The Transformative Impact Of Nursing: Advancing Patient Outcomes, Healthcare Quality, And System Resilience – A Comprehensive Review

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Abstract

Nursing has long been recognized as the backbone of healthcare, yet its transformative impact on patient outcomes, healthcare quality, and system resilience has gained increasing attention in recent years. This review synthesizes evidence from contemporary literature to examine the multidimensional contributions of nurses across clinical, organizational, and policy domains. A systematic search of databases including PubMed, CINAHL, Scopus, and Web of Science was conducted, focusing on studies published between 2016 and 2025. The review highlights three major areas of influence: Patient outcomes, where nurses play a pivotal role in improving safety, reducing hospital stay durations, managing chronic illnesses, and enhancing patient satisfaction; Healthcare quality, in which nurses contribute to evidence-based practice, medication safety, error reduction, and interdisciplinary coordination; and System resilience, where nursing leadership and frontline adaptability strengthen responses to health crises such as the COVID-19 pandemic and support long-term healthcare sustainability. Despite these contributions, challenges remain, including workforce shortages, high turnover, limited professional development opportunities, and structural barriers. To maximize nursing's impact, investment in education, empowerment in leadership roles, and supportive policies are essential. This review underscores nursing's central role not only in delivering high-quality patient care but also in driving healthcare innovation and resilience, reinforcing the need for strategic recognition of nurses as catalysts of global health transformation.

Keywords: Nursing, Patient Outcomes, Healthcare Quality, System Resilience, Evidence-Based Practice, Healthcare Transformation.

1. Introduction

Nursing is widely regarded as the cornerstone of modern healthcare systems, serving as both the frontline of patient care and a key driver of quality, safety, and innovation. Globally, nurses represent the largest proportion of the healthcare workforce, with an estimated 28 million nurses worldwide according to the World Health Organization (WHO, 2020). Their contributions span clinical care, patient education, care coordination, leadership, and health system resilience, making nursing a pivotal profession in ensuring equitable, safe, and high-quality healthcare delivery (Bodenheimer & Bauer, 2016). Over the past two decades, the evolving role of nursing has

expanded beyond traditional bedside functions to encompass advanced practice, policy influence, and leadership in healthcare transformation (Aiken et al., 2017).

The impact of nursing on patient outcomes has been demonstrated across multiple contexts, with a growing body of evidence linking adequate nurse staffing and skill mix to reduced mortality rates, fewer adverse events, and greater patient satisfaction (Griffiths et al., 2018). Advanced practice nurses (APNs) and nurse practitioners (NPs), in particular, have been shown to deliver care outcomes comparable to physicians in primary care and specialized fields, highlighting their potential to bridge gaps in service delivery and improve access to healthcare (Martsolf et al., 2015). Moreover, the integration of evidence-based practice by nurses has advanced the quality of care, reduced variability in clinical outcomes, and contributed to the development of safer healthcare environments (Melnyk et al., 2018).

Beyond individual patient outcomes, nursing plays a critical role in shaping healthcare quality at organizational and system levels. Nurses are often the linchpin in multidisciplinary teams, coordinating care across specialties and settings to ensure continuity and efficiency (Wei et al., 2019). They actively contribute to the prevention of medical errors, infection control, and the development of safety cultures within healthcare organizations (Slawomirski, Auraaen, & Klazinga, 2017). Their leadership in quality improvement initiatives has also been central to advancing patient-centered care and addressing health disparities.

The role of nursing in strengthening healthcare system resilience has become particularly evident during crises, such as the COVID-19 pandemic. Nurses not only provided direct patient care under unprecedented conditions but also adapted practices, engaged in policy advocacy, and supported rapid system-level transformations to ensure continuity of care (Lai et al., 2020). Their capacity to respond to emergencies, disasters, and public health crises illustrates the essential role of nursing in safeguarding healthcare systems against disruption and in sustaining long-term resilience (Jackson et al., 2021).

Despite these significant contributions, nursing continues to face global challenges that threaten its transformative potential. Chronic workforce shortages, high turnover, burnout, and inadequate support for professional development persist across many regions (Shah et al., 2021). Structural barriers, such as limited representation in decision-making processes and insufficient recognition of nursing leadership, further constrain the ability of nurses to fully impact healthcare transformation (WHO, 2021). Addressing these challenges requires strategic investment in nursing education, workforce planning, and leadership development, as well as the implementation of supportive policies that recognize nurses as central to healthcare reform.

