

Pressure injury prevention and quality of nursing service: A Systematic review

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Abstract

Pressure injuries remain a significant challenge in healthcare settings, affecting patient outcomes and increasing healthcare costs. Effective prevention strategies led by staff nurses are critical to enhancing the quality of nursing services and reducing the incidence of pressure injuries. This systematic review aims to evaluate the effectiveness of pressure injury prevention programs for staff nurses and their impact on the quality of nursing service. A systematic search of peer-reviewed literature was conducted across major databases, including PubMed, CINAHL, and Scopus. Studies published within the last ten years were included, focusing on nurse-led pressure injury prevention interventions, education programs, and their outcomes. Data were synthesized thematically to assess the impact on patient outcomes, nurse knowledge, adherence to guidelines, and overall nursing service quality. The review identified that structured educational programs, adherence to evidence-based guidelines, and multidisciplinary collaboration significantly reduced the incidence of pressure injuries. Nurse-led interventions, such as early risk assessment using standardized tools, frequent repositioning protocols, and skin integrity monitoring, were associated with improved patient outcomes. Additionally, facilities implementing comprehensive prevention strategies reported higher nursing service quality, including better patient satisfaction, reduced hospital-acquired pressure injury rates, and increased nursing confidence in managing at-risk patients. Pressure injury prevention programs tailored for staff nurses play a pivotal role in enhancing nursing service quality. Effective implementation of training, adherence to best practices, and institutional support contribute to a marked reduction in pressure injuries and improved patient care. Future research should focus on long-term sustainability and the integration of technology in prevention strategies.

1. Introduction

Pressure injuries remain a persistent challenge in healthcare settings, contributing to patient morbidity, extended hospital stays, increased healthcare costs, and compromised quality of care. As largely preventable adverse events, pressure injuries are widely regarded as indicators of the effectiveness and quality of nursing services. Despite ongoing efforts to promote evidence-based prevention strategies, pressure injuries continue to occur across care environments, highlighting gaps between recommended practices and their consistent implementation in clinical settings (Wu et al., 2022). Staff nurses play a central role in pressure injury prevention, as they are directly responsible for assessing patient risk, implementing preventive interventions, monitoring skin integrity, and coordinating daily care activities. Nurses lead prevention efforts at the bedside and adapt interventions to individual patient needs, making

their role critical in reducing pressure injury incidence. However, their ability to deliver effective prevention is influenced by contextual factors such as workload, staffing levels, availability of resources, and organizational support (Li et al., 2022).

Education and training are foundational components of pressure injury prevention programs for staff nurses. Evidence indicates that structured educational initiatives enhance nurses' knowledge, clinical competence, and confidence in applying prevention strategies. Improved knowledge supports early risk identification, appropriate intervention selection, and adherence to best practices, thereby strengthening preventive care delivery and contributing to safer patient outcomes (Gaballah & El-Deen, 2021). In addition to education, nurse-led clinical interventions such as early risk assessment using standardized tools, regular repositioning protocols, and systematic skin integrity monitoring are essential in preventing pressure injuries. When these interventions are embedded into routine nursing practice, they contribute to reductions in pressure injury incidence and promote more consistent and proactive care delivery, particularly among patients at increased risk (Yap et al., 2022).

Pressure injury prevention also has broader implications for the quality of nursing service beyond clinical outcomes. Effective prevention programs have been associated with improved patient satisfaction, enhanced nursing confidence, better adherence to care protocols, and strengthened accountability within nursing teams. These outcomes reflect improvements in both the technical and relational aspects of nursing service quality, which are increasingly emphasized in contemporary healthcare systems (Tabish, 2024). Although numerous studies have examined individual components of pressure injury prevention, the evidence remains dispersed across different intervention types and care settings. There is a need to systematically map and synthesize the literature focusing on nurse-led pressure injury prevention programs and their impact on nursing service quality. Therefore, this scoping review aims to evaluate the effectiveness of pressure injury prevention programs for staff nurses and to examine their influence on the quality of nursing service, in accordance with current priorities for patient safety and quality improvement (Kandula, 2025).

