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CANADIAN FEDERATION OF NURSES UNIONS

# Nurse-Patient Ratios

## Current evidence report

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# Canadian Federation of Nurses Unions

The CFNU is Canada's largest nurses' organization, representing frontline unionized nurses and nursing students in every sector of health care – from home care and long-term care to community and acute care – and advocating on key priorities to strengthen public health care across the country.

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# Executive Summary

Nurse staffing has been a focal point of health care research and policy development for decades, recognized universally for its critical role in shaping both patient outcomes and nurse retention. Despite efforts, variability in staffing levels has persisted, which research has shown can affect both patient outcomes and nurse satisfaction. This has led to a global push towards establishing more consistent staffing standards, including mandated nurse-patient ratios. These standards aim to enhance the quality of care and support the health of the nursing workforce. Recent challenges brought about by the COVID-19 pandemic have further highlighted the importance of robust staffing models. These models not only support the delivery of high-quality care but also ensure that health care systems are resilient and sustainable, prepared to meet both current and future demands.

In view of nurse staffing and nurse-patient ratios being a point of convergence amongst health care leaders, researchers and policymakers, this evidence report is intended to address the research, practice and legislative policy efforts undertaken to date in Canada and on an international scale. The report provides an overview of global approaches, including legislative efforts and approaches that have been implemented to promote safe staffing, while also mapping the state of the evidence regarding nurse staffing research.

Legislative efforts to improve nurse staffing are diverse, reflecting the complexity of health care needs across different regions of the world. While the implementation of mandated nurse-patient ratios represents an ongoing trend, the global landscape shows that there is no one-size-fits-all solution to nurse staffing. Various jurisdictions have implemented diverse staffing approaches that include staffing committees and flexible guidelines tailored to the unique demands of their health care systems. The impact of these legislations and approaches extends to the overall quality of health care delivery, emphasizing the need for robust evidence-based policies that can adapt to evolving health care challenges while supporting the well-being of the nursing workforce.

The literature outlined in this review highlights the positive trend or association between nurse staffing levels and a range of adverse patient and nurse outcomes. Across most reviews, nurse staffing is linked to better outcomes for patients and nurses alike, and the implications for policy and practice are clear. Evidence of causal links between nurse staffing and outcomes is inconsistent, making generalizability of study results a challenge. This lack of coherence impacts the ability to make all-encompassing standards or recommendations and ascertain the precise benefits of specific nurse staffing methods. Despite there being an inconclusive dimension to this body of evidence, the findings suggest that nurse staffing levels are an important indicator of adverse patient and nurse outcomes and are instrumental in informing decision-making related to staffing and optimizing workforce management.

The broader implications of legislation and staffing research on health care systems are profound, encompassing both the quality of patient care and the sustainability of nurse workforces. As health care continues to face complex challenges, effective staffing policies guided by robust research and legislative backing play a crucial role in establishing health care environments that are both supportive and sustainable. A coherent strategic approach will create an environment where both patient needs and nurse well-being are prioritized, ultimately leading to a more effective and efficient health care system.

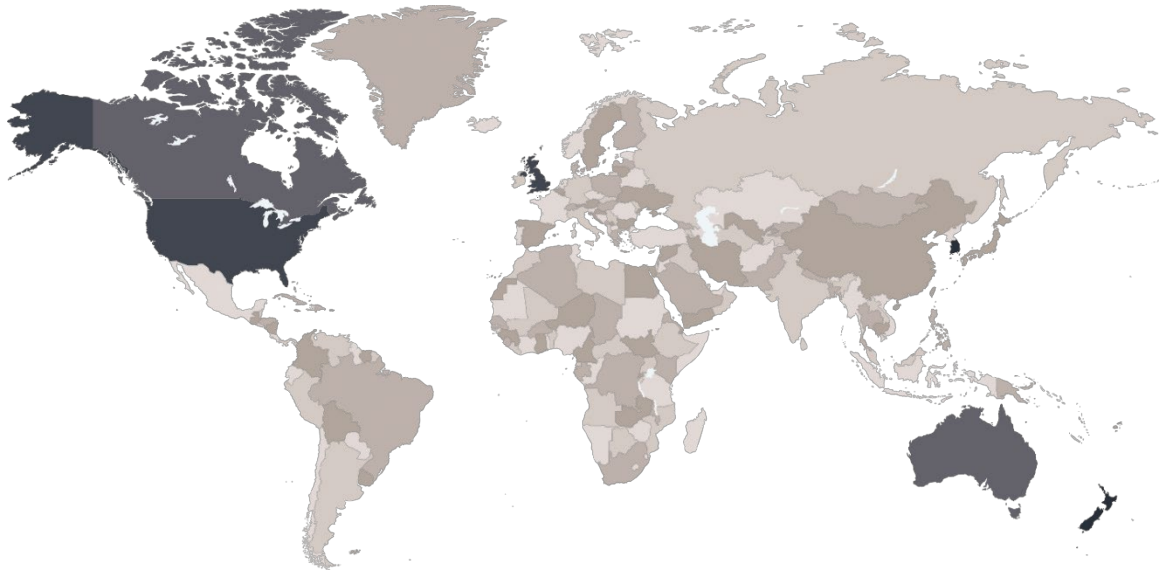
# Introduction

Nurse staffing has been a topic of interest in literature for decades. Optimizing nurse staffing has been acknowledged as important in shaping patient and nurse outcomes, emerging as a public policy issue and safety imperative. A substantial body of evidence has developed worldwide demonstrating the link between nurse staffing levels and patient safety and quality of care, along with nurses' retention. At the same time, this has not translated into a uniform approach to addressing safe and adequate staffing. While consensus exists about the importance of safe nurse staffing levels, complexities in the health care landscape, including resource constraints, prioritization of fiscal responsibilities and persistent global nurse workforce shortages, continue to impact nurse staffing and clinical work environments. These issues were further exacerbated by the COVID-19 global pandemic, where substantial staffing challenges, difficult working conditions and elevated workload were experienced dramatically altering health care delivery. As a result, in a post-pandemic climate the nursing workforce, who represent the highest proportion of health care workers globally and are central to delivering quality care, have been deeply impacted. This provides the impetus for examining nurse staffing models to support nurse retention.

Globally there have been varied responses to implementing safe staffing approaches with growing evidence demonstrating the importance of investing in the nursing workforce. Various jurisdictions internationally, including the United States and Australia, have implemented legislation mandating staffing ratios, whereas in other parts of the world mandated acts and programs or pilot projects and guidelines have been adopted as a measure to manage nurse staffing levels and aid in decision-making related to nurse staffing. In Canada, British Columbia and Nova Scotia have both recently introduced methods to manage nurse staffing levels, with BC adopting minimum nurse-patient ratios across all acute, community and long-term care worksites and units, starting with six specific areas of care. Meanwhile, the NS government has committed to guaranteed nursing hours of care per patient day in the provincial collective agreement with nurses, which will be implemented in partnership with nurse unions via a safe staffing framework.

The Canadian Federation of Nurses Unions (CFNU) has a lengthy history of advocating for effective nurse staffing, safe work environments and the promotion of patient safety. As such, understanding the current state of the research evidence, practice environment examples and the policy landscape pertaining to nurse staffing and nurse-patient ratios is critical for stakeholders, including nurses, unions, employers, administrators and policymakers, to appropriately inform next steps in developing safe staffing practices in Canada.

The purpose of this brief report is to 1) provide an overview of current nurse staffing approaches that have been implemented globally; and 2) highlight the state of evidence from the literature pertaining to the implementation of nurse-patient ratios and safe nurse staffing models. Findings from this review will be used as background to inform a national forum aimed at determining the steps needed moving forward to create environments with safe nurse staffing in Canada.



# 1.0 Approaches to Safe Nurse Staffing

Ensuring optimal nurse staffing levels is crucial for delivering high-quality health care. Effective nurse staffing policies not only improve patient outcomes but also enhance nurse satisfaction and reduce burnout. This section explores legislative measures and mandated nurse staffing acts and programs, pilot projects and guidelines related to nurse staffing, pending nurse staffing legislation and various global strategies underway to maintain safe nurse-patient ratios, reflecting diverse influences on health care practices. By examining the enactment and impact of these staffing policies this analysis sheds light on the complexities and critical importance of nurse staffing in maintaining the efficiency and quality of health care services.

## A. Nurse-patient ratio legislation

The global enactment of nurse staffing legislation is characterized by a spectrum of regulatory approaches (see Table 1), each tailored to meet specific regional health care challenges. Notably, there is a growing advocacy for nurse-patient ratio mandates as they provide clear quantifiable standards that directly correlate with patient safety and nurse workloads.

In examining legislative frameworks, contrasting approaches to their development are apparent with variations in stakeholder involvement evident. In the United States, California's 1999 AB 394 Assembly Bill set a precedent of participative policymaking engaging a broad coalition of voices. This differs from the Philippines' approach visible in the Philippine Nursing Act of 2002, which took a directive stance in response to workforce emigration challenges being faced there. In addition, Victoria (Australia) implemented nurse-patient ratios through their collective agreement in 2000, with legislation reinforcing these ratios coming later in 2015, reflecting strong public and professional demand for systemic reform. These examples illustrate that successful legislation must be responsive to clinical realities as well as socio-political and economic conditions specific to each region.

The implementation of nurse-patient ratios often unfolds in phases, suggesting careful progression within health care regulation. For instance, in Australia, Victoria (2015) and Queensland (2016) started with critical care, later broadening their scope, akin to the strategies New York (2023) and British Columbia in Canada (2024). This phased approach seems to reflect a balance between achieving immediate health care improvements and fostering a sustainable expansive vision for care quality.

Enforcement and compliance methods for the implementation of nurse-patient ratios vary significantly across jurisdictions, reflecting each of their unique health care priorities. In the US, California's (1999) punitive approach through financial penalties highlights a strict enforcement policy, aiming to ensure rigid compliance with staffing ratios. In contrast, South Korea (2018) offers financial incentives, a model that promotes voluntary adherence by rewarding hospitals that meet the established staffing benchmarks. In Queensland, Australia (2016), a dynamic and reflective governance model is evidenced by the regular legislative reviews that adapt staffing mandates to the evolving needs of health care settings. Also in the US, New York's (2023) transparency-driven model adds another dimension by mandating public posting of staffing levels, advocating for an environment of open accountability. These approaches illustrate varying strategies to harmonize the legislative framework with practical health care delivery, each with potential implications for nurse satisfaction and patient care quality.