This review seeks to synthesize current evidence on the transformative impact of nursing in advancing patient outcomes, enhancing healthcare quality, and fostering system resilience. By highlighting both the contributions and challenges faced by the nursing profession, the article underscores the urgent need to prioritize nursing as a catalyst for sustainable healthcare transformation. The review is organized into key sections that address the evidence on patient outcomes, healthcare quality, and system resilience, followed by an exploration of barriers and a conceptual framework that illustrates the interconnected dimensions of nursing's impact.

2. Literature Review

The literature on the impact of nursing underscores the profession's central role in advancing healthcare systems worldwide. This section synthesizes findings across three major dimensions: patient outcomes, healthcare quality, and system resilience.

Numerous studies have demonstrated the strong association between nursing care and patient outcomes. Aiken et al. (2014) found that lower nurse-to-patient ratios were linked to reduced mortality and improved patient satisfaction in European hospitals. Similarly, Needleman et al.

(2011) reported that increased nurse staffing levels were associated with lower rates of hospital-related complications, including infections and falls.

Advanced practice nurses (APNs) and nurse practitioners (NPs) have also been shown to significantly enhance patient outcomes. A systematic review by Newhouse et al. (2011) revealed that NPs deliver outcomes comparable to physicians in primary care, including chronic disease management, preventive care, and patient education. These findings highlight the potential of APNs to expand access to healthcare services and mitigate physician shortages, particularly in underserved areas.

In addition to clinical indicators, nursing plays a crucial role in improving patients' psychosocial well-being. Studies show that effective communication, empathy, and holistic care provided by nurses foster greater trust, satisfaction, and adherence to treatment plans (Papastavrou et al., 2014). Collectively, these findings illustrate nursing's multifaceted contributions to both physical and emotional dimensions of health outcomes.

Nurses are fundamental to maintaining and improving healthcare quality. Their integration of evidence-based practice (EBP) has been identified as a key driver in reducing care variability and improving outcomes (Melnyk et al., 2018). EBP initiatives led by nurses have demonstrated effectiveness in infection control, pressure injury prevention, and fall reduction programs (Barker et al., 2016).

The role of nurses in patient safety is equally critical. The Organisation for Economic Co-operation and Development (OECD) emphasized that nursing-led interventions, such as medication reconciliation and monitoring, reduce medical errors and prevent adverse events (Slawomirski, Auraaen, & Klazinga, 2017). Furthermore, Wei et al. (2019) highlighted how positive nursing work environments correlate with better patient safety outcomes and fewer readmissions.

Nursing also plays an indispensable role in interdisciplinary collaboration, ensuring continuity of care across departments. Research suggests that when nurses are actively engaged in decision-making, communication between healthcare teams improves, thereby enhancing both efficiency and patient-centeredness (Manojlovich & DeCicco, 2007). In this way, nursing strengthens not only bedside care but also the structural quality of healthcare systems.

The COVID-19 pandemic has amplified the importance of nursing in maintaining healthcare system resilience. Nurses demonstrated adaptability by redesigning workflows, adopting telehealth technologies, and providing psychological support to both patients and colleagues under extreme conditions (Jackson et al., 2021). Their leadership in crisis management has been recognized as vital to sustaining healthcare delivery during unprecedented disruptions.

Nursing contributions to disaster preparedness extend beyond pandemics. For example, Veenema et al. (2017) emphasized the role of nurses in disaster response planning, emergency triage, and community-based resilience initiatives. By engaging in education, advocacy, and frontline care, nurses enhance the capacity of health systems to withstand shocks and recover efficiently.

Globally, nursing's role in resilience is particularly critical in resource-limited settings, where nurses often serve as the primary providers of healthcare. Evidence suggests that empowering nurses in leadership roles contributes to stronger health systems and improved community health outcomes (WHO, 2020). This underscores the importance of investing in nursing education and leadership to build sustainable resilience worldwide.

3. Nursing's Impact on Patient Outcomes

Nursing practice has a profound influence on patient outcomes across a wide spectrum of healthcare settings. The link between effective nursing care and improved health indicators is well established in both developed and developing health systems. This section discusses three key areas of impact: clinical outcomes, patient safety, and patient satisfaction and well-being.