2. Methodology

This study adopted a scoping review methodology to comprehensively map the existing evidence on pressure injury prevention programs led by staff nurses and their impact on the quality of nursing services. A scoping review approach was selected to allow systematic identification, categorization, and synthesis of diverse study designs addressing nurse-led preventive interventions, educational strategies, and service-related outcomes across healthcare settings (Yang et al., 2024). A structured literature search was conducted across major electronic databases, including PubMed, CINAHL, and Scopus, to identify relevant peer-reviewed studies published within the last ten years. The search strategy combined keywords and Medical Subject Headings related to pressure injury prevention, staff nurses, nursing education, and quality of nursing service. The search process was designed to capture empirical studies, quality improvement projects, and review articles that explicitly examined nurse-led prevention strategies and their outcomes on patient care and service quality (Wu et al., 2022).

Studies were included if they focused on pressure injury prevention interventions implemented or led by staff nurses, including educational programs, risk assessment practices, repositioning protocols, bundled care, or technology-supported prevention strategies. Eligible studies were required to report outcomes related to pressure injury incidence, nurse knowledge or practice, adherence to guidelines, patient satisfaction, or broader indicators of nursing service quality. Studies that did not clearly involve nursing-led prevention or lacked outcome data relevant to nursing service quality were excluded (Kandula, 2025). The study selection process followed a transparent, multi-stage screening procedure. Titles and abstracts were initially screened for relevance, followed by full-text review of eligible articles to confirm alignment with the inclusion criteria. Any uncertainties regarding eligibility were resolved through careful reassessment to ensure consistency with the study objectives. This process ensured methodological rigor and reduced the risk of selection bias (Yang et al., 2024).

Data extraction was conducted using a standardized charting form to capture key information from each included study, including author, year, study design, setting, type of nurse-led intervention, outcome measures, and reported impact on nursing service quality. Extracted data were synthesized thematically to identify recurring patterns related to educational effectiveness, clinical practices, multidisciplinary collaboration, and quality outcomes. This approach facilitated comparison across heterogeneous studies and supported the development of a structured narrative synthesis (Singh et al., 2023). Figure 1 presents the PRISMA 2020 flow diagram, detailing the number of records identified, screened, assessed for eligibility, and included in the final review. The diagram provides a transparent overview of the study selection process and ensures methodological clarity and reproducibility in accordance with established scoping review standards.

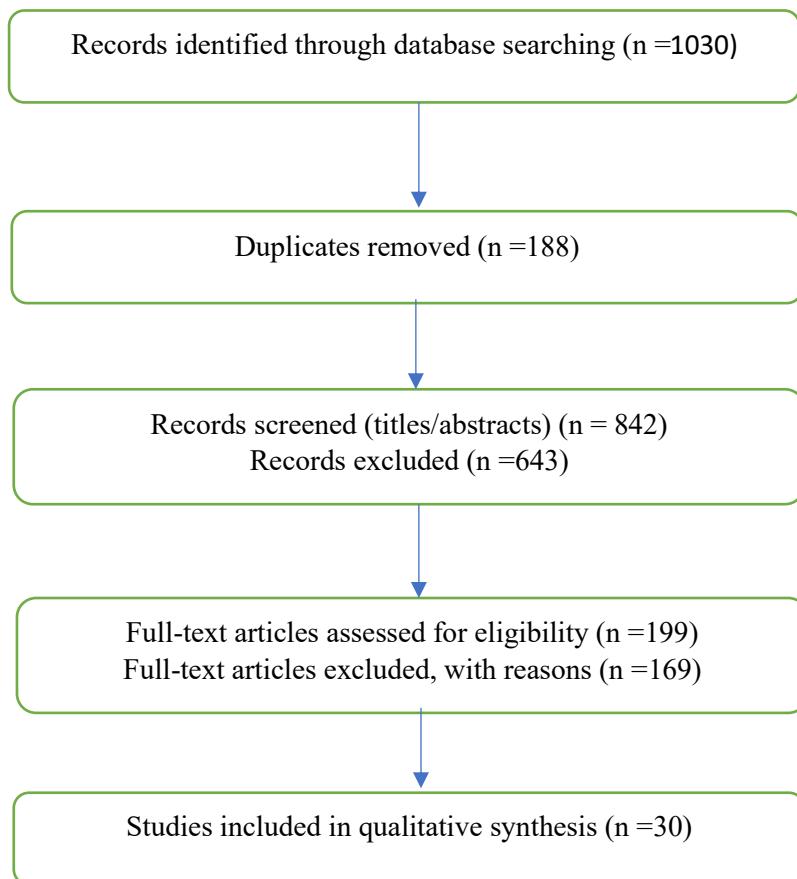


Fig. 1. PRISMA 2020 flow diagram illustrating identification, screening, eligibility, and inclusion of studies