With the implementation of nurse staffing mandates, it becomes evident that such measures must be accompanied by broader systemic supports for the health care workforce. South Korea's (2018) retention incentives, British Columbia's (Canada) (2024) funding, Queensland's (Australia) (2016) ongoing legislative refinements and Victoria's (Australia) (2015) targeted support for specialized areas underscore a holistic strategy for workforce sustainability. Additionally, in the US, Oregon's (2023) reforms notably included the elimination of the 'buddy break' system, a practice where nurses often had to cover for each other during breaks, leading to temporary understaffing. California also eliminated this system in 2004. By abolishing this system, the reforms aimed to guarantee uninterrupted and consistent staffing levels throughout shifts. Collectively, these global strategies emphasize a commitment to sustaining the health care workforce through supportive legislation that goes beyond mere numbers, addressing the broader needs of nurses and the quality of patient care.

It is within these varying frameworks that nurse-patient ratio mandates show their advantage. By setting definitive and enforceable staffing standards they offer a direct solution to staffing deficiencies. The evolving global dialogue on nurse staffing mandates suggests a shift towards policy frameworks that balance clinical needs with the welfare of the nursing workforce. There is a growing recognition that effective health care relies on staffing structures that are equitable, considerate of complex patient and nurse needs, and focused on sustainable care delivery.

## B. Mandated acts and programs

The evolution of health care has also prompted jurisdictions globally to develop programs that focus on comprehensive care quality and nursing workforce resilience. Mandated nurse staffing acts and programs represent vital components of health care planning, shaping the delivery of care and the work environment for nurses. These measures address various aspects of nurse staffing, ranging

from committee formation and staffing plans to accountability and transparency reporting. Acts and programs not predicated on fixed nurse-patient ratios present a more flexible approach, allowing adjustments according to specific unit needs and circumstantial demands. These diverse legislative frameworks are designed to offer flexible responsive policies aimed at addressing the broader needs of nurses and patients.

Examples in the US from Connecticut (2008) and Ohio (2008) exemplify the critical role of engaging frontline care providers in policy making. Their initiatives underline the principle that those delivering care possess invaluable insights for practical effective solutions. This 'direct engagement' ensures policies are grounded in the realities of patient care. Additionally, examples from Washington (2008) and Nevada (2009) illustrate the adaptability of legislation, with amendments to acts and committee roles that keep pace with the evolving health sector. These scenarios depict a responsive governance system attuned to the voices and needs of health care providers. These approaches nurture a responsive legislative environment but may not yield immediate measurable benefits that specific ratio mandates can provide.

Transparency and accountability serve as the foundation for the success of these programs as evidenced in further examples from the US. New Jersey's (2005) stringent reporting requirements and Washington's (2008) imposition of financial penalties showcase a decisive move towards enforceable compliance. Illinois's (2021) innovative use of fines to fund nursing education turns disciplinary measures into opportunities for workforce enhancement. Minnesota's (2013) public disclosure of staffing levels and, in the UK, Wales's (2016) mandated reporting of nurse staffing assessments reveal a commitment to transparency that fosters public and professional trust.

Global legislative efforts are increasingly acknowledging the importance of comprehensive measures to support the nursing workforce. Initiatives such as Germany's (2021) professional development opportunities and, in the US, Rhode Island's (2021) financial incentives are directed at cultivating a robust nursing workforce essential to the fabric of patient care. Ohio's (2008) investment in nursing education and Illinois's (2021) reinvestment strategy are prime examples of forward-thinking approaches to bolster nurse retention and training.

The ongoing global conversation on nurse staffing underscores a progressive intertwining of legislative action, health care delivery and workforce sustainability. These emerging policies are crafted to ensure health care systems remain agile, compassionate and adequately equipped to meet the intricate needs of both patients and nurses, thereby fostering a sustainable path towards health care excellence.

## C. Pilot projects, guidelines and collective agreements

Worldwide, pilot projects and guidelines are also paving the way for improved nurse staffing practices, aiming to bolster patient safety and strengthen workforce sustainability. These preliminary initiatives often predicate larger legislative shifts, serving as trials for real-world application and providing critical insights into effective staffing models.

Central to these efforts is the aim to synchronize nursing capacity with the intricate demands of care delivery, yet approaches to achieving this goal exhibit remarkable diversity. For instance, New Zealand's Care Capacity Demand Management (CCDM) (2005) program and the UK's National Health Service (NHS) (2014) guidelines employ predictive analysis to finely tune staffing to the ebb and flow of patient needs. Meanwhile, the Irish Nurses and Midwives Organization's (INMO) (2015) pilot projects and, in Canada, Quebec's (2018) approach as per Letter of Understanding No. 17 showcase a malleable framework that molds staffing strategies around local health care landscapes and patient populations.

In Nova Scotia, the Nursing Hours Per Patient Day (NHPPD) Framework is steering a new era in clinical staffing.[77] The approach is methodical and patient-centric, designed to ensure that staffing reflects the specific needs and circumstances of each unit. This structured framework promises not only to uphold current staffing levels but also sets the stage for potential negotiations for additional staff based on thorough assessments of each unit's unique clinical capacity and workload. In Manitoba, a sub-committee on nurse-patient ratios will be formed to develop a 'made in Manitoba' approach, with recommendations due by January 2026. This initiative aims to establish nurse-patient ratios that consider the skills mix, complexity and acuity of care, ultimately providing tailored staffing strategies.[78]

Learning from these pilot projects, guidelines and collective agreements is illustrative, providing a window into a range of staffing challenges and the spectrum of solutions. They stand as exemplars of evidence-based adaptable frameworks capable of navigating the complexities of health care services, ultimately contributing to the advancement of patient care on a global scale.

## D. Pending nurse staffing legislation

Mandatory nurse-patient ratios stand out for their ability to offer clear, enforceable standards that can be directly tied to patient safety and quality care outcomes. While flexibility and adaptability are inherent benefits of broader legislative approaches, the clear-cut nature of ratio solutions is arguably the most direct method to address staffing inadequacies. The global enactment of nurse-patient ratio legislations, such as California's pioneering AB 394, not only established definitive standards for staffing but also acted as a safeguard during economic downturns, as evidenced by the state's ability to maintain nurse levels despite the financial pressures of the 2008 recession. This resilience underlines the mandate's role in safeguarding patient care quality, a point that California's experience highlights with its robust adherence and enforcement mechanisms. In the synthesis of these perspectives, it becomes clear that nurse-patient ratio mandates provide a tangible framework to tackle staffing deficiencies. These mandates, drawing from empirical

evidence and evolving health care needs, advocate for staffing structures that are not just equitable but are fundamentally rooted in the principles of sustainable health care delivery.

The arena of nurse staffing legislation stands on the cusp of transformative change, propelled by evolving health care demands and persistent advocacy from the nursing community. A wave of pending legislation across the US, including Pennsylvania, Georgia, Maine, Illinois, New Jersey and New York, highlights a collective move toward enshrining mandatory nurse-patient ratios within legal frameworks. This movement echoes a growing recognition of nursing expertise and empirical research advocating for staffing levels that are critical to patient safety and care quality. The trajectory of these pending legislations encapsulates a shift in health care policy making, increasingly favoring mandates as the mechanism to elevate the standards of patient care and the working conditions of nurses. This evolving policy trend acknowledges the indispensable role of adequate nurse staffing in delivering high-caliber health care, signaling an era where the inputs of nursing professionals are integral to shaping health legislation.

## E. Global variation in nurse-patient ratio enactment

Examination of global variations in the enactment of nurse-patient ratios reveals a landscape marked by diverse legislative responses to health care demands (see Figure 1). These differences highlight the potential influence of economic, cultural and systemic factors on health care policy and practice.

Specifically, intensive care units (ICUs) and critical care areas require a high level of nursing care, with most developed regions maintaining a 1:1 to 1:2 nurse-patient ratio (see Table 1). This range is reflected in the mandates of California, Massachusetts, South Korea, and both Victoria and Queensland in Australia.

For general medical-surgical wards, standard daytime nurse-patient ratios observed are 1:4 to 1:5, as demonstrated in the US (California and Oregon), Australia and Canada (BC).

The Philippines, with nurse-patient ratios like 1:12 in general wards and 1:6 in ICUs, starkly contrasts with other regions. These higher proportions of patients compared to nurses reflect the current state of the health care system in the country.

In maternity care, a 1:1 ratio during active labour, such as those in the US (California) and Australia, is maintained. In postpartum units, the nurse-patient ratio of 1:4 in California (US) and Victoria (Australia), as well as the ratio of 1:5 in Queensland (Australia), continues to provide comprehensive care for both mother and baby during the recovery phase.

Emergency room (ER) nurse-patient ratios are more complex, given the unpredictability and variability of patient acuity. For instance, triage areas generally maintain a 1:3 to 1:4 ratio, as seen in Victoria and Queensland (Australia) and California. In more critical scenarios, such as trauma care, California mandates a 1:1 ratio. The variation in ER ratios reflects the dynamic and fluid nature of emergency nursing.

In the high-stakes environment of the operating room (OR), the nurse-patient ratio of 1:1 is indicative of the critical role nurses play in surgical procedures. Jurisdictions that maintain this ratio, like California, recognize the intrinsic value of dedicated nursing care.

Recognizing the importance of specialized attention around pediatric care units, California has established nurse-patient ratios of 1:4.

Mental health units maintain a less stringent ratio, with California's 1:6 nurse-patient ratio indicating a standard for psychiatric care. These ratios are less standardized across jurisdictions, perhaps due to the varying definitions of mental health needs and differences in the scope of practice.

