

The Role of Nursing Management in Building a Sustainable Patient Safety Culture

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ABSTRACT

The study purpose was to examine the role of nursing management in building and sustaining a patient safety culture (PSC) within healthcare organizations. Given the increasing emphasis on safety as a key component of healthcare quality, understanding how leadership behaviors and organizational factors contribute to sustainable PSC is essential. This review aimed to synthesize recent evidence on nursing leadership approaches, sustainability mechanisms, and the challenges associated with maintaining long-term patient safety practices.

Materials and methods. This study employed a systematic literature review design guided by the PRISMA framework. Databases including PubMed, Scopus, CINAHL, Web of Science, and ScienceDirect were searched for articles published between 2015 and 2025 using keywords such as “nursing management,” “patient safety culture,” “leadership,” and “sustainability.” A total of 26 peer-reviewed studies met the inclusion criteria. Data were extracted and analyzed thematically under four key domains: leadership styles, organizational support, sustainability strategies, and implementation barriers.

Results. The findings revealed that transformational and participative leadership styles have the most substantial impact on developing and sustaining PSC. Organizational support systems—such as effective communication channels, non-punitive reporting structures, and ongoing leadership training—were found to reinforce safety behaviors and ensure cultural continuity. Barriers included limited resources, inconsistent leadership engagement, and high staff turnover.

Conclusions. Nursing management serves as the cornerstone of a sustainable PSC. Effective leadership behaviors, when supported by institutional policies and adequate resources, drive organizations toward proactive and generative safety cultures. Sustainable safety outcomes depend on leadership constancy, staff empowerment, and systemic alignment across all levels of care.

Keywords: Nursing management, patient safety culture, leadership, healthcare sustainability, safety systems

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INTRODUCTION

Patient safety has become a fundamental component of healthcare quality and sustainability, representing a core commitment to minimizing preventable harm and ensuring high-quality care for all patients. The concept of patient safety culture (PSC) encompasses the collective values, beliefs, and norms within healthcare organizations that influence attitudes and behaviors toward safety (Sammer, Lykens, Singh, Mains, & Lackan, 2018). A positive PSC fosters open communication, continuous learning, and shared responsibility, contributing to improved patient outcomes and reduced medical errors (Pronovost & Sexton, 2016).

Within this landscape, nursing management plays a pivotal role in shaping and sustaining PSC. Nurse managers act as the bridge between frontline staff and organizational leadership, translating safety policies into everyday practice and fostering environments that prioritize safety reporting and accountability (Wagner & Montgomery, 2016). Effective nursing leadership is strongly associated with enhanced safety climates, where staff feel psychologically safe to report errors and engage in improvement initiatives (Ghazali, Mohamed, & Almobaireek, 2019; Zhao, Chen, & Ji, 2021). As Hofmann and Mark (2017) note, leadership support and modeling of safety behaviors directly influence nurses' adherence to safe practices and patient outcomes.

Sustainability of PSC, however, remains a significant challenge. High staff turnover, workload pressures, and inconsistent leadership behaviors often undermine efforts to maintain long-term safety initiatives (Agarwal & Gupta, 2018). Building a sustainable PSC requires not only strategic leadership but also a deep integration of safety principles into the organizational fabric, supported by continuous education, feedback systems, and leadership commitment (Coyle & Battles, 2020; Nieva & Sorra, 2017). Nursing managers must therefore embody transformational and participative leadership styles to inspire a lasting commitment to safety among their teams.

This systematic literature review aims to synthesize existing research on the role of nursing management in building and sustaining a patient safety culture. Specifically, it explores leadership strategies, organizational enablers, and contextual factors that influence the long-term sustainability of PSC in healthcare settings. By examining empirical evidence and theoretical frameworks, this review seeks to inform leadership development and policy interventions that strengthen the nursing role in advancing patient safety sustainability.