3. Results

3.1 Study selection and characteristics

The literature search yielded a broad range of studies examining pressure injury prevention from nursing-led perspectives across acute care, long-term care, community, and specialized clinical settings. Following title and abstract screening, full-text assessment, and eligibility checks, studies that explicitly addressed staff nurse-led prevention interventions and reported relevant outcomes were retained for inclusion. The final body of evidence consisted of qualitative studies, cross-sectional surveys, randomized and non-randomized intervention studies, quality improvement projects, systematic reviews, and scoping reviews, reflecting the methodological diversity of the field (Yang et al., 2024). The included studies were conducted across multiple geographical contexts, including hospitals, nursing homes, community care settings, and specialized units such as intensive care, neurosurgery, oncology, and neonatal care. Most studies focused on registered nurses or staff nurses as primary agents of pressure injury prevention, while some incorporated nurse assistants or multidisciplinary teams under nursing leadership. Study populations ranged from adult medical-surgical patients to older adults, immobile patients, and high-risk groups such as individuals with obesity or neurological impairment (Marshall et al., 2024).

Table 1 presents a literature review matrix summarizing the key characteristics of the included studies, including authorship, year of publication, study design, setting, sample characteristics, nurse-led prevention strategies, and reported outcomes. The matrix demonstrates a consistent emphasis on nursing education, risk assessment, repositioning practices, bundled care, and supportive technologies as central components of pressure injury prevention initiatives led by staff nurses (Li et al., 2022).

Table 1. Literature review matrix

No.	Author(s) & Year	Nurse-led Prevention	Education / Training	Risk Assessment Tools	Repositioning	Skin Integrity Monitoring	Nutrition Support	Multidisciplinary Collaboration	Barriers / Challenges	Quality of Nursing Service
1	Li et al. (2022)	✓	✓					✓	✓	✓
2	Cangelosi et al. (2025)	✓					✓			✓

3	Kandula (2025)		✓	✓	✓					✓
4	Coventry et al. (2024)									✓
5	Noreen et al. (2025)			✓	✓	✓	✓	✓		
6	Singh et al. (2023)		✓							✓
7	Deakin et al. (2023)		✓							✓
8	Jones (2023)		✓							
9	Nieto-García et al. (2025)		✓							
10	Perrett (2025)		✓							✓
11	Fok (2024)		✓							✓
12	Kirkland-Kyhn et al. (2025)	✓	✓	✓					✓	✓
13	Yap et al. (2022)			✓	✓					
14	Joseph et al. (2025)		✓			✓		✓		✓
15	Kennerly et al. (2022)			✓	✓					
16	Lv et al. (2025)		✓	✓	✓		✓	✓		✓
17	Tabish (2024)							✓	✓	✓
18	Givens (2025)		✓						✓	✓
19	Hsu et al. (2023)	✓						✓		✓
20	Chen et al. (2024)			✓	✓		✓			✓
21	Gaballah & El-Deen (2021)		✓	✓						✓
22	Yang et al. (2024)		✓						✓	
23	Gu et al. (2022)							✓		✓
24	McGarry (2025)		✓		✓					✓
25	Abdelgadir et al. (2024)		✓							✓
26	Marshall et al. (2024)		✓							✓
27	Wu et al. (2022)		✓				✓			✓
28	Pinzon Figueroa (2025)		✓	✓	✓				✓	✓
29	Renner & Hardesty (2022)		✓				✓		✓	
30	Awoke et al. (2022)	✓	✓						✓	✓

3.2 Nurse-led pressure injury prevention interventions

Across the reviewed literature, nurse-led educational interventions emerged as a foundational strategy for improving pressure injury prevention practices. Educational programs targeted staff nurses' knowledge of risk factors, staging, preventive measures, and evidence-based guidelines, often using structured training sessions, in-service education, or competency-based modules. These interventions

consistently reported improvements in nurses' knowledge, confidence, and adherence to prevention protocols (Givens, 2025). Clinical prevention practices led by nurses frequently included early and systematic risk assessment, most commonly using standardized tools such as the Braden Scale. Nurses utilized these tools to identify at-risk patients and initiate individualized prevention plans involving repositioning, support surfaces, skin inspection, and nutritional monitoring. Studies highlighted that nurse-led assessment remains central to timely prevention and serves as the trigger for multidisciplinary coordination (Kennerly et al., 2022).