The relationship between nurse staffing levels and clinical outcomes has been extensively documented. Aiken et al. (2014) demonstrated that each additional patient added to a nurse's workload increases the likelihood of mortality by 7% in acute care hospitals. Similarly, Needleman et al. (2011) reported that hospitals with higher registered nurse (RN) staffing experienced significantly fewer inpatient deaths and complications. These findings highlight the critical role of adequate staffing ratios in determining patient outcomes.

Advanced practice nurses (APNs) and nurse practitioners (NPs) have also shown effectiveness in managing chronic conditions such as diabetes, hypertension, and heart failure. Evidence suggests that patients managed by NPs demonstrate comparable or superior outcomes in disease control, adherence to treatment, and follow-up care compared to physician-led care (Martsolf et al., 2015; Newhouse et al., 2011). This demonstrates nursing's ability to enhance access to high-quality care, particularly in primary and community health settings.

Nurses are central to maintaining patient safety by preventing adverse events such as medication errors, hospital-acquired infections, and falls. Research by Ball et al. (2018) found that nurse staffing shortages were directly associated with an increased risk of missed care, leading to compromised safety outcomes. Similarly, Cho et al. (2015) emphasized the role of nursing surveillance in early detection of patient deterioration, thereby preventing critical incidents.

Infection prevention and control represent another significant area of nursing impact. Nursing-led programs in hand hygiene, wound management, and catheter care have been instrumental in reducing healthcare-associated infections (HAIs) (Mitchell et al., 2018). This highlights how nurses safeguard patient safety not only through bedside care but also by implementing system-level protocols.

Beyond clinical and safety outcomes, nursing strongly influences patients' psychosocial well-being and satisfaction with care. Nurses often spend more time with patients than other healthcare providers, enabling them to provide emotional support, effective communication, and holistic care. Papastavrou et al. (2014) found that patients reported higher satisfaction levels when they perceived nurses as empathetic, responsive, and attentive to individual needs.

The therapeutic nurse–patient relationship has also been linked to improved adherence to treatment regimens and greater trust in the healthcare system (Kutney-Lee et al., 2015). For example, effective communication by nurses during discharge planning has been shown to reduce readmissions and improve continuity of care (Weiss et al., 2015). These findings underscore nursing's vital role in shaping the overall patient experience, which is increasingly recognized as a core indicator of healthcare quality.

4. Nursing and Healthcare Quality

The contribution of nursing to healthcare quality extends far beyond the provision of bedside care. Nurses play a critical role in ensuring safe, effective, and patient-centered care that aligns with international quality standards. Their involvement in evidence-based practice, error prevention, interdisciplinary collaboration, and the adoption of digital innovations has been instrumental in advancing healthcare quality across diverse settings.

One of the strongest contributions of nursing to healthcare quality lies in the implementation of evidence-based practice (EBP). By integrating clinical expertise with the best available research evidence, nurses help reduce variability in care delivery and ensure consistent, high-quality outcomes. Melnyk et al. (2018) emphasized that EBP led by nurses improves reliability, reduces costs, and enhances patient outcomes across clinical contexts. For example, nurse-led EBP interventions have been particularly effective in infection prevention, wound care, and chronic disease management (Saunders & Vehviläinen-Julkunen, 2016). Standardization of care through nursing protocols and guidelines ensures greater safety and efficiency across healthcare organizations.

Nurses are central to the prevention of medical errors—one of the most pressing threats to healthcare quality. As frontline caregivers, they are responsible for monitoring patient conditions, administering medications, and detecting early signs of deterioration. Studies have shown that higher nurse staffing levels and positive work environments correlate with lower rates of hospital-acquired infections, medication errors, and adverse events (Griffiths et al., 2018; Cho et al., 2015).

In addition, nursing-driven initiatives in safety culture—such as reporting systems for near-misses and adverse events—contribute to a stronger culture of transparency and continuous quality improvement. Mitchell et al. (2018) highlighted that improved staffing and adherence to nursing safety protocols significantly reduce the incidence of healthcare-associated infections (HAIs), which remain a leading cause of preventable harm worldwide.

Nurses serve as the primary coordinators of patient care across multiple disciplines. Effective communication between nurses, physicians, pharmacists, and allied health professionals improves care transitions and reduces the likelihood of fragmented services. Manojlovich and DeCicco (2007) demonstrated that healthy nurse–physician communication environments were associated with improved patient outcomes and reduced adverse events.