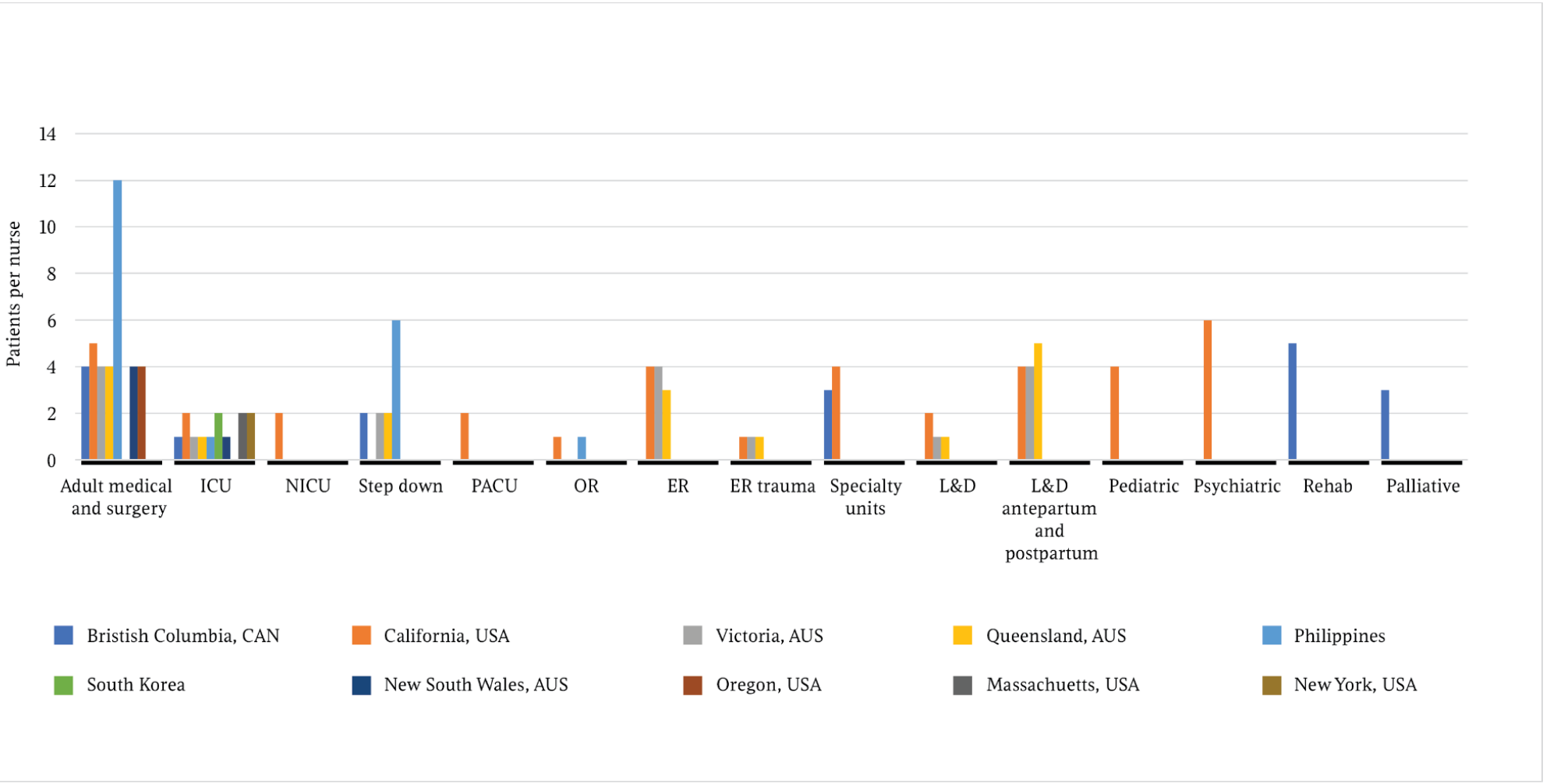
Palliative care units require nurse-patient ratios that effectively address the complex emotional, physical and spiritual needs of the patients with life-limiting illnesses. As seen in British Columbia, Canada, the ratio of 1:3 allows nurses to provide intensive personalized care.

In rehabilitation units, British Columbia has set a nurse-patient ratio of 1:5 during the day and evening shifts and 1:7 on night shifts. This approach highlights an understanding of the unique dynamics of rehabilitation care.

# Summary

This analysis highlights a clear trend in the development and implementation of nurse-patient ratio policies, with a notable concentration of established mandates in areas traditionally deemed as high-acuity or high-volume, such as critical care units and medical-surgical wards. These areas have historically received the most regulatory attention, reflecting the immediate risks associated with insufficient staffing. Legislation for nurse-patient ratios in maternity wards, the ER and OR is gradually gaining momentum, with several regions implementing specific mandates. In contrast, areas such as pediatrics, mental health, palliative care and rehabilitation have seen fewer specific legislative actions concerning nurse-patient ratios. This disparity may stem from a variety of factors, including less public awareness of the complexities of care in these settings, variability in patient needs, and the limited amount of research specific to these areas. Looking forward, the continued expansion of nurse-patient ratio policies to encompass all facets of health care will require ongoing research, stakeholder engagement and policy innovation. Such policies will not only enhance patient care but also support the sustainability of the health care workforce by ensuring that workloads are manageable and that nurses can perform to the best of their abilities in every health care context.

**Figure 1: Variation in nurse-patient day shift ratios by clinical area**



## Table 1. Nurse-patient ratio legislation and safe staffing program models and projects

| Location | Name of mandate/act | Timing of implementation | Ratios (area-/unit-specific) | Comments |
|---|---|---|---|---|
| **Nurse-patient ratio mandates and acts** | | | | |
| California, USA **(1999)**[6,8,38] | AB 394 | • Legislation passed (1999): California became the first state in the USA to pass legislation mandating nurse-patient ratios in hospitals. Assembly Bill 394 was signed into law in October 1999.<br>• Development of regulations (2000-2003): California Department of Public Health was tasked with developing specific regulations to implement the law. This process involved stakeholder input.<br>• Initial implementation (2004): the first set of nurse-patient ratio regulations went into effect on January 1, 2004 –1:6 (medical-surgical units) and 1:2 (intensive care units).<br>• Phased implementation (2004-2008): ratio in medical-surgical units was adjusted to 1:5 in 2005.<br>• Amendment (2019): the law was amended to increase enforcement of the mandated ratios. This was achieved through increased oversight by the California Department of Public Health and the imposition of financial penalties for repeated violations of the ratio requirements. | • Intensive/critical care: 1:2<br>• Neo-natal intensive care: 1:2<br>• Operating room: 1:1<br>• Post-anesthesia recovery: 1:2<br>• Labor and delivery: 1:2<br>• Antepartum: 1:4<br>• Postpartum couplets: 1:4<br>• Postpartum women only: 1:6<br>• Pediatrics: 1:4<br>• Emergency room: 1:4<br>• ICU patients in the ER: 1:2<br>• Trauma patients in the ER: 1:1<br>• Step down (initial): 1:4, (2008): 1:3<br>• Telemetry (initial): 1:5, (2008): 1:4<br>• Medical/surgical (initial): 1:6, (2008): 1:5<br>• Other specialty care (initial): 1:5, (2008): 1:4<br>• Psychiatric: 1:6 | • Hospitals are warned not to violate state law on staffing levels or face fines.<br>• The California Department of Public Health conducts periodic unannounced inspections to enforce compliance.<br>• New policy narrows the circumstances under which hospitals will not be penalized for violations due to "unpredictable circumstances" requiring them to document efforts to maintain safe staffing. |
| Philippines **(2002)**[27,30,73] | Implementing rules and regulations of | Philippine Nursing Act of 2002: provided a legal framework for the nursing profession in the Philippines, including provisions related | Recommended ratios<br><br>Hospitals: | • Department of Health issuances: issued various administrative orders and circulars |

Table 1. Nurse-patient ratio legislation and safe staffing program models and projects

| Location | Name of mandate/act | Timing of implementation | Ratios (area-/unit-specific) | Comments |
|---|---|---|---|---|
| | the Philippine Nursing Act of 2002 (Republic Act No. 9173) | to nursing practice, education and workforce standards. | • General wards: 1:12<br>• Intensive care units (ICUs): 1:6<br>• Critical care units: 1:1<br>• Operating rooms: 1:1 (circulating nurse), 1:1 (scrub nurse)<br>• Emergency departments: ratio varies based on acuity<br><br>Primary health care facilities: 1:20<br><br>Specialized units: varied with fewer patients per nurse depending on acuity | to provide guidelines for nurse staffing levels in health care facilities.<br>• Ongoing updates: The DOH periodically reviews and updates its guidelines, including nurse-patient ratios, to ensure they remain relevant and effective. These updates are based on factors such as health care trends, workforce availability and feedback from stakeholders.<br>• Many public hospitals and rural health units struggle to meet the recommended ratios due to budget constraints and a shortage of nurses.<br>• The migration of nurses to other countries for better opportunities has exacerbated the staffing challenges. |
| Massachusetts, USA **(2014)**[25,67] | HPC regulation 958 ICU Nurse Staffing Law (chapter 155 of the Acts of 2014) | 2014: mandated nurse-patient ratios in intensive care units only | ICU: maximum 2 patients per nurse (nurse-patient ratio 1:2) | The law also requires the use of patient acuity tools to determine appropriate staffing levels. |
| Victoria, Australia **(2015)**[14,66] | Safe patient care (nurse to patient and midwife to patient ratios) act 2015 | • Initial legislation (2015): the safe patient care (nurse to patient and midwife to patient ratios) act 2015 was passed.<br>• First round of implementation (2016): focusing on key areas such as medical and surgical wards, maternity services and emergency departments in public hospitals.<br>• Second round of implementation (2018): a second round of implementation occurred in 2018, which included adjustments to | • General medical or surgical wards: 1:4 D, 1:4 E, 1:8 N<br>• Intensive care units: 1:1 (complex support), or 1:2.<br>• Emergency departments: 1:3 (triage), 1:1 (resuscitation)<br>• Maternity services: 1:1 (birthing suites), 1:4 D & E (postnatal care), 1:6 N (postnatal care) | |

| Location | Name of mandate/act | Timing of implementation | Ratios (area-/unit-specific) | Comments |
|---|---|---|---|---|
| | | existing ratios and the expansion of ratios to additional hospital wards and units.<br>• Further amendments (2019-2020): in 2019, the government announced further amendments to the ratios, which came into effect in March 2020 – improvements to ratios in areas such as mental health, palliative care, and rural and regional hospitals. | | |
| Queensland, Australia **(2016)**[12] | Nursing and midwifery (safe staffing) amendment bill 2016 | • Initial implementation (July 2016): focusing on key areas such as medical and surgical wards, intensive care units and emergency departments in selected public hospitals.<br>• Expansion (2017-2018): include additional hospital wards and units as well as more health care facilities across Queensland.<br>• Legislative review (2019): the Queensland Government conducted a review of the legislation and its impact – it led to further refinements and adjustments to the ratios in some areas. | • Medical and surgical wards: 1:4 D, 1:7 N<br>• Intensive care units: 1:1 (complex support) or 1:2<br>• Emergency departments: 1:3 (triage), 1:1 (resuscitation)<br>• Maternity services: 1:1 (birthing suites), 1:5 D (postnatal care), 1:6 N (postnatal care) | |
| South Korea **(2018)**[70,76] | Nurse Staffing Policy Reform | • Nurse Staffing Policy Reform (2018): South Korea passed a law specifically aimed at improving nurse staffing levels in hospitals, particularly in intensive care units (ICUs).<br>• The implementation of the new staffing ratios was phased (2019-2021), with hospitals required to meet certain benchmarks by specific deadlines. | Intensive Care Units (ICUs): the exact ratios vary depending on the type of ICU and the acuity level of the patients, but the general goal was to ensure at least 1:2. Implementation timeline may vary. | • The policy allows for some flexibility in staffing ratios based on the specific needs of patients and the acuity levels in different hospital units. Hospitals are expected to adjust their staffing levels as needed to ensure safe and effective patient care.<br>• The reform included supportive measures to help hospitals meet the new requirements. This included efforts to increase the overall supply of nurses, improve working conditions |