Repositioning protocols represented another core nurse-led intervention, with several studies examining the effectiveness of varying repositioning frequencies supported by nursing judgment and monitoring systems. Nurse-managed repositioning schedules, when combined with staff education and compliance monitoring, were associated with reduced pressure injury incidence and improved preventive consistency in long-term care and institutional settings (Yap et al., 2022). In addition to traditional practices, emerging interventions incorporated technology-assisted prevention under nursing oversight. These included wearable sensors, patient monitoring systems, electronic documentation, and artificial intelligence-supported risk prediction tools. Nurses played a key role in implementing, interpreting, and integrating these technologies into routine care, highlighting the evolving scope of nursing leadership in pressure injury prevention (Kirkland-Kyhn et al., 2025).

3.3 Impact on quality of nursing service

The reviewed studies consistently demonstrated that effective nurse-led pressure injury prevention interventions were associated with improvements in patient outcomes, particularly reductions in pressure injury incidence, severity, and healing time. Facilities implementing structured prevention programs reported lower rates of hospital-acquired pressure injuries and improved patient safety indicators, underscoring the clinical value of nursing-led prevention strategies (Kandula, 2025). Beyond clinical outcomes, nurse-led prevention initiatives positively influenced nursing service quality, including improved patient satisfaction and perceived quality of care. Patients and caregivers reported greater confidence in nursing care when prevention practices were proactive, consistent, and individualized. Enhanced communication, education, and shared decision-making further strengthened the nurse-patient relationship (Hsu et al., 2023).

At the professional level, pressure injury prevention programs contributed to enhanced nursing performance and confidence, particularly when supported by education, leadership engagement, and institutional resources. Nurses reported improved competence, accountability, and professional satisfaction when prevention responsibilities were clearly defined and supported through training and teamwork (Gaballah & El-Deen, 2021). Organizationally, the integration of comprehensive nurse-led prevention strategies was linked to improved workflow efficiency, better guideline adherence, and strengthened interdisciplinary collaboration. These factors collectively supported higher standards of nursing service delivery and reinforced the central role of staff nurses in maintaining care quality and patient safety (Singh et al., 2023).

4. Discussion

4.1 Interplay of Behavioral, Organizational, and Contextual Factors in Nurse-Led Pressure Injury Prevention

The findings of this scoping review indicate that nurse-led pressure injury prevention is strongly influenced by behavioral factors related to nurses' knowledge, attitudes, and clinical decision-making. Nurses' understanding of risk assessment, preventive strategies, and evidence-based guidelines directly shapes the consistency and effectiveness of preventive care. When nurses demonstrate strong ownership of prevention responsibilities and integrate preventive actions into daily practice, pressure injury risk is more effectively mitigated at the bedside (Li et al., 2022). Organizational factors further interact with individual nurse behaviors to determine the success of prevention efforts. Adequate staffing, leadership support, access to education, and availability of preventive resources enable nurses to translate knowledge into consistent practice. Conversely, high workload, time constraints, and insufficient institutional support can limit adherence to prevention protocols, even among knowledgeable nurses. These organizational conditions highlight that pressure injury prevention is not solely an individual responsibility but a shared organizational priority (Singh et al., 2023). Contextual factors, including patient complexity, care setting, and technological infrastructure, also shape nurse-led prevention practices. Nurses working with high-risk populations or in resource-limited environments face additional challenges that influence preventive decision-making and prioritization. Emerging technological tools and structured prevention systems can support nurses in navigating these contextual demands, but their effectiveness depends on appropriate training and integration into routine workflows (Kirkland-Kyhn et al., 2025).