The importance of this role is especially visible in complex cases such as surgical recovery, oncology, and intensive care, where multidisciplinary collaboration is essential. Wei et al. (2019) noted that work environments that empower nurses to participate in decision-making processes enhance not only staff satisfaction but also the efficiency and quality of patient care. Thus, nurses act as integrators of care, ensuring both continuity and accountability across health systems.

The integration of digital health technologies has further expanded nursing's role in healthcare quality improvement. Nurses are increasingly involved in the implementation of electronic health records (EHRs), telehealth services, and clinical decision support systems. Research shows that nurses' use of digital tools enhances medication safety, improves documentation accuracy, and strengthens chronic disease monitoring (Topaz & Bowles, 2016).

During the COVID-19 pandemic, nurses demonstrated adaptability by using telehealth platforms to provide patient education, follow-up care, and psychological support, thereby sustaining care quality under challenging conditions (Jackson et al., 2021). Their role in digital health adoption underscores nursing's contribution to innovation and ongoing improvements in healthcare delivery.

5. Nursing and System Resilience

The concept of healthcare system resilience refers to the ability of systems to anticipate, withstand, adapt to, and recover from challenges such as public health emergencies, natural disasters, and organizational disruptions. Nurses, as the largest segment of the healthcare workforce, play a central role in building and sustaining resilience at the patient, organizational, and societal levels. Their ability to adapt quickly, innovate under pressure, and provide both clinical and emotional support underscores their critical role in strengthening system resilience.

The COVID-19 pandemic has exemplified the central role of nurses in system resilience. Nurses were at the frontline, providing essential care under extreme pressure, while simultaneously adapting to rapidly evolving protocols and resource limitations. Evidence suggests that healthcare institutions with well-supported nursing staff demonstrated stronger resilience, continuity of care, and patient safety during the crisis (Jackson et al., 2021). Beyond direct care, nurses engaged in infection control, patient education, and the use of telehealth to sustain services amid restrictions (Turale et al., 2020). Their involvement in emergency preparedness training and crisis leadership further highlights their ability to enhance system adaptability.

Nursing contributions to disaster preparedness extend to roles in triage, emergency planning, and disaster risk reduction. Veenema et al. (2017) emphasized that nurses are critical in developing and implementing preparedness programs at both hospital and community levels. Their participation in

simulation-based training enhances readiness for mass-casualty events, pandemics, and natural disasters. Importantly, nurses also play a role in mitigating long-term effects of crises by supporting rehabilitation, mental health, and community reintegration (Al Harthi et al., 2020).

Nurses in leadership roles contribute to organizational resilience by influencing policy, resource allocation, and staff well-being. Nurse managers are often responsible for maintaining staff morale, ensuring flexible workforce deployment, and fostering a culture of adaptability during crises (Shaw et al., 2021). Research demonstrates that organizations with strong nursing leadership are better equipped to manage surges in demand, reduce burnout, and maintain continuity of care (Wei et al., 2020). Moreover, nurses' involvement in decision-making processes enhances trust and cohesion within healthcare teams, reinforcing organizational capacity to adapt.

In many low- and middle-income countries, nurses are the primary providers of healthcare, often functioning in settings with limited infrastructure and resources. Their role in immunization campaigns, maternal and child health, and community outreach directly strengthens health system resilience at the grassroots level (WHO, 2020). Empowering nurses through education, policy support, and leadership opportunities is essential for building sustainable resilience in fragile healthcare systems worldwide. This underscores the global imperative to invest in nursing as a strategy for achieving long-term healthcare sustainability.

6. Conceptual Framework

The transformative impact of nursing can be conceptualized through an integrated framework that connects inputs, mechanisms, and outcomes within healthcare systems. This framework illustrates how nursing contributes to advancing patient outcomes, enhancing healthcare quality, and strengthening system resilience. It also acknowledges the barriers that may limit impact, while highlighting the pathways for maximizing nursing's role in healthcare transformation.

The foundation of nursing's impact begins with structural and organizational inputs, which include:

- **Nursing education and training:** Academic preparation, ongoing professional development, and specialization.

- **Workforce capacity and staffing:** Adequate numbers of skilled nurses distributed across care settings.