Table 1. Nurse-patient ratio legislation and safe staffing program models and projects

| Location | Name of mandate/act | Timing of implementation | Ratios (area-/unit-specific) | Comments |
|---|---|---|---|---|
| | | | | and provide additional resources for nurse training and development.<br>• The government provided financial incentives to hospitals to increase their nursing staff and meet the new staffing standards. This included subsidies for hiring additional nurses and support for training and development.<br>• The reform also addressed working conditions for nurses, including measures to reduce overtime and ensure adequate rest periods. The aim was to improve job satisfaction and retention among nurses.<br>• The implementation of the nurse staffing policy reform was monitored by the Ministry of Health and Welfare, which also conducted inspections to ensure compliance with the new staffing standards. |
| Oregon, USA **(2023)**[5,17,40,54] | House Bill 2697 | The law was signed by Governor Tina Kotek on August 11, 2023. | • Minimum nurse-patient ratios: The law establishes minimum nurse-patient ratios across various patient care units.<br>• Ratios in medical-surgical units are set at 1:5, with a planned reduction to 1:4 in June 2026.<br>• Certified nursing assistants are assigned to a maximum of seven patients on the day shift and 11 patients on the night shift. | • The law builds on Oregon's existing requirements for RN staffing committees, which have been in place since 2001.<br>• The law provides mechanisms for investigations and enforcement when hospitals fail to comply with the staffing requirements.<br>• The law puts an end to the "buddy break system", which resulted in nurses having double the patient load when another nurse took a break. This change aims to ensure more consistent and safe staffing levels throughout the day. |

Table 1. Nurse-patient ratio legislation and safe staffing program models and projects

| Location | Name of mandate/act | Timing of implementation | Ratios (area-/unit-specific) | Comments |
|---|---|---|---|---|
| New York, USA **(2023)**[28,52,53,69] | Safe Staffing for Quality Care Act | • The act was first introduced in 2003.<br>• The recent universal 1:2 ratio rule for critical care patients was adopted on June 29, 2023, and will be in effect across all of New York's 212 hospitals. | Critical care: 1:2 | • The act calls for the establishment of a 13-member hospital council to define ratios not specified in the bill and advise the Health Commissioner on the development of regulations, acuity systems and reporting mechanisms.<br>• Public posting of staffing plans and the use of approved acuity systems are required.<br>• Plans for addressing emergency staffing situations and monitoring outcomes are mandated.<br>• A facility-based work assignment policy is required, with potential for operating certificate denials for non-compliance. |
| British Columbia, Canada **(2024)**[32,36,37,59] | Minimum nurse-patient ratios (mNPRs) | • Immediate implementation of the policy directive to establish minimum nurse-patient ratios in six health care settings in acute care facilities.<br>• Nurses can expect to begin to see changes reflecting the new ratios in the fall of 2024.<br>• Determination of minimum nurse-patient ratios in remaining hospital settings and non-hospital settings, such as long-term care and community settings, will be updated in the near future. | • Adult medical and surgical units (operating 24/7, 365 days a year, excluding surgical daycare): 1:4<br>• Palliative care units: 1:3<br>• Rehabilitation units: 1:5 D & E, 1:7<br>• Focused (special) care units (adult care) 1:3<br>• High acuity/step down units: 1:2<br>• Intensive care (adult/child) units: 1:1 | The Ministry of Health has committed $750 million over three years, along with ongoing funding, to support the new ratios and help with nurse recruitment and retention, indicating a significant investment in health care human resources. |
| **Nurse staffing acts and programs** | | | | |
| New Jersey, USA **(2005)**[22] | Health Care Professional Responsibility and Reporting | The act was enacted in 2005: requires health care entities to report information about health care professionals to ensure patient safety and professional accountability. | | • Requires New Jersey health care entities to report information about health care professionals licensed or certified by the New Jersey Division of Consumer Affairs or |

Table 1. Nurse-patient ratio legislation and safe staffing program models and projects

| Location | Name of mandate/act | Timing of implementation | Ratios (area-/unit-specific) | Comments |
|---|---|---|---|---|
| | Enhancement Act | | | certified by the Department of Health and Senior Services.<br>• The New Jersey Department of Health provides quarterly reports on hospital patient care staffing, as required by this legislation. |
| Connecticut, USA **(2008)**[11,72] | Public Act 23-204 | 2008: established a nurse staffing committee to create or shape staffing policy | | • The committee is responsible for developing and implementing a staffing plan that ensures adequate nurse staffing levels.<br>• Mandates the creation of dedicated staffing committees in hospitals to develop annual nurse staffing plans.<br>• Committees must include at least 50% direct care registered nurses (RNs) employed by the hospital.<br>• Outlines specific requirements for RNs' participation in hospital activities and protects RNs from adverse actions for objecting to or refusing to perform tasks outside their expertise. |
| Ohio, USA **(2008)**[24,64] | Written Nurse Services Staffing Plan & Ohio Safe Patient Care Act | • 2008: The Written Nursing Services Staffing Plan becomes effective<br>• 2023: The Ohio Safe Patient Care Act (House Bill 285) introduced to the House of Representatives | | • This act requires hospitals to create evidence-based written nursing services staffing plans guiding the assignment of nurses hospital-wide.<br>• Hospitals are required to implement their nursing services staffing plans within 90 days after their hospital-wide nursing care committee is convened.<br>• The bill aims to establish minimum staffing standards in every Ohio hospital, create a universal reporting system for staffing complaints, establish protection for |

Table 1. Nurse-patient ratio legislation and safe staffing program models and projects

| Location | Name of mandate/act | Timing of implementation | Ratios (area-/unit-specific) | Comments |
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| | | | | whistleblowers who report unsafe staffing, and create a $20 million loan-to-grant program for nurses. |
| Washington, USA **(2008)**[15,20,40] | Patient Safety Act (HB 1714) | • 2008: the original nurse staffing committee legislation, known as the Patient Safety Act, was passed.<br>• 2017: the law was amended, known as HB 1714, to strengthen the role of nurse staffing committees, increase accountability for staffing plans and improve working conditions for nurses.<br>• 2019: significant portions of the amended law took effect, including the requirements for meeting patient assignments and the expanded composition of the staffing committees. | | • This act established the requirement for hospitals to have nurse staffing committees and set guidelines for their composition and responsibilities.<br>• The amendment introduced requirements for hospitals to meet patient assignments in their staffing plans at least 80% of the time or develop and follow a corrective action plan. It also introduced financial penalties for failure to follow a corrective action plan and expanded the staffing committee to include LPNs and CNAs. |
| Nevada, USA **(2009)**[2,3,44] | Nevada Revised Statutes: Patient Protection and Safe Staffing Bill (SB 362) | • 2009: Nevada Revised Statutes (NRS) 449.242 was enacted.<br>• 2013: the law was amended to enhance the requirements for the staffing committee.<br>• 2019: additional amendments were made.<br>• 2020 (effective date): the amendments made in 2019 became effective on July 1, 2020. | | • Requires hospitals in counties with a population of 100,000 or more and licensed to have more than 70 beds to establish a staffing committee.<br>• The committee is responsible for developing a written policy and a documented staffing plan.<br>• The amendment included the need for hospitals to prepare a written report concerning the establishment of the staffing committee, its activities, progress and the determination of its efficacy. The report must be submitted every two years to the director of the Legislative Counsel Bureau and the Legislative Committee on Health Care. |

Table 1. Nurse-patient ratio legislation and safe staffing program models and projects

| Location | Name of mandate/act | Timing of implementation | Ratios (area-/unit-specific) | Comments |
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| | | | | • Additional amendments included the requirement for the staffing committee to consider information regarding requests to be relieved of a work assignment, refusals of a work assignment and objections to a work assignment |
| Texas, USA **(2009)**[21,34,74] | Chapter 257 of the Health and Safety Code | Enacted by Senate Bill 476 in 2009 | | • Requires hospitals to establish a nurse staffing committee and to adopt, implement and enforce a written nurse staffing policy to ensure an adequate number and skill mix of nurses are available to meet the level of patient care needed.<br>• The committee must be composed of at least 60% registered nurses who provide direct patient care during at least 50% of their work time and are selected by their peers.<br>• The committee is required to meet at least quarterly and develop a nurse staffing plan that meets specific requirements outlined in the legislation.<br>• Hospitals are required to annually report to the Department of State Health Services on various aspects related to the nurse staffing policy and plan. |
| Minnesota, USA **(2013)**[57,58] | Nurse Staffing Levels Reporting Act | • Act was implemented in 2013<br>• Hospitals were required to begin posting their daily staffing levels on their websites by January 1, 2014.<br>• The first quarterly staffing level reports were due to the Minnesota Department of Health by April 30, 2014. | | • Hospitals in Minnesota are required to publicly disclose information about their nurse staffing levels. This includes posting daily staffing levels for each inpatient care unit on the hospital's website and submitting quarterly reports to the Minnesota Department of Health. |

Table 1. Nurse-patient ratio legislation and safe staffing program models and projects

| Location | Name of mandate/act | Timing of implementation | Ratios (area-/unit-specific) | Comments |
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| | | | | • Hospitals must develop, implement and annually update a core staffing plan that is based on the needs of patients, the experience and qualifications of the nursing staff, and other relevant factors.<br>• The Minnesota Department of Health is required to make the staffing level reports submitted by hospitals available to the public on its website. |
| Wales, UK **(2016)**[75] | Nurse Staffing Levels (Wales) Act 2016 | • The act received royal assent in March 2016.<br>• The first phase of implementation focused on adult acute medical and surgical inpatient wards. The Welsh government issued statutory guidance to support the implementation of this phase. | | • The act places a legal duty on health boards and NHS trusts in Wales to take all reasonable steps to maintain nurse staffing levels that are sufficient to provide safe and effective care to patients.<br>• The Welsh government is responsible for issuing guidance and regulations to support the implementation of the act.<br>• Health boards and NHS trusts are required to regularly assess and review nurse staffing levels, taking into account factors such as patient acuity, dependency and the complexity of care. They must also report on their compliance with the act to the Welsh government, which monitors the implementation and effectiveness of the legislation. |
| Colorado, USA **(2018)**[23] | Senate Bill 18-214: Nurse Staffing Standards for Hospital Patient | The bill was signed into law on April 26, 2018. | | • Hospitals in Colorado are required to establish nurse staffing committees by January 1, 2019. These committees must be composed of at least 55% direct care nurses, and they are responsible for developing and overseeing the implementation of nurse staffing plans. |