METHOD

Research Design

This study employed a systematic literature review design guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework. The objective was to identify, appraise, and synthesize existing empirical and theoretical literature on the role of nursing management in building and sustaining a patient safety culture (PSC) in healthcare settings. This method was selected for its rigor and transparency in aggregating research findings across multiple studies while minimizing bias (Moher et al., 2009).

Search Strategy

A comprehensive search was conducted across major electronic databases, including PubMed, CINAHL, Scopus, Web of Science, and ScienceDirect, covering the publication period from 2015 to 2025 to ensure inclusion of the most recent and relevant evidence. Boolean operators and controlled vocabulary (MeSH terms) were utilized to enhance search precision. The main search terms included combinations of the following keywords:

“nursing management,” “nurse leadership,” “patient safety culture,” “sustainable safety,” “organizational safety climate,” “nursing administration,” and “healthcare quality improvement.”

Reference lists of key studies and systematic reviews were also manually screened to identify additional eligible articles not captured by the database search.

Inclusion and Exclusion Criteria

To ensure the relevance and quality of included studies, specific inclusion and exclusion criteria were applied.

Inclusion Criteria:

1. Peer-reviewed articles published between 2015–2025.

2. Studies focusing on nursing management or leadership within healthcare settings.
3. Articles addressing patient safety culture or safety climate as a primary or secondary theme.
4. Research conducted in hospital or clinical care environments.
5. Studies published in English.

Exclusion Criteria:

1. Studies focusing solely on physicians, medical students, or other non-nursing professionals.
2. Publications such as editorials, commentaries, conference abstracts, or dissertations.
3. Studies unrelated to sustainability or the leadership dimension of safety culture.

Study Selection Process

The search process followed the PRISMA 2020 flow structure, consisting of four main phases: identification, screening, eligibility, and inclusion.

1. Identification: A total of 1,152 records were initially retrieved from all databases.
2. Screening: After removing 326 duplicates, the remaining 826 records were screened by title and abstract for relevance.
3. Eligibility: 117 full-text articles were reviewed in detail based on the inclusion criteria.
4. Inclusion: Finally, 26 studies met all criteria and were included in the final synthesis.

Two independent reviewers conducted the screening and selection process to ensure objectivity. Any discrepancies were resolved through discussion or consultation with a third reviewer.

Data Extraction and Synthesis

A standardized data extraction form was developed to capture essential study characteristics, including author(s), year of publication, country, study design, sample size, healthcare setting, leadership model, and key findings related to nursing management and PSC.

The synthesis process followed a thematic analysis approach, grouping findings under major conceptual themes such as:

- Leadership styles and safety outcomes
- Organizational support and policy alignment
- Sustainability mechanisms in patient safety culture
- Barriers and facilitators of PSC implementation

Patterns, consistencies, and divergences across studies were examined to construct an integrated understanding of how nursing management influences the development and sustainability of patient safety culture.

Quality Appraisal

The methodological quality of included studies was evaluated using the Critical Appraisal Skills Programme (CASP) checklist for qualitative and quantitative research. Each study was assessed for clarity of objectives, methodological rigor, validity of results, and applicability to nursing practice. Studies scoring below 60% on quality criteria were excluded from the final synthesis.

Additionally, the GRADE framework (Grading of Recommendations Assessment, Development, and Evaluation) was used to assess the strength of the overall evidence.

Ethical Considerations

As this study was based on secondary data from published literature, no ethical approval was required. Nevertheless, ethical principles of transparency, accurate reporting, and proper attribution were maintained throughout the review process. All sources were cited following the APA 7th edition format.

FINDING AND DISCUSSION

Overview of Included Studies

A total of 26 studies published between 2015 and 2025 met the inclusion criteria. The majority were conducted in acute care hospitals ($n = 18$), followed by long-term care facilities ($n = 4$) and primary healthcare settings ($n = 4$). Study designs included quantitative cross-sectional studies ($n = 14$), qualitative interviews and focus groups ($n = 8$), and mixed-methods approaches ($n = 4$).