- **Resources and technology:** Access to equipment, digital health tools, and supportive infrastructure.

- **Policy and leadership support:** Recognition of nursing leadership and integration into decision-making processes.

These inputs translate into **mechanisms of impact** through which nursing transforms healthcare:

- **Patient-centered care:** Holistic, empathetic, and personalized approaches.

- **Evidence-based practice:** Integration of research findings into clinical decision-making.

- **Care coordination:** Effective collaboration across interdisciplinary teams to ensure continuity of care.

- **Leadership and advocacy:** Nurses shaping organizational strategies, policy frameworks, and quality initiatives.

The mechanisms of nursing translate into three core outcomes:

1. **Improved Patient Outcomes** – Reduced mortality, better chronic disease management, enhanced satisfaction, and psychosocial well-being.

2. **Enhanced Healthcare Quality** – Fewer medical errors, standardized practices, improved safety cultures, and higher efficiency.

3. **System Resilience** – Greater preparedness for crises, stronger adaptability, sustained workforce morale, and continuity of care.

The framework also acknowledges feedback loops: positive outcomes reinforce investments in nursing education, workforce expansion, and leadership opportunities. Conversely, barriers such as workforce shortages or lack of recognition can weaken these pathways, reducing nursing's transformative impact.
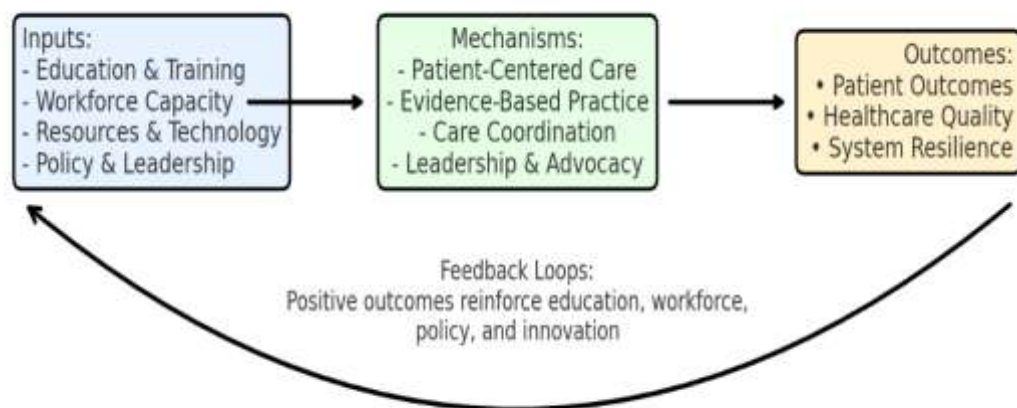

Figure 1. Conceptual Framework of the Transformative Impact of Nursing

This framework positions nursing as a **catalyst** for healthcare transformation, operating at the intersection of patient care, organizational processes, and system-level sustainability. By strengthening inputs and supporting mechanisms, the healthcare system can amplify nursing's impact and achieve more resilient, high-quality, and patient-centered outcomes.

7. Discussion

This review has synthesized evidence demonstrating the transformative impact of nursing on patient outcomes, healthcare quality, and system resilience. The findings confirm that nursing is not only central to direct patient care but also a driving force behind systemic improvements in healthcare delivery and sustainability. This discussion section critically examines the implications of the review, highlights global perspectives, and identifies directions for future research and policy development.

The evidence consistently affirms that adequate nurse staffing and advanced nursing roles are linked to better patient outcomes, including reduced mortality, fewer hospital-acquired complications, and enhanced patient satisfaction (Aiken et al., 2014; Needleman et al., 2011). The contributions of advanced practice nurses (APNs) and nurse practitioners (NPs) have proven particularly valuable in expanding access to care, managing chronic illnesses, and reducing the burden on physicians (Newhouse et al., 2011; Martsolf et al., 2015). These findings highlight the need for policies that support workforce expansion, role recognition, and integration of nurses into primary and community-based care systems.