Table 1. Nurse-patient ratio legislation and safe staffing program models and projects

| Location | Name of mandate/act | Timing of implementation | Ratios (area-/unit-specific) | Comments |
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| | Safety and Quality Care Act | | | • The nurse staffing committees are tasked with creating staffing plans that take into account the needs of patients, the skill mix of the nursing staff, the layout of the hospital unit, and other factors that affect the delivery of safe and effective care.<br>• Hospitals are required to make their nurse staffing plans publicly available and to report on their compliance with the staffing plans to the Colorado Department of Public Health and Environment.<br>• The nurse staffing committees must review and update the staffing plans at least annually.<br>• The law includes provisions to protect nurses and other hospital staff who report concerns about staffing levels or compliance with the staffing plans. |
| Scotland **(2019)**[31] | Health and Care (Staffing) (Scotland) Act 2019 | • The act was passed by the Scottish Parliament in May 2019.<br>• The act received royal assent in June 2019. | | • The act requires the development and application of a common staffing method for health and care services. This method involves using professional judgment, evidence-based workload and workforce planning tools, and local context to determine appropriate staffing levels.<br>• Health boards and care service providers are required to carry out regular assessments of staffing levels to ensure they are adequate for providing safe high-quality care. They must also report on their staffing levels and how they have used the common staffing method to inform these levels.<br>• The act places a duty on health boards and care service providers to ensure appropriate |

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| Location | Name of mandate/act | Timing of implementation | Ratios (area-/unit-specific) | Comments |
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| | | | | staffing levels. They are responsible for ensuring that staffing is sufficient to meet the needs of patients and service users and to maintain a safe environment for care.<br>• The act includes provisions for whistleblowing and escalation processes, allowing staff to raise concerns about staffing levels that may compromise patient safety. Health boards and care service providers must have clear procedures in place for staff to report concerns and for these concerns to be addressed promptly. |
| Illinois, USA **(2021)**[31,26,46,60,61] | Nurse Staffing Improvement Act of 2021 | The amendment took effect on July 1, 2021. | | • The act emphasizes the importance of direct care registered nurses in staffing decisions. The nursing care committee, which is responsible for developing the hospital's staffing plan, must be comprised of at least 55% direct inpatient care nurses, with one direct inpatient care nurse selected annually to serve as the committee's co-chair.<br>• The staffing plan must be prepared by the nursing care committee and provide for minimum direct care professional registered nurse-patient staffing needs for each inpatient care unit.<br>• The act holds hospitals accountable for having and implementing a written staffing plan. Enforcement measures include fines for failing to adopt a staffing plan, a 60-day period to provide a plan of correction, and fines for a pattern or practice of failing to comply with the plan of correction. The Illinois Department of Public Health will |

Table 1. Nurse-patient ratio legislation and safe staffing program models and projects

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| | | | | publicly disclose violations, and money from fines will be deposited in the Nursing Education Scholarship Fund. |
| Germany **(2021)**[29,35,50] | Nursing Care Reform 2021 (Pflegereform 2021) | The Nursing Care Reform 2021 was passed by the German parliament and entered into effect on July 1, 2021. | | • The reform aimed to increase staffing levels in long-term care facilities to ensure better care for residents.<br>• The reform included measures to support the development of the nursing workforce, such as training and professional development opportunities.<br>• The reform provided financial incentives for long-term care facilities to improve staffing levels and working conditions. |
| Rhode Island, USA **(2021)**[19,71] | Nursing Home Staffing and Quality Care Act | Enacted on May 27, 2021 | | • Sets minimum staffing levels for Rhode Island nursing homes.<br>• The law establishes a minimum standard of 3.58 hours of resident care per day by January 1, 2022, and 3.81 hours of resident care per day beginning January 1, 2023.<br>• The act also provides funding to raise wages for direct care staff to help recruit and retain a stable and qualified workforce |
| **Pilot projects, guidelines and collective agreements** | | | | |
| New Zealand **(2005)**[9,51,68] | Care Capacity Demand Management (CCDM) program | • Safe Staffing and Healthy Workplaces Committee of Inquiry (2005/2006): the inquiry was established to address concerns about safe staffing levels and healthy workplaces in the health care sector. Its | | • TrendCare system: helps to predict patient demand and determine the required staffing levels by taking into account factors such as patient acuity, the complexity of care needed and the activities nurses need to perform. |

| Location | Name of mandate/act | Timing of implementation | Ratios (area-/unit-specific) | Comments |
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| | | recommendations laid the groundwork for the development of the CCDM program.<br>• Development and initial implementation (2007-2015): the CCDM program was developed as a joint initiative between the New Zealand Nurses Organization (NZNO) and district health boards.<br>• Mandatory implementation (2018) | | • Staffing methodology: calculating the hours of care required for patients in a particular unit or ward and then determining the number of staff needed to provide that care.<br>• Shift-by-shift management: staffing decisions are made based on the actual workload and patient needs at the beginning of each shift.<br>• Safe Staffing Healthy Workplaces Committee: responsible for overseeing the implementation of the CCDM program. This committee includes representatives from nursing staff, management and other stakeholders.<br>• Variance Response Management: provides a structured way for staff to respond when actual staffing levels differ from what is required. |
| United Kingdom **(2014)**[42,43] | National Health Service (NHS) Guidelines | • NICE guidelines (2014): guidelines on safe staffing for nursing in adult inpatient wards in acute hospitals<br>• NHS England and NHS improvement (2016-2018): additional guidance and case studies to help health care providers apply the guidelines in practice | | • NICE guidelines: the National Institute for Health and Care Excellence (NICE) has published guidelines on safe staffing for nursing in adult inpatient wards in acute hospitals. These guidelines recommend using a systematic approach to determine staffing levels based on patient needs, acuity and dependency.<br>• NHS improvement resources: a range of resources to support health care providers in implementing safer staffing principles. These resources include frameworks, toolkits and case studies that cover various aspects of staffing, such as workforce planning, rostering and the use of technology. |

Table 1. Nurse-patient ratio legislation and safe staffing program models and projects

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| | | | | • Safe staffing tools: The NHS has developed several tools to help health care providers assess and manage staffing levels. For example, the Safer Nursing Care Tool is used to calculate the required nursing hours per patient day based on the acuity and dependency of patients on adult inpatient wards. |
| Ireland, UK **(2015)**[65] | Irish Nurses and Midwives Organisation (INMO) pilot projects: Safe Staffing Level, Nurse-Patient Ratio | • Initial pilot projects (2015-2016): aimed at testing the feasibility and impact of implementing specific nurse-patient ratios in different hospital units<br>• Further projects (2017-2018): projects expanded to more hospitals and units | • Medical-surgical wards: common ratio 1:4 D or 1:5 D<br>• Emergency departments: ratios were often determined based on the level of care required (e.g., triage, resuscitation, minor injuries) and the patient flow. For example, 1:3 or 1:4 in areas with less critical cases<br>• Intensive care units: 1:1 or 1:2 depending on the severity of the patients' conditions.<br>• Specialized units: ratios were adjusted to reflect the specific needs of the patient population, 1:1 (birthing suite) | • Each pilot project has a set duration, after which the outcomes are evaluated. The findings from these evaluations are used to inform future projects and to advocate for policy changes at the national level.<br>• The pilot projects emphasized the importance of adjusting ratios based on patient acuity and care needs – the ratio could vary depending on the patients' conditions and requirements for care.<br>• Need for collaboration among the health care team and flexibility in staffing to respond to changing patient needs and circumstances. |
| Quebec, Canada **(2018)**[63] | Letter of Understanding No. 17 | The process of implementing safe ratios in Quebec has been ongoing and involves several steps, including the establishment of pilot projects, the publication of reports like the *Black Book of Care Safety*, and the expansion of the scope of Letter of Understanding No. 17 to include 17 ratio projects, the majority of which are underway. | • Surgery and mixed units: 1:7-9 D, 1:8-10 E, 1:10-12 N<br>• Medicine units: 1:7-9 D, 1:8-12 E, 1:10-14 N<br>• Long-term care facilities (CHSLD): 1:20-27 D, 1:25-32 E, 1:37-44N | • This letter of understanding initiated the study of the relevance and feasibility of safe ratios by setting up pilot projects in various health care settings.<br>• The ultimate goal is to pass legislation on safe ratios province-wide. |

Table 1. Nurse-patient ratio legislation and safe staffing program models and projects

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| | | | | • The FIQ (Fédération interprofessionnelle de la santé du Québec) is actively advocating for the establishment of guaranteed safe ratios across all health care institutions in Quebec.<br>• The process involves collaboration between various committees, training programs and the use of tools like the Safer Nursing Care Tool (SNCT) for adjusting staff levels within the specified ratios. |
| Newfoundland and Labrador, Canada **(2022)**[4,13,18] | Core staffing review by the Registered Nurses' Union Newfoundland and Labrador (RNUNL) | The review is set to be conducted over a two-year period. | | • Four health care sites are being examined in the review.<br>• The review is set to be conducted over a two-year period.<br>• An external consultant has been hired to conduct the review, ensuring an unbiased and comprehensive analysis.<br>• The review includes examining various factors that contribute to the workload of registered nurses (RNs), including client factors, staffing factors, organizational factors and other relevant factors.<br>• RNUNL is in the final approval stage with the government for a long-term plan that aims to implement a model similar to that of New Zealand – a focus on safe staffing levels and possibly a care capacity demand management approach, which is used in New Zealand, to ensure that staffing levels are matched to patient care needs.<br>• The long-term plan is envisioned to span over a decade, indicating a commitment to sustainable and strategic improvements in |

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| | | | | staffing and workload management for RNs in Newfoundland and Labrador. |
| New South Wales, Australia **(2023)**[45,47,48,62] | Safe Staffing Levels Policy | April 27, 2023: establishment of the Safe Staffing Working Group, which is tasked with planning and driving the implementation of safe staffing levels across the public hospital system, starting with emergency departments. | • General medical and surgical wards: 1:4<br>• Critical care units: 1:1 or 1:2<br>• ER: specific ratios based on the different areas within departments<br>• Maternity wards: ratios take into account different stages of maternity care<br>• Mental health: ratios based on factors such as level of patient observation required and therapeutic activities being provided<br>• Specialized units: ratios tailored to the specific needs of the patient population | |
| Nova Scotia, Canada **(2023)**[77] | Nursing hours per patient day (NHPPD) framework | • Commitment to establish a framework based on NHPPD by July 2023<br>• The initial phase involves maintaining current staffing levels and providing unit profiles within 6 months of the new collective agreement signing date. | Hypothetical examples<br>• Surgical unit A: requires maintaining 5.3 NHPPD, which equates to 165 nursing hours per day for 31 patients, resulting in 1:4 from 07:00-23:00, and 1:5 overnight<br>• Surgical unit B (higher-acuity): requires 6.3 NHPPD, amounting to 195 nursing hours for a unit | • The framework is inspired by similar practices in Australia.<br>• It is a structured needs-based approach, allowing for staffing solutions that reflect the unique demands and resources of each unit.<br>• The initial steps include maintaining current staffing levels, and then units will undergo evaluations prioritized by workload feedback from nurses. |