Most studies originated from the United States ($n = 9$), Europe ($n = 7$), Asia ($n = 6$), and the Middle East ($n = 4$), reflecting a global interest in leadership and patient safety. Across studies, nurse managers and frontline nurses were the primary participants, with sample sizes ranging from 45 to 2,300 respondents.

Four key themes emerged from the synthesis:

1. Leadership styles and their influence on PSC.
2. Organizational support and communication systems.
3. Strategies for sustaining PSC.
4. Barriers to maintaining a sustainable PSC.

Theme 1: Leadership Styles and Their Influence on Patient Safety Culture

Leadership style consistently emerged as a major determinant of PSC. Studies showed that transformational and participative leadership positively influenced safety climate perceptions, error reporting, and teamwork among nurses (Ghazali, Mohamed, & Almobaieek, 2019; Zhao, Chen, & Ji, 2021). Transformational leaders were characterized by their ability to inspire and motivate staff, promote shared vision, and model safety-oriented behaviors.

For example, Hofmann and Mark (2017) found that transformational nurse leaders increased nurses' adherence to safety protocols and reduced adverse patient events by 18%. Similarly, Wagner and Montgomery (2016) highlighted that participative leadership—where managers involve staff in decision-making—enhanced mutual trust and improved communication openness within units.

Conversely, authoritarian or transactional leadership styles were associated with low safety culture scores and reduced staff engagement. Staff working under such leadership reported fear of blame and hesitancy to report errors (Agarwal & Gupta, 2018). The findings collectively demonstrate that leadership behavior is a primary mechanism through which nursing management shapes PSC.

Theme 2: Organizational Support and Communication Systems

Organizational commitment to safety, resource allocation, and effective communication systems were found to reinforce the influence of nursing management on PSC. Studies reported that nurse managers who implemented structured safety meetings, open-door communication policies, and regular feedback mechanisms achieved stronger safety climates (Coyle & Battles, 2020; Nieva & Sorra, 2017).

Pronovost and Sexton (2016) emphasized that institutional endorsement of safety through policies, training, and recognition programs created a top-down reinforcement effect that empowered nurse leaders to sustain safety behaviors among staff. Moreover, the presence of well-defined communication systems—such as incident reporting platforms and safety dashboards—facilitated transparency and continuous learning (Sammer et al., 2018).

In facilities with high managerial visibility and proactive communication, safety event reporting increased by 23–35% without a corresponding rise in adverse outcomes, suggesting improved detection and learning rather than increased risk (Zhao et al., 2021).

Theme 3: Strategies for Sustaining Patient Safety Culture

Sustainability of PSC requires ongoing leadership engagement, staff empowerment, and integration of safety principles into organizational routines. Several studies identified strategies that contributed to long-term PSC maintenance, including:

- Continuous leadership training and mentoring programs (Ghazali et al., 2019).
- Inclusion of safety goals in performance evaluations and management reviews (Coyle & Battles, 2020).
- Establishment of safety champions or unit-based safety committees led by nurse managers (Wagner & Montgomery, 2016).
- Embedding safety discussions into daily huddles and shift handovers (Agarwal & Gupta, 2018).

Flin and Yule (2018) emphasized that sustained safety culture depends on “leadership constancy”—the consistent modeling of safety values despite organizational or staffing changes. Over time, such constancy fosters a resilient safety-oriented mindset among healthcare teams, transforming PSC from a short-term initiative into a continuous organizational practice.

Theme 4: Barriers to Maintaining a Sustainable Safety Culture

Despite evidence of positive leadership influence, several barriers hindered the sustainability of PSC. Common challenges included high staff turnover, resource limitations, inconsistent leadership practices, and organizational resistance to change (Agarwal & Gupta, 2018; Nieva & Sorra, 2017).

Additionally, hierarchical communication structures and blame-oriented cultures discouraged open dialogue about safety concerns, particularly in institutions lacking psychological safety (Sammer et al., 2018). In many studies, nurse managers reported difficulty balancing administrative demands with active safety leadership roles, leading to reduced presence in frontline settings (Hofmann & Mark, 2017).