Nursing's pivotal role in healthcare quality is evident through evidence-based practice, patient safety initiatives, and interdisciplinary collaboration. Nurse-led interventions have successfully standardized care processes, reduced adverse events, and enhanced patient safety (Melnyk et al., 2018; Mitchell et al., 2018). Furthermore, the integration of nurses into decision-making processes

has been shown to improve communication across healthcare teams, thereby reducing fragmentation and inefficiencies (Manojlovich & DeCicco, 2007). This indicates that healthcare systems can substantially improve quality outcomes by empowering nurses to take leadership in quality improvement and safety culture initiatives.

The COVID-19 pandemic has highlighted nurses' ability to sustain healthcare systems during crises. Their adaptability in adopting telehealth, implementing new safety protocols, and providing psychosocial support demonstrates their indispensable role in system resilience (Jackson et al., 2021; Turale et al., 2020). Beyond emergencies, nurses also strengthen resilience through disaster preparedness programs, leadership in policy advocacy, and community health initiatives (Veenema et al., 2017). This evidence underscores the importance of incorporating nurses into disaster planning and global health strategies, especially in low- and middle-income countries where nurses often constitute the majority of the health workforce (WHO, 2020).

Despite these significant contributions, challenges persist that hinder the full realization of nursing's transformative potential. Workforce shortages, high turnover, and burnout are pressing global issues that undermine both patient outcomes and system resilience (Shah et al., 2021). Structural barriers, including insufficient investment in nursing education and limited representation in leadership and policy-making, also restrict nurses' ability to influence systemic change (WHO, 2021). Addressing these challenges requires coordinated strategies, including investment in workforce development, stronger support for continuing education, and the integration of nurses into high-level decision-making bodies.

Globally, the findings emphasize the urgent need for strategic investment in nursing as outlined in the WHO's State of the World's Nursing Report (2020). Countries that prioritize nursing education, workforce expansion, and leadership development are more likely to achieve sustainable healthcare improvements. Policies that grant nurses expanded scope of practice and leadership roles not only enhance healthcare delivery but also foster innovation and equity. For resource-limited settings, empowering nurses through training and community engagement is vital for strengthening primary healthcare and achieving universal health coverage.

While the current evidence highlights nursing's contributions, more research is needed to examine long-term effects of nurse-led innovations, particularly in digital health and artificial intelligence integration. Additionally, cross-national comparative studies could further clarify how variations in workforce policies and cultural contexts influence nursing's impact. Future work should also address strategies to mitigate workforce burnout and develop resilience-building frameworks that support both individual nurses and organizations.

Overall, the findings of this review affirm that nursing's impact extends well beyond traditional patient care. Nurses are essential to improving patient outcomes, ensuring healthcare quality, and strengthening system resilience. However, maximizing this impact requires strategic investment, supportive policies, and recognition of nurses as leaders and innovators in healthcare transformation.

Conclusion

This comprehensive review has highlighted the transformative impact of nursing across three critical dimensions: advancing patient outcomes, improving healthcare quality, and strengthening system resilience. The evidence clearly demonstrates that nurses are not only central to bedside care but also vital contributors to organizational performance, policy innovation, and healthcare sustainability. Through patient-centered approaches, evidence-based practice, and interdisciplinary collaboration, nursing directly influences safety, efficiency, and equity in healthcare delivery.

The COVID-19 pandemic and other global crises have further underscored the indispensable role of nurses in ensuring healthcare resilience. Their adaptability, leadership, and advocacy during times of disruption have safeguarded the continuity of care and reinforced the critical need for

greater investment in the nursing workforce. Similarly, the expansion of advanced practice roles has shown that nurses can bridge gaps in service delivery, particularly in primary care and underserved areas, thereby enhancing access and health equity.

Despite these achievements, systemic challenges persist. Workforce shortages, high turnover, burnout, and insufficient recognition of nursing leadership continue to threaten the profession's capacity to fully realize its potential. Without adequate support, these barriers risk undermining the quality and sustainability of healthcare systems globally. Addressing these challenges requires policies that prioritize nursing education, expand workforce capacity, integrate nurses into decision-making structures, and invest in their leadership development.

In conclusion, nursing should be recognized as a cornerstone of healthcare transformation. By reinforcing its role through strategic investments, supportive policies, and empowerment at all levels of decision-making, healthcare systems can harness the full potential of nursing as a catalyst for improved outcomes, higher quality, and sustainable resilience. The future of global health depends on ensuring that nurses are not only valued as caregivers but also empowered as innovators, leaders, and advocates for change.