Table 1. Nurse-patient ratio legislation and safe staffing program models and projects

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| | | | with 31 patients, resulting in 1:3 around the clock | • The NHPPD numbers will become mandatory targets following the transition from existing counts.<br>• Potential negotiations for additional staff may occur based on unit assessments. |
| Manitoba, Canada[78] | Letter of agreement: sub-committee on nurse-patient ratios | • Formation of sub-committee: within three months of the union and employer ratifying a collective agreement<br>• Recommendations submission: no later than January 1, 2026<br>• Dispute resolution process initiation: no later than 120 days prior to January 1, 2026 | | • The agreement is between the Government of Manitoba, Provincial Health Labour Relations Service (PHLRS) on behalf of the employers in various Manitoba health regions, and the Manitoba Nurses Union.<br>• The sub-committee will include representatives from the Government of Manitoba, the union and employers.<br>• The sub-committee aims to define a made-in-Manitoba approach for establishing minimum nurse-patient ratios in various areas of patient care.<br>• Factors to consider in NPR recommendations include staff skills mix, care complexity, acuity, nurse expertise, multidisciplinary team supports and physical layout.<br>• Continuous improvement methodology will be used in developing NPR recommendations.<br>• The sub-committee will develop evaluation metrics and determine priority areas.<br>• The sub-committee should exercise due and reasonable diligence in considering related actions and nurse-patient ratio recommendations that are acted upon in other jurisdictions which provide health care to a similar standard of that which exists in Manitoba. |

Table 1. Nurse-patient ratio legislation and safe staffing program models and projects

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| | | | | • The Government will fund administrative support and a research project coordinator for the sub-committee.<br>• In case of unresolved disputes, a two-step resolution process involving meetings between executive directors and potentially an arbitration panel is outlined. |
| New Brunswick, Canada[79] | Public Service Labour Relations Act, regional health authorities; Part III, First Schedule | • The joint committee for the research project on mandatory nurse-patient ratios (MNPR) was to be formed within three months of signing the collective agreement.<br>• The research project phase started on January 1, 2023, and is scheduled to last until December 31, 2024.<br>• A report on the research project is to be prepared and released within six months after the two-year research phase, around mid-2025. | | • The letter of intent emphasizes the collaboration between the union and the employer to enhance quality health care and patient safety, recognizing the crucial role of registered nurses.<br>• A joint committee comprising equal representation from the employer and union is tasked with planning and conducting the MNPR research project.<br>• The project aims to identify suitable nurse-patient ratios by assessing various factors such as staff skill mix, care complexity, acuity, RN expertise, support staff availability and physical layout.<br>• The project involves two units, one in Horizon and one in Vitalité, ensuring these units already meet appropriate MNPR to avoid reallocating resources from other units.<br>• The research project is designed to be flexible and non-binding, allowing the employer to reassign RNs based on operational needs and patient acuity.<br>• The joint committee has the authority to invite additional participants as needed to |

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| | | | | ensure the project benefits from the necessary knowledge and expertise. |
| **Pending legislation** | | | | |
| Pennsylvania, USA[55,56] | Patient Safety Act | • The Pennsylvania House of Representatives passed the bill in July 2023.<br>• The legislation has advanced to the state Senate floor and is awaiting a vote. | | The bill requires hospitals to set appropriate nurse-patient ratios based on patient acuity. |
| Georgia, USA[16] | Safe Patient Limits Act | • The bill was introduced in the Georgia House of Representatives in 2020.<br>• The bill is undergoing review and awaiting a vote in the full legislature. | | The bill would require hospitals and other health care facilities to limit the number of patients that may be assigned to a registered nurse (RN). |
| Maine, USA[10,33] | Maine Quality Care Act | The bill has advanced to the state's Committee on Labor and Housing and is awaiting a vote. | | The act would require the establishment of minimum staffing ratios for RNs at health care facilities across the state and mandate hospitals to maintain staffing records and report staffing ratios to the department of health. |
| Illinois, USA[49] | Safe Patient Limits Act | The bill is awaiting a state House vote. | | • The bill could limit the number of patients that may be assigned to an RN in specific situations or on specific units.<br>• It would also require hospitals to use a patient acuity system to determine appropriate staffing needs and forbids assigning nurses to clinical areas in which they have had no training or orientation.<br>• All temporary or agency nurses would be required to receive the same amount of training that is given to permanent staff. |

Table 1. Nurse-patient ratio legislation and safe staffing program models and projects

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| New Jersey, USA[7,39] | Senate Bill 304 | The legislation is currently awaiting a state Senate vote. | | • The bill would mandate nurse-patient ratios across all specialties.<br>• It would require the implementation of a patient acuity system, which must be approved by at least half of the unit staff nurses prior to taking effect.<br>• It would also forbid hospitals from including nurses functioning in a supervisory role (such as a nurse manager) in the projected unit staffing numbers. |
| New York, USA[28,52,53,69] | Safe Staffing for Quality Care Act | The timeline for the implementation of the broader provisions of the act would depend on its passage through the legislative process. | • OR, trauma ED, L&D (stages 2 and 3): 1:1<br>• L&D (stage 1), ICU, PACU, critical care ED: 1:2<br>• Antepartum, ED, pediatrics, stepdown, telemetry, newborn nursery, intermediate care nursery: 1:3<br>• Postpartum mother-baby couplets: 1:3<br>• Non-critical antepartum, postpartum (moms only), med-surg, acute psych: 1:4<br>• Rehab, sub-acute: 1:5<br>• Well baby nursery: 1:6 | The act has faced challenges in the legislative process, with the Senate being reluctant to pass it. Efforts are being made to offer alternatives to mandated ratios, such as hospital-based staffing committees, to create and oversee plans. |

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# 2.0 Early Research on Nurse Staffing

Research into the impact of nurse staffing on patient outcomes emerged in the 1990s, with pioneering studies conducted in the US in the 1990s by researchers like Aiken (University of Pennsylvania) and Kovner (New York University). These studies were crucial in establishing a foundational understanding that linked the quality of nursing care directly to patient health outcomes.

Aiken's (1994) groundbreaking research conducted at Magnet hospitals – facilities recognized for their superior nursing care – found a 4.6 lower mortality rate even after adjusting for patient characteristics.[80] This study not only emphasized the importance of nursing care quality but also signaled that organized nursing care was integral to patient mortality. Following this, Kovner (1998) analyzed acute care hospitals across ten states in a study that revealed a strong inverse relationship between registered nurse staffing levels and postoperative complications.[81] Kovner's findings were instrumental in demonstrating the value of nurse staffing in patient safety and recovery. Needleman (2002) went on to expand the evidence base using administrative data from hospitals in 11 states, showing that higher staffing levels of registered nurses led to better patient outcomes.[82] This provided substantial support for advocating policies that ensure adequate hospital nurse staffing.

Together, these studies formed the cornerstone of research into nurse staffing and patient outcomes, each adding layers of evidence that have influenced health care policy and practice. They highlight the essential role of nurses in health care settings and demonstrated how strategic improvements in nurse staffing could lead to significant enhancements in patient health outcomes.

# International research initiatives

In the groundbreaking International Hospital Outcomes Study conducted in the US and Canada, Aiken (2002) set out to systematically assess how nurse staffing and organizational support across different countries affected key nurse and patient outcomes.[83] Within Canada, particularly in Ontario and British Columbia, the study uncovered that nurses were grappling with high levels of job dissatisfaction and burnout – a trend consistent with global patterns. Notably, poor staffing and insufficient organizational support were correlated with these adverse outcomes.[83] These findings resonated deeply with the Canadian health care system, highlighting the urgent need for reforms.

Moving forward, Aiken's 2011 study delved into the relationship between hospital work environments and a range of outcomes, including nurse burnout, job dissatisfaction and patient care quality. While Canada saw the lowest rate of nurses reporting poor quality of care at 11%, concerns remained high regarding patient readiness for discharge, echoing similar international apprehensions about care following hospitalization.[84] The study served as a catalyst, driving forward the conversation about work environments in the Canadian health care policy sphere. The findings urged health care leaders to recognize the importance of work environments on not only nursing staff retention but also on the patient's journey through the care continuum.

Findings from these pivotal studies highlight a consistent theme: the health of a health care system can be gauged by the well-being of its nursing staff and the organization of its work environments. Canada-specific data in these studies reaffirmed that improving nurse staffing levels and enhancing work environments could significantly elevate patient care quality and nurse job satisfaction.

Following this, the RN4CAST study began in Europe in the late 2000s, aiming at addressing the complexities of nurse staffing and its impact on patient outcomes on a scale that transcended national boundaries. This large-scale project built on Aiken's initial work and involved data collection from over 500 hospitals across 12 European countries, making it one of the most extensive studies of its kind. RN4CAST utilized a sophisticated multilevel modeling approach to analyze data collected through nurse surveys, patient surveys and routinely collected hospital data.[85] This comprehensive method allowed the researchers to capture a nuanced picture of how different aspects of nursing and hospital organization influenced outcomes. While the focus was initially European, the study's methodologies and findings resonated globally, impacting health care policies and strategies for nurse workforce planning around the world.

The RN4CAST study significantly advanced the field of nursing research by providing a clear empirical basis for the links between nurse staffing, the work environment and health care outcomes. Its legacy continues to influence health care policy and nursing practice, emphasizing the crucial role of the nursing workforce in achieving high-quality patient care. This study serves as a foundational reference for ongoing research and discussions about the optimal allocation and support of nursing resources in health care systems around the world.

Following this foundational work, subsequent research continued to explore and expand our understanding of how nurse staffing levels impact patient care and outcomes. These studies have

built on earlier findings, providing deeper insights and refining approaches to nurse workforce management.

In Australia, Duffield's (2011) research highlighted that better nurse staffing ratios led to improved patient outcomes such as lower mortality rates. This study drew attention to the importance of considering nurse workload and the work environment quality.[86] In 2015, Sermeus delved into the RN4CAST data, focusing on the nursing work environment's effects on patient outcomes across Europe. This provided a nuanced understanding of how staffing and work conditions influence health care quality and safety.[87] Aiken's ongoing research in 2016 scrutinized the effects of nursing skill mix on key health outcomes. It provided compelling evidence that a higher proportion of professional nurses was associated with better patient outcomes and cautioned against substituting less qualified staff to cut costs.[88] In the UK, Ball investigated the association between shift lengths and job satisfaction, finding that longer shifts were linked to lower care quality and increased care left undone. Her findings added depth to the staffing debate by addressing the implications of shift structure for patient and nurse well-being.[89]

## Summary

The continuum of research from the early 1990s to the late 2010s has substantially enriched our understanding of the dynamics between nurse staffing, work environments and patient outcomes. Each study has contributed layers of evidence supporting the need for strategic nurse staffing to ensure high-quality patient care. Their findings continue to inform health care policies, emphasizing the critical role of nursing in the overall health care matrix and advocating for systemic changes to enhance both patient and nurse outcomes. As this field has developed over time, the literature has evolved to include a number of literature reviews that focus on linking nurse staffing to patient and/or nurse outcomes. An overview of the state of the evidence reported in these published literature reviews follows.