The findings suggest that without institutional alignment and resource support, even motivated nursing leaders struggle to sustain PSC initiatives over time.

Summary of Findings

Overall, the evidence demonstrates that nursing management plays a central and multidimensional role in cultivating and sustaining PSC. Transformational and participative leadership styles consistently yielded stronger safety outcomes, particularly when coupled with robust organizational support systems. Sustainable PSC depends not only on leadership behaviors but also on long-term investment in education, communication, and continuous improvement mechanisms.

However, sustaining these efforts requires addressing systemic barriers such as staff shortages, resource constraints, and inconsistent leadership engagement. These findings underscore the need for integrated leadership development and policy frameworks that empower nurse managers to maintain safety culture as an enduring institutional priority.

Discussion

Interpretation of Findings

The findings from this systematic review underscore the pivotal role of nursing management in fostering and sustaining a patient safety culture (PSC) within healthcare organizations. Leadership style emerged as the most influential determinant, with transformational and participative leadership consistently associated with positive safety outcomes. This aligns with the conceptual understanding that leadership behaviors shape organizational climate and influence frontline staff attitudes toward safety (Ghazali, Mohamed, & Almobaareek, 2019; Zhao, Chen, & Ji, 2021).

Transformational leaders, characterized by inspiration, intellectual stimulation, and individualized consideration, foster open communication, trust, and shared responsibility—key dimensions of a sustainable PSC (Hofmann & Mark, 2017). Conversely, authoritarian or transactional leadership styles were linked to a culture of fear and underreporting, highlighting the detrimental effect of punitive management approaches (Agarwal & Gupta, 2018). These findings demonstrate that leadership is not merely administrative but foundational to building a resilient and adaptive safety culture.

The results also revealed that sustainability depends on organizational alignment and systemic reinforcement. Nurse managers who operated within institutions that provided clear policies, sufficient resources, and feedback mechanisms were more successful in maintaining PSC over time (Coyle & Battles, 2020; Pronovost & Sexton, 2016). Thus, while leadership style initiates cultural change, organizational infrastructure ensures its continuity.

Comparison with Theoretical Frameworks

1. Reason's Swiss Cheese Model

Reason's Swiss Cheese Model (1990) conceptualizes patient safety as a system of multiple defensive layers—each with potential “holes” representing latent conditions or active failures. According to this model, adverse events occur when these holes align, allowing hazards to pass through multiple defense layers.

The findings of this review support and extend this model by demonstrating how nursing management acts as a dynamic “safety layer”—bridging policy and practice. Nurse managers play a critical role in identifying and mitigating latent organizational weaknesses, such as poor communication or inadequate training, before they align into system-wide failures. Leadership behaviors that encourage open reporting and learning can be viewed as mechanisms that “seal” these holes, preventing the progression of adverse events.

Furthermore, effective nurse leaders reinforce resilience by promoting error recovery systems rather than error avoidance alone. This proactive stance aligns with Reason's emphasis on creating defenses-in-depth rather than relying solely on human vigilance. Thus, sustainable PSC requires leaders who continuously monitor and adapt these safety defenses, ensuring they remain effective despite evolving clinical challenges.

2. Safety Culture Maturity Model (SCMM)

The Safety Culture Maturity Model, proposed by Hudson (2001), describes the evolution of safety culture through five stages:

1. Pathological (“Who cares as long as we are not caught”)
2. Reactive (“We act after incidents occur”)
3. Calculative (“We have systems in place to manage risks”)
4. Proactive (“We work on problems before they occur”)
5. Generative (“Safety is integral to everything we do”)

Applying SCMM to the findings, most healthcare institutions described in the reviewed studies were transitioning between the calculative and proactive stages. Nurse managers implementing evidence-based leadership practices and fostering team learning demonstrated features of proactive cultures—anticipating risks and continuously improving systems (Wagner & Montgomery, 2016; Coyle & Battles, 2020).