References

- Aiken, L. H., Sloane, D. M., Bruyneel, L., Van den Heede, K., Griffiths, P., Busse, R., ... & Sermeus, W. (2014). Nurse staffing and education and hospital mortality in nine European countries: A retrospective observational study. The Lancet, 383(9931), 1824–1830. https://doi.org/10.1016/S0140-6736(13)62631-8

- Aiken, L. H., Sloane, D., Griffiths, P., Rafferty, A. M., Bruyneel, L., McHugh, M., ... & Sermeus, W. (2017). Nursing skill mix in European hospitals: Cross-sectional study of the association with mortality, patient ratings, and quality of care. BMJ Quality & Safety, 26(7), 559–568. https://doi.org/10.1136/bmjqs-2016-005567

- Al Harthi, M., Al Thobaity, A., Al Ahmari, W., & Almalki, M. (2020). Challenges for nurses in disaster management: A scoping review. Risk Management and Healthcare Policy, 13, 2627–2634. https://doi.org/10.2147/RMHP.S276841

- Ball, J. E., Griffiths, P., Rafferty, A. M., Lindqvist, R., Murrells, T., & Tishelman, C. (2018). A cross-sectional study of 'care left undone' on nursing shifts in hospitals. Journal of Advanced Nursing, 74(6), 1474–1487. https://doi.org/10.1111/jan.13564

- Barker, A. L., Morello, R. T., Wolfe, R., Brand, C. A., Haines, T. P., Hill, K. D., ... & Kamar, J. (2016). 6-PACK programme to decrease fall injuries in acute hospitals: Cluster randomised controlled trial. BMJ, 352, h6781. https://doi.org/10.1136/bmj.h6781

- Bodenheimer, T., & Bauer, L. (2016). Rethinking the primary care workforce—An expanded role for nurses. New England Journal of Medicine, 375(11), 1015–1017. https://doi.org/10.1056/NEJMp1606869

- Cho, S. H., Lee, J. Y., You, S. J., Song, K. J., Hong, K. J., & Lee, D. H. (2015). Nurse staffing, nurses' prioritization, missed care, quality of nursing care, and patient safety. International Journal of Nursing Studies, 52(3), 666–675. https://doi.org/10.1016/j.ijnurstu.2014.11.001

- Griffiths, P., Ball, J., Drennan, J., Dall'Ora, C., Jones, J., Maruotti, A., ... & Simon, M. (2018). Nurse staffing and patient outcomes: Strengths and limitations of the evidence to inform policy and practice. International Journal of Nursing Studies, 78, 157–167. https://doi.org/10.1016/j.ijnurstu.2017.09.009

- Jackson, D., Bradbury-Jones, C., Baptiste, D., Gelling, L., Morin, K., Neville, S., & Smith, G. D. (2021). Life in the pandemic: Some reflections on nursing in the context of COVID-19. Journal of Clinical Nursing, 30(7–8), e19–e21. https://doi.org/10.1111/jocn.15257

- Kutney-Lee, A., Germack, H., Hatfield, L., Kelly, S., Maguire, P., Dierkes, A., ... & Aiken, L. H. (2015). Nurse engagement in shared governance and patient and nurse outcomes. Journal of Nursing Administration, 45(7–8), 401–407. https://doi.org/10.1097/NNA.0000000000000228

- Lai, J., Ma, S., Wang, Y., Cai, Z., Hu, J., Wei, N., ... & Hu, S. (2020). Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. JAMA Network Open, 3(3), e203976. https://doi.org/10.1001/jamanetworkopen.2020.3976

- Manojlovich, M., & DeCicco, B. (2007). Healthy work environments, nurse-physician communication, and patients' outcomes. American Journal of Critical Care, 16(6), 536–543. https://doi.org/10.4037/ajcc2007.16.6.536

- Martsolf, G. R., Auerbach, D. I., Arifkhanova, A., Rand Corporation, & Duffy, E. (2015). The impact of full practice authority for nurse practitioners and other advanced practice registered nurses on healthcare access, quality, and costs. RAND Corporation. https://doi.org/10.7249/RR990

- Melnyk, B. M., Gallagher-Ford, L., Long, L. E., & Fineout-Overholt, E. (2018). The establishment of evidence-based practice competencies for practicing registered nurses and advanced practice nurses in real-world clinical settings. Worldviews on Evidence-Based Nursing, 11(1), 5–15. https://doi.org/10.1111/wvn.12021