4.2 Policy, Practice, and Theoretical Implications for Nursing Service Quality

From a practice perspective, the findings of this scoping review demonstrate that nurse-led pressure injury prevention initiatives are closely linked to improvements in nursing service quality. Effective prevention practices, such as systematic risk assessment, consistent repositioning, and ongoing skin integrity monitoring, enhance patient safety and continuity of care. These practices contribute to more reliable service delivery and reinforce the role of nurses as key drivers of quality improvement within healthcare organizations (Gaballah & El-Deen, 2021). At the policy level, the results suggest a need for healthcare organizations and decision-makers to prioritize pressure injury prevention as a core nursing quality indicator. Policies that support continuous education, adequate staffing, and access to evidence-based guidelines enable nurses to maintain high prevention standards and reduce variability in care. Embedding pressure injury prevention within institutional quality and safety frameworks can strengthen accountability and promote sustainable improvements in nursing service performance (Singh et al., 2023). From a theoretical standpoint, the findings align with established models of nursing service quality that emphasize the relationship between structural support, care processes, and patient outcomes. Well-prepared nurses operating within supportive organizational structures are better positioned to deliver consistent, high-quality preventive care. This reinforces the conceptualization of pressure injury prevention not merely as a clinical task, but as an integral component of professional nursing practice and service excellence (Tabish, 2024).

4.3 Comparison with Existing Reviews, Study Limitations, and Future Research Directions

The findings of this scoping review are broadly consistent with existing reviews that emphasize education, quality improvement initiatives, and structured nursing protocols as central strategies for pressure injury prevention. Similar to previous syntheses, this review confirms that nurse-led interventions play a decisive role in reducing pressure injury incidence and strengthening preventive practices. However, the present review extends earlier work by explicitly linking nurse-led prevention strategies to broader indicators of nursing service quality, including patient satisfaction, professional nursing performance, and service reliability, which have been less consistently addressed in prior reviews (Yang et al., 2024). Several limitations should be acknowledged when interpreting the findings of this review.

The included studies varied widely in design, setting, sample size, and outcome measurement, limiting the ability to draw direct comparisons or quantify pooled effects. Additionally, many studies focused on short-term outcomes following educational or quality improvement interventions, providing limited insight into the long-term sustainability of nurse-led pressure injury prevention programs. The reliance on self-reported measures of knowledge or practice in some studies may also introduce reporting bias (Wu et al., 2022). Future research should prioritize longitudinal and implementation-focused studies to better understand how nurse-led pressure injury prevention initiatives can be sustained over time and adapted across diverse clinical contexts. Further investigation is needed to standardize measures of nursing service quality and to evaluate the integration of emerging technologies, such as digital monitoring systems and decision-support tools, in supporting nursing practice. Expanding research in these areas will help strengthen the evidence base and guide the development of scalable, effective prevention strategies that enhance both patient outcomes and nursing service quality (Kirkland-Kyhn et al., 2025).

5. Conclusion

This scoping review demonstrates that pressure injury prevention programs led by staff nurses play a vital role in enhancing the quality of nursing services and improving patient outcomes across healthcare settings. Nurse-led interventions that emphasize early risk assessment, consistent preventive practices, and individualized patient care are central to reducing the incidence and severity of pressure injuries. When prevention is integrated into routine nursing practice, it strengthens patient safety and reinforces the professional responsibility of nurses in delivering high-quality care. The findings further indicate that structured education and continuous professional development are essential for sustaining effective pressure injury prevention. Educational initiatives enhance nurses' knowledge, confidence, and adherence to evidence-based guidelines, enabling more proactive and consistent preventive care. Supportive organizational environments, including adequate staffing, leadership engagement, and access to appropriate resources, are equally important in translating knowledge into practice and maintaining prevention standards. In addition to clinical benefits, nurse-led pressure injury prevention contributes positively to broader nursing service quality. Improvements in patient satisfaction, continuity of care, and nursing performance highlight the value of investing in prevention as a quality improvement strategy.

rather than viewing it solely as a clinical task. These outcomes underscore the need for healthcare organizations to recognize pressure injury prevention as a core component of nursing service excellence. Overall, the evidence suggests that effective pressure injury prevention requires a comprehensive and sustained approach that combines skilled nursing practice, organizational support, and system-level commitment. Future efforts should focus on strengthening long-term sustainability, standardizing service quality indicators, and leveraging innovative technologies to support nurses in delivering safe, high-quality, and patient-centered care.

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