weaknesses and monitor progress over time. Evidence from regional and multinational studies suggests that embedding patient safety culture assessment into accreditation and quality improvement frameworks may drive more consistent organizational attention to leadership accountability, staffing adequacy, and non-punitive reporting systems (Camacho-Rodriguez et al., 2022). Policymakers should also consider workforce policies that address staffing shortages and excessive workloads, as these contextual pressures directly undermine safety culture regardless of individual motivation or training.

In practice, the review highlights several actionable strategies for healthcare leaders and managers. Strengthening leadership capacity at unit and organizational levels is critical, as leadership behaviors shape both the structural and relational foundations of safety culture. Interventions that promote visible management support, leadership walkarounds, and constructive feedback following incidents have been shown to enhance safety culture perceptions and reporting behaviors (Alsobou et al., 2025). Practical efforts should also focus on fostering teamwork and communication through structured handovers, multidisciplinary collaboration, and team training programs, which have demonstrated positive effects on safety culture and patient outcomes (Alsabri et al., 2022). Additionally, investing in patient safety education and continuous professional development can reinforce shared safety values and translate policy intentions into everyday practice (Agbar et al., 2023).

Theoretically, the findings of this review contribute to the conceptual understanding of patient safety culture as a multidimensional and context-dependent construct. The evidence supports theoretical models that conceptualize safety culture as a collective organizational resource shaped by leadership, social interactions, and working conditions rather than solely by individual attitudes (Lu et al., 2022). The observed relationships between safety culture, staff well-being, and patient outcomes further reinforce the relevance of systems and organizational behavior theories in patient safety research. These insights suggest that future theoretical frameworks should explicitly integrate behavioral, organizational, and contextual pathways to better capture the complexity of safety culture in healthcare settings.

4.3 Comparison with Existing Reviews, Limitations, and Future Research

The findings of this systematic review are broadly consistent with existing reviews that report generally low to moderate levels of patient safety culture across healthcare settings and identify leadership, teamwork, and communication as core determinants. Previous systematic and scoping reviews have similarly emphasized the association between patient safety culture and adverse events, incident reporting, and staff outcomes, reinforcing the robustness of these relationships across contexts (Vikan et al., 2023). However, this review extends prior work by synthesizing a broader range of determinants, including psychological safety, burnout, empowerment, and work environment factors, thereby providing a more integrated perspective on how safety culture is formed and sustained. Despite its contributions, this review has several limitations that should be acknowledged. First, the majority of included studies employed cross-sectional designs, limiting the ability to infer causal relationships between determinants and patient safety culture. Second, there was substantial heterogeneity in study settings, measurement tools, and analytical approaches, which constrained direct comparability across studies.

Third, evidence from primary care settings and low- and middle-income countries remains limited, suggesting potential gaps in the global understanding of patient safety culture (de Abreu Pereira et al., 2024). Publication bias and language restrictions may also have

influenced the body of evidence included in this review. Future research should prioritize longitudinal and interventional designs to better understand causal pathways and the sustainability of safety culture improvements over time. There is a particular need for high-quality studies examining patient safety culture in under-researched settings, including primary healthcare and resource-constrained environments. Additionally, future studies should explore how organizational interventions targeting leadership, staffing, and psychological safety interact to influence both patient outcomes and workforce well-being. Advancing this evidence base will be essential for designing effective, context-sensitive strategies to strengthen patient safety culture across diverse healthcare systems.

5. Conclusion

This systematic review provides a comprehensive synthesis of the existing evidence on the determinants of patient safety culture across diverse healthcare settings and professional groups. The findings demonstrate that patient safety culture remains generally low to moderate in many healthcare organizations, indicating persistent challenges in embedding safety as a shared organizational value. Patient safety culture is not shaped by a single factor but emerges from the continuous interaction of behavioral practices, organizational structures, and contextual conditions within healthcare systems. Elements such as leadership behaviors, teamwork, communication openness, and staffing adequacy collectively influence how safety is perceived and enacted in everyday clinical work. The review highlights leadership and management support as foundational drivers of patient safety culture, as leaders shape the norms, expectations, and responses that guide staff behavior. Supportive leadership fosters trust, encourages reporting and speaking up, and reinforces learning from errors, whereas punitive or disengaged leadership undermines these processes. Equally important are teamwork and interprofessional collaboration, which enable coordinated care, shared responsibility, and mutual support among healthcare professionals. Behavioral factors, including attitudes toward incident reporting and communication about errors, serve as critical mechanisms through which organizational intentions are translated into practice.

Patient safety culture was also shown to have far-reaching implications for both patient and workforce outcomes. Stronger safety culture is associated with reduced adverse events, improved care processes, and enhanced staff well-being, while weak safety culture contributes to burnout, job dissatisfaction, and intentions to leave. These findings underscore the importance of viewing patient safety culture as a strategic organizational resource that supports quality of care, workforce sustainability, and overall health system performance. In conclusion, strengthening patient safety culture requires a holistic and sustained approach that integrates leadership development, workforce support, effective communication, and supportive work environments. Healthcare organizations and systems must move beyond isolated interventions and adopt comprehensive strategies that address the multiple, interacting determinants of safety culture. By doing so, patient safety culture

can be transformed from a stated priority into a lived reality that consistently supports safe, high-quality care for patients and healthcare professionals alike.

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