- Mitchell, B. G., Gardner, A., Stone, P. W., Hall, L., & Pogorzelska-Maziarz, M. (2018). Hospital staffing and healthcare-associated infections: A systematic review of the literature. International Journal of Nursing Studies, 77, 19–27. https://doi.org/10.1016/j.ijnurstu.2017.09.013

- Needleman, J., Buerhaus, P., Pankratz, S., Leibson, C. L., Stevens, S. R., & Harris, M. (2011). Nurse staffing and inpatient hospital mortality. New England Journal of Medicine, 364(11), 1037–1045. https://doi.org/10.1056/NEJMsa1001025

- Newhouse, R. P., Stanik-Hutt, J., White, K. M., Johantgen, M., Bass, E. B., Zangaro, G., ... & Weiner, J. P. (2011). Advanced practice nurse outcomes 1990–2008: A systematic review. Nursing Economics, 29(5), 230–250. PMID: 22372080

- Papastavrou, E., Andreou, P., & Efstathiou, G. (2014). Rationing of nursing care and nurse–patient outcomes: A systematic review of quantitative studies. International Journal of Health Planning and Management, 29(1), 3–25. https://doi.org/10.1002/hpm.2160

- Saunders, H., & Vehviläinen-Julkunen, K. (2016). The state of readiness for evidence-based practice among nurses: An integrative review. International Journal of Nursing Studies, 56, 128–140. https://doi.org/10.1016/j.ijnurstu.2015.10.018

- Shah, M. K., Gandrakota, N., Cimiotti, J. P., Ghose, N., Moore, M., & Ali, M. K. (2021). Prevalence of and factors associated with nurse burnout in the US. JAMA Network Open, 4(2), e2036469. https://doi.org/10.1001/jamanetworkopen.2020.36469

- Shaw, S., Flott, K., Fontana, G., & Darzi, A. (2021). Enhancing resilience of healthcare professionals and healthcare systems during and after the COVID-19 pandemic: A review of evidence. International Journal of Health Policy and Management, 10(12), 853–863. https://doi.org/10.34172/ijhpm.2020.244

- Slawomirski, L., Auraaen, A., & Klazinga, N. (2017). The economics of patient safety: Strengthening a value-based approach to reducing patient harm at national level. OECD Health Working Papers, No. 96. OECD Publishing. https://doi.org/10.1787/5a9858cd-en

- Topaz, M., & Bowles, K. H. (2016). We need to talk about the quality of nursing documentation. Journal of Nursing Scholarship, 48(6), 579–588. https://doi.org/10.1111/jnu.12228

- Turale, S., Meechamnan, C., & Kunaviktikul, W. (2020). Challenging times: Ethics, nursing and the COVID-19 pandemic. International Nursing Review, 67(2), 164–167. https://doi.org/10.1111/inr.12598

- Veenema, T. G., Meyer, D., Bell, S. A., Couig, M. P., & Langan, J. C. (2017). Recommendations for disaster health core competencies for children and families. Journal of Nursing Scholarship, 49(6), 658–667. https://doi.org/10.1111/jnu.12334

- Wei, H., Roberts, P., Strickler, J., & Corbett, R. W. (2020). Nurse leaders' strategies to foster nurse resilience. Journal of Nursing Management, 28(7), 1596–1604. https://doi.org/10.1111/jonm.13121

- Wei, H., Sewell, K. A., Woody, G., & Rose, M. A. (2019). The state of the science of nurse work environments in the United States: A systematic review. International Journal of Nursing Sciences, 5(3), 287–300. https://doi.org/10.1016/j.ijnss.2018.04.010

- Weiss, M. E., Yakusheva, O., & Bobay, K. L. (2015). Quality and cost analysis of nurse staffing, discharge preparation, and postdischarge utilization. Health Services Research, 46(5), 1473–1494. https://doi.org/10.1111/j.1475-6773.2011.01267.x

- World Health Organization (WHO). (2020). State of the world's nursing 2020: Investing in education, jobs and leadership. Geneva: WHO. https://apps.who.int/iris/handle/10665/331677

- World Health Organization (WHO). (2021). Global strategic directions for nursing and midwifery 2021–2025. Geneva: WHO. https://apps.who.int/iris/handle/10665/344562