# 3.0 Current Research on Nurse Staffing: Review of the Literature

Research exploring nurse staffing approaches is multifaceted and complex in part due to wide variations in health care systems globally and intricacies of the settings being considered. The scope of the literature examined in this review reflects the importance, both from a research and practical perspective, of this area of inquiry. Giving consideration to the evolution of nurse staffing research, including landmark studies and the research endeavors that followed thereafter, provides a frame of reference when mapping the evidence and acknowledging the current state of study in this area.

## Literature review methodology

A rapid umbrella review of the literature was conducted to identify and synthesize evidence on this topic area.[90] This structured review process was undertaken to capture the depth and breadth of the literature and provide an understanding of the key findings from this body of evidence. Umbrella reviews, also described as a review of reviews, are intended to examine literature reviews available on a given topic.[90] Use of this methodological approach has increased in recent years in response to large amounts of published research emerging in an area and the need to distill that evidence so that it is usable for decision-makers.[90] This approach is particularly useful when examining nurse staffing research given the volume of literature and heterogeneity amongst the studies. This methodology consists of compiling and synthesizing multiple literature reviews, making comparisons to highlight analogous or divergent results and providing an overall assessment of the findings. The inclusion criteria for this rapid umbrella review consisted of published literature reviews examining staffing levels or nurse-patient ratios, written in English and published in the timeframe of 2000 to 2024.

A comprehensive literature search was carried out in CINAHL, MEDLINE, EMBASE, Scopus and Google Scholar databases. The main search terms used were: “nurse-patient ratio” and “nurse staffing”. The search strategy, including identified keywords and index terms, was adapted for each of the databases used. Inclusion criteria for articles were literature reviews that provided empirical evidence of the impact of nurse-patient ratios on patient and nurse outcomes. The search was limited to articles published in English, with a restriction on publication date from 2000 to 2024, allowing for the articles to encompass a historical perspective on the evolution of staffing norms. Reference lists were also manually screened to identify additional reviews not captured in the initial search undertaken. The selection process involved reviewing titles and abstracts for relevance, followed by a full-text review to confirm the suitability for inclusion, and was carried out by two independent reviewers.

# Literature review results

## A. Characteristics of literature reviews

This rapid umbrella review revealed a variety of 'types' of literature reviews have been published (n=48), the majority being systematic reviews (n=31), four of which included a meta-analysis (see Table 2). The remainder were comprised of narrative reviews (n=10), scoping reviews (n=3), umbrella reviews (n=2), integrative reviews (n=1) and hermeneutic reviews (n=1). The number of studies in each review ranged from 5 to 96, with the earliest primary study conducted in 1990. Research took place in a range of settings, with the majority from acute care settings (n=33), in addition to a number of distinct specialty areas, such as ICU (n=3), critical care (n=3), pediatrics (n=2), NICU (n=1), emergency room (n=1) and acute specialist units (n=1). Outpatient settings were examined in one review only. The reviews addressed both patient and nurse outcomes.

Common themes addressed in the reviews were the: a) impact on, or change made to, nurse staffing; b) relationships identified between nurse staffing and patient outcomes (n=44); and c) relationship found between nurse staffing and nurse outcomes (n=22). The most prevalent patient outcomes identified in these reviews were mortality, hospital-acquired infections, pressure injuries, length of stay and failure to rescue. Predominant nurse outcomes reported included job satisfaction, burnout, intention to leave and nurse turnover.

## B. Impact/change in nurse staffing

Literature reviews on nurse staffing levels provide a broad understanding of the overall impact of changes to nurse staffing on patients and nurses. Several of the reviews identified that higher levels of nurse staffing are associated with better patient (n=34; 77%) and nurse (n=20; 90%) outcomes. At the same time, some reviews suggest that limited evidence exists linking nurse staffing to patient outcomes[91,92], or that the evidence of relationships between nurse staffing and outcomes experienced by nurses[93] or patients[94] was inconclusive. Of particular interest to this work, a 2004 review that explored nurse-patient ratios found no support for 'specific' nurse-patient ratios for acute care hospitals.[95] Inconclusive findings were also reported in a 2009 review wherein there was only some evidence linking nurse resources, such as nurse-patient ratios and skill mix, to patient outcomes in ICU settings.[96] Similarly, a 2019 review reported that there is limited evidence to conclude that staffing methodologies encompassing a supply and demand model or ratios method mitigate risk or contribute to quality, safe patient care.[97] Findings such as these may raise questions surrounding the utility and impact of ratios and other staffing methodologies as measures to ensure safe staffing. Interestingly, this corresponds with inconclusive findings found in a 2013 review exploring the impact of California's nurse-patient ratios on patient outcomes.[98] Such findings suggested that the impact was 'mixed', and while some modest improvements were apparent, the extent to which mandated staffing ratios were expected to yield positive outcomes fell short of initial predictions. In an analogous study conducted several years earlier (2010) on the impact of mandated ratios in California, they reported that this staffing measure did not significantly impact nursing quality metrics and patient safety indicators across hospitals.[99]

Further discrepancies pertaining to nurse staffing methodologies were apparent across this research synthesis. In more recent reviews, limited evidence on the impact of adopting a specific nurse staffing methodology when considering patient and nurse outcomes was reported[100], along with lack of evidence to support the choice of any particular tool[101]. This incongruence regarding the particular methodology to adopt is considered a limitation in this body of research, as is the inability to determine the number of nurses or hours of work that will yield improved patient outcomes.[100,101] Also evident throughout some reviews is concern regarding the variety of measurement tools and differing operational definitions that underpin nurse staffing measures. A systematic review examining the relationship between nurse staffing, hospital costs and length of stay found that increased RN staffing may lead to significant reductions in hospital costs and patient length of stay (LOS); at the same time, the inconsistencies in definitions and measurement approaches for these variables impacted the conclusiveness of the results.[102] Despite this, looking across the literature reviews highlights the breadth of evidence in this field. It is apparent that while there is a sizeable amount of evidence that nurse staffing levels are associated with improved outcomes for patients and nurses, the findings are not entirely cohesive and consistent. Additionally, there are notable challenges associated with translating these findings into clear uniform recommendations for achieving safe staffing levels. This juxtaposition in the findings requires careful scrutiny when it comes to identifying decision-making processes for nurse staffing.

## C. Effect of nurse staffing on patient outcomes

Across literature reviews, patient outcomes have been a critical area of investigation when considering nurse staffing levels. Many of these outcomes are described as nurse-sensitive patient outcomes (NSPOs), or outcomes sensitive to, or reflective of, nursing care. A broad range of patient outcomes were examined across the literature reviews, including inpatient mortality, hospital-acquired infections, incidence of pressure injuries, length of hospital stay, failure to rescue, medication errors, patient falls, patient satisfaction, hospital costs, nosocomial pneumonia, urinary tract infections, postoperative complications, restraint prevalence, increased patient wait times, missed nursing care and respiratory failure (see Table 3a). An overview of the findings for the five most common outcomes reported across the 44 studies addressing nurse staffing levels and patient outcomes follows. The remaining four studies did not investigate the link between nurse staffing and patient outcomes.

**MORTALITY.** Mortality rates are a strong indicator of patient care quality and have been the subject of extensive research related to nurse staffing levels. A total of 31 (70%) of the literature reviews examined associations between nurse staffing and mortality – the most frequent patient outcome reported in these studies. Across the majority of these reviews (n=27; 87%), higher levels of nurse staffing were linked to decreased rates of mortality, indicating that staffing levels are clearly and consistently associated with inpatient mortality. Some reviews commented on the difficulty establishing a causal link or definitive statistical association to patient outcomes.[102,104] Meanwhile, others suggest that the evidence supports a causal relationship between nurse staffing levels and patient outcomes, although the exact size of the effect is unclear.[105] Another review reported that an increase in nurse's workload of one patient increases the likelihood of an inpatient dying within 30 days of admission.[106] Across the reviews identifying this association, higher education levels among nurses, higher proportions of registered nurses and supportive work environments were

also factors linked to reduced in-hospital mortality.[92,97,105,107,108,109,110,111] Several reviews failed to identify a statistically significant association between nurse staffing levels and rates of inpatient mortality or reported mixed results (n=4). In one review that failed to confirm a positive relationship between nurse staffing levels and rates of patient mortality, the authors indicated that the evidence was limited.[94] A review of nurse-patient ratios and neonatal outcomes reported that a lower proportion of nurses compared to patients was associated with higher mortality in three studies and with lower mortality in one study[112]. The authors commented further on the complexity of the relationship between nurse staffing or nurse-patient ratios, noting that limited data may be a factor.

**HOSPITAL-ACQUIRED INFECTIONS.** Hospital-acquired infections, or health care associated infections (HAIs), are those acquired in the context of a person receiving care in a health care facility. They are considered an adverse patient outcome that can negatively shape a patient's trajectory and are a major challenge and economic burden for clinicians and organizations.[113] A total of 24 reviews reported on HAIs with 18 reporting a relationship between higher nurse staffing levels and lower rates of infection. The evidence involved research conducted in acute care settings and a number of specialty units, including the ICU, critical care and pediatrics population. Findings provide evidence that higher nurse staffing levels, a higher proportion of RNs and skill mix are associated with improved patient outcomes.[95,107,108,109,111,114,115] In a narrative review examining the relationship between nurse staffing levels and adverse patient outcomes in adult intensive care unit patients there was no statistical association. It was noted that most other studies demonstrated a trend between increased nurse staffing levels and decreased patient outcomes in this setting.[104] The association was less evident in the other literature reviews, with one noting the association between higher registered nurses staffing levels and patient outcomes, including infections, is more mixed.[116] Similarly, mixed or inconclusive findings were reported in two additional reviews[95,100], while another noted that the relationship between nursing levels and incidence of nosocomial infections was not consistently significant across all studies[117].