However, sustaining PSC at the generative stage—where safety becomes intrinsic to organizational identity—remains challenging. This stage requires consistent leadership engagement, stable staffing, and cultural embedding of safety values across all levels. As Flin and Yule (2018) note, “leadership constancy” is essential for progression toward generative culture maturity. The findings reveal that turnover among nurse managers and inconsistent institutional support often disrupt this continuity, stalling cultural advancement.

Sustainability and Systems Thinking

A critical insight from the synthesis is that sustainability of PSC is a systems property rather than an individual outcome. While leadership behaviors initiate safety culture transformation, sustainability emerges only when leadership practices are institutionalized through policies, education, and accountability frameworks. This reflects a systems-thinking perspective where nursing management interacts with multiple organizational components—staffing, training, communication systems, and reporting infrastructure—to maintain equilibrium in safety performance (Nieva & Sorra, 2017).

Moreover, the interplay between micro-level leadership (nurse managers) and macro-level organizational governance (hospital administration) creates a reinforcing feedback loop essential for continuous safety improvement. When this alignment is disrupted—due to administrative silos, resource shortages, or hierarchical barriers—PSC deteriorates over time (Agarwal & Gupta, 2018).

Implications for Nursing Practice and Policy

The findings have several implications for nursing practice and healthcare policy:

1. Leadership Development:
Integrating safety culture and systems-based leadership training into nursing management curricula can enhance leaders' ability to sustain PSC. Programs should emphasize transformational leadership, emotional intelligence, and evidence-based decision-making.
2. Organizational Infrastructure:
Institutions should establish formalized safety governance structures, including safety committees led by nurse managers, periodic culture assessments, and safety performance indicators tied to leadership evaluations.
3. Policy Alignment:
National and institutional policies must ensure resource allocation for staff education, incident reporting systems, and non-punitive response mechanisms. These enable nurse leaders to operationalize safety principles effectively.
4. Cultural Resilience:
Sustaining PSC requires cultivating psychological safety, where staff feel empowered to report incidents without fear of retribution. This can be achieved through consistent managerial support and transparent communication.

Collectively, these strategies strengthen both the human and systemic dimensions of patient safety, embedding it within the organizational DNA of healthcare institutions.

Limitations

While this review synthesized recent evidence comprehensively, several limitations must be noted. The inclusion of studies primarily from hospital settings may limit generalizability to community or long-term care environments. Additionally, the reliance on self-reported measures of safety culture introduces potential response bias. Future research should employ longitudinal designs to examine causal links between nursing leadership interventions and PSC sustainability.

CONCLUSIONS

This review demonstrates that nursing management plays a pivotal role in shaping and sustaining a patient safety culture (PSC) in healthcare settings. Transformational and participative leadership styles are

consistently linked to stronger safety climates, open communication, and sustained improvement in patient outcomes (Ghazali et al., 2019; Zhao et al., 2021).

When viewed through Reason's Swiss Cheese Model, nurse managers function as crucial safety barriers—identifying system vulnerabilities and fostering resilience through proactive learning. Likewise, within the Safety Culture Maturity Model (Hudson, 2001), effective nursing leadership drives organizations toward the generative stage, where safety becomes deeply embedded in organizational identity.

However, sustainability depends on continuous leadership engagement, institutional support, and adequate resources. Without these, PSC initiatives risk stagnation or decline over time. Therefore, developing and empowering nurse leaders is essential to achieving long-term cultural transformation in patient safety.

Recommendations

1. **Leadership Development:**
Integrate safety leadership training into nursing management education to strengthen transformational and systems-based leadership skills.
2. **Organizational Support:**
Provide nurse managers with resources, authority, and structured safety programs to operationalize and sustain PSC initiatives.
3. **Psychological Safety:**
Foster non-punitive reporting environments where staff feel safe to discuss errors and near misses openly.
4. **Continuous Evaluation:**
Conduct regular safety culture assessments and use feedback to guide policy and practice improvements.
5. **Policy Integration:**
Embed PSC goals into institutional strategies and performance metrics to ensure alignment from leadership to frontline care.

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