**INCIDENCE OF PRESSURE INJURIES.** Pressure ulcers are considered a frequent adverse patient outcome impacting hospitalized patients and an indicator of the quality level of nursing care. A total of 18 reviews reported them, 11 of which identified that higher nurse staffing levels are associated with lower rates of pressure ulcers, whereas the remaining seven produced more mixed results. One review considered the effect of nurse staffing on patient outcomes in acute care settings in low- and middle-income countries, reporting that the incidence of pressure injuries was inconsistent.[118] Mixed or inconclusive findings were also reported in a number of reviews exploring the effect of nurse staffing and incidence of pressure ulcers.[95,116,119] Another reported that while a trend between increased nurse staffing levels and decreased pressure ulcers exists in the ICU, a definitive statistical association was not established.[104] This corresponds with earlier work reporting no significant impacts of improved staffing measures on patient outcomes (including pressure ulcers) in a research synthesis examining the impact of California's legislatively mandated ratios on patient outcomes.[99]

**LENGTH OF HOSPITAL STAY.** Length of stay (LOS) relates to the length of time in which patients are admitted to hospital. LOS informs the allocation of resources and reflects care efficiency, and may also have negative implications for the patient if prolonged.[120] LOS was addressed by 14 of the literature reviews. The majority of these (n=12; 86%), reported a relationship between nurse staffing

and patient length of stay, signifying that higher levels of nurse staffing are associated with reduced length of stay. In an umbrella review of staffing levels and nursing-sensitive patient outcomes (NSPOs), the authors noted that length of stay was identified as one of four NSPOs with a high strength of evidence linking back to nurse staffing levels.[121] The link between level of nurse staffing and length of stay was evident in a number of clinical specialties and patient populations across the literature reviews, including emergency departments[91], and ICUs and surgical patients[122]. While 80% of the reviews reported a significant or clear association between nurse staffing levels and LOS, the remaining research syntheses examining this outcome reported inconsistent findings[118] and mixed evidence[116]. An earlier review examining the impact of California's mandated ratios identified that there was no reduction in the length of stay with improved staffing measures.[99]

**FAILURE TO RESCUE.** Failure to rescue (FTR) is another well-examined quality of care outcome metric relating to the failure or delay in recognizing or responding to a hospital patient's deteriorating condition.[123] Of the patient outcomes addressed in the reviews considered, 11 reported on this outcome. Across the reviews, the link between nurse staffing levels and rates of FTR is well established, with all (n=11; 100%) reporting that higher nurse staffing is associated with a reduced incidence of this adverse outcome. One systematic review reported that lower proportions of nurses compared to patients are associated with higher rates of failure to rescue, although the evidence is not entirely consistent.[124] Several studies examining this association identified that higher education levels and a higher proportion of RNs in skill mix were a factor in lowering the odds of FTR.[95,105,109,114,122,125]

To summarize, the evidence illustrates that staffing levels and/or nurse-patient ratios have a notable impact on several patient outcomes. While the strength of evidence does vary, adequate nurse staffing is a key component that shapes health care delivery and ensures that patients are afforded high-quality care.

## D. Effect of nurse staffing on nurse outcomes

While staffing levels and their corresponding impact on patient outcomes have long been a focus in the literature, the relationship between nurse-patient ratios and nurse outcomes has increasingly been an area of interest. A number of adverse nurse outcomes were identified in the literature reviews, including level of job satisfaction, burnout, intention to leave, nurse turnover, work environment, needlestick and sharps injuries, job stress, fatigue, workload, work engagement and collaboration (see Table 3b). All of the reviews described the harmful effects that lower staffing levels have on outcomes experienced by nurses. An overview of the findings from the literature reviews on the four most commonly explored nurse outcomes – job satisfaction, burnout, intention to leave and nurse turnover – is described below.

**JOB SATISFACTION.** Job satisfaction among nurses is an indicator of their happiness and degree to which they experience a positive emotional state about their job.[126] It also has greater implications for nurses' work as it can impact engagement, performance and ultimately contribute to better patient outcomes.[127] Across the reviews considered, 20 (91%) reported on this variable: 11 addressed job dissatisfaction, while nine described job satisfaction. Of these studies, the majority (n=18; 90%) found that increased nurse staffing is associated with improved nursing job satisfaction. Mixed findings were reported in two of the included research reviews. One described

mixed findings in the relationship between nurse staffing and job dissatisfaction in ICUs, with some studies in the review reporting a negative impact on nurse outcomes in the context of inadequate nurse staffing, although not all studies found significant relationships[93]. Mixed findings were also evident in work examining the impact of mandated acute care hospital staffing ratios where findings differed regarding the impact of ratios on job satisfaction.[99] Overall, across the reviews, higher job satisfaction was found to be associated with higher nurse staffing levels, supporting the need to ensure adequate staffing.

**BURNOUT.** Burnout is frequently cited as a nurse outcome that is consistently associated with staffing levels and nurse-patient ratios. Burnout, a widespread phenomenon impacting nurses and a detrimental outcome for the nursing workforce, was examined in 17 (77%) of the literature reviews. Overall, the findings from the literature highlight that increased staffing results in reduced levels of nurse burnout (n=16; 94%). One literature review considered the effect of nurse staffing on nurse workforce outcomes in acute care settings within low- and middle-income countries and found that higher workload is associated with higher levels of burnout[118], while another described that a strong relationship exists between long work hours and adverse nurse outcomes such as burnout, across the literature synthesized in their review[128]. Heavy workload and high nurse-patient ratios were also factors in one review wherein inadequate staffing levels were associated with emotional exhaustion, a core component of burnout.[124] Meanwhile, another systematic review examining nurse staffing levels in ICUs, reported an inconclusive relationship between staffing levels and nurse outcomes, including burnout.[93]

**INTENTION TO LEAVE.** Intention to leave is a process characterized by an individual nurses' thoughts and plans to leave their organization.[129] It is synonymous with turnover intention and a reliable predictor of actual turnover and resignation. Ten (45%) of the literature reviews addressed intention to leave, with six (60%) of those reporting that higher nurse workload and increased proportions of patients compared to nurses are associated with higher levels of intent to leave. This was outlined in a number of systematic reviews, including one identifying that reduced critical care nurse staffing is associated with increased intention to leave the nursing profession.[130] Similarly, a meta-analysis review reported that higher proportions of patients compared to nurses were associated with increased intent to leave.[117] This finding mirrored the report from another review describing that nearly all studies found a significant association between higher nurse-patient ratios and adverse nurse outcomes.[131] Meanwhile, another found that nurses working in an environment with adequate staffing perceive their practice environment more favorably and are more likely to stay in their positions.[110] The other four literature reviews did not identify a significant relationship between nurse staffing and intention to leave, with one noting mixed findings regarding the relationship between nurse staffing and intent to leave[93], and another reporting post mandated ratio increases in anticipated turnover[99]. Higher nurse staffing levels were generally associated with better nurse outcomes, although the evidence was less clear for other nurse outcomes such as intention to leave.[105] More recently, no statistically significant association between intention to leave and nurse staffing levels was found in a review of the evidence of nurse staffing levels and nurses' outcomes in acute care hospitals across Japan.[132]

**NURSE TURNOVER.** Nurse turnover is noted to having varying definitions, however, relates to a nurse leaving their job or organization and may be voluntary or involuntary.[133] Turnover can pose considerable threats or disturbances to a health care organization. This outcome was addressed in

eight (36%) of the reviews and was noted to yield consistent findings across all included research syntheses. Most reviews (n=7; 88%) reported that increased nurse staffing is associated with lower nurse turnover. In a critical care context, having fewer nursing staff was reported to result in increased workload and, in turn, higher turnover rates.[102] Also noteworthy, low levels of RNs on duty was associated with an increased likelihood of missed care, which can lead to increased turnover rates.[134] A review on the impact of California's mandated ratios reported that increased nurse staffing levels resulted in potentially reduced turnover.[135] Findings from another literature review were mixed with differing findings regarding turnover rates post-ratio implementation.[99] Overall, the connection between staffing levels and turnover is evident.

# Summary

The evidence illustrates that staffing levels have a significant impact on the welfare of nurses and that optimal nurse staffing cultivates a workforce that is equipped to provide high-quality care. The findings of this umbrella literature review shed light on the current state of the evidence involving nurse staffing levels. A total of 48 published literature reviews were included in this analysis exploring the associations between levels of nurse staffing and patient (n=42) and nurse (n=21) outcomes. This highlights the continuum of research in this field and ongoing advancement of research aimed at enhancing our understanding of the complexities inherent in this area of study. Several of the reviews identified that higher levels of nurse staffing are associated with better patient outcomes (n=34; 77%) and better nurse outcomes (n=20, 90%). At the same time, a number reported inconsistent or limited findings.

Forty-two of the 48 (88%) literature reviews addressed the relationship between nurse staffing levels and patient outcomes. Across these reviews, adequate nurse staffing levels are linked to positive patient outcomes in acute care hospital settings and in some specialty areas, including critical care, ICUs and pediatric settings. The range of patient outcomes covered by the evidence is large, exemplifying that research linking staffing levels to patient outcomes has been widespread. Patient outcomes most frequently identified in the reviews included mortality, hospital-acquired infections, the incidence of pressure injuries, length of stay and failure to rescue. It is noted that there is variability in the findings with respect to the extent that strong conclusions can be made. This review examined the most common patient outcomes reported in the included research reviews. Of all patient outcomes considered, mortality was noted to be addressed most frequently. It is an outcome measure that has been studied extensively in this body of work, including in several seminal studies in the 1990s. The findings of this review indicate that 87% of the included literature reviews identified a link between higher staffing levels and the rate of adverse patient outcomes. This is demonstrative of the importance of optimal nurse staffing and its impact in mitigating risks to patients. Among the other outcome measures examined, positive relationships between nurse staffing and hospital-acquired infections along with length of stay were reported in 75% and 80% of included research syntheses respectively.

The results of this rapid umbrella review underscore the link between staffing levels and select patient outcomes, although mixed findings were evident in several of the reviews. In some reviews, findings on the effect of nurse staffing on some outcome measures were inconsistent, whereas these associations were clear for others. For example, one review found that lower proportions of

nurses compared to patients and higher nurse workload were associated with higher rates of in-hospital mortality, HAIs and medication errors; ultimately, this connection was not established for the incidence of pressure ulcers and LOS.[118] Another review noted the consistent association between higher nurse staffing levels and lower mortality rates, while the evidence for other outcomes was mixed[116]. Additionally, n=11 (26%) reviews also concluded that there is evidence of a correlation between nursing experience, skill mix and positive patient outcomes[105,107,125,136] as reported in conjunction with findings regarding staffing levels. This highlights that, in tandem with staffing levels, other factors play a role in achieving optimal outcomes. One review reported that long work hours and overtime can have an impact on patient outcomes[128], while another identified that staffing alone is not sufficient, and that work environment and other factors are instrumental[131].

Twenty-two of the 48 (46%) reviews reported on the relationship between nurse staffing and nurse outcomes. These reviews shed light on the role of nursing outcomes as an important area of consideration in the ongoing dialogue regarding adequate staffing levels. Notably, there were considerably fewer research reviews pertaining to adverse nurse outcomes, highlighting that this has not been as strong a focus in this area of study. A broad range of nurse outcomes was reported, with the most common being job satisfaction, burnout, intention to leave and nurse turnover. Most of the literature reviews investigating nurse staffing levels and nurse outcomes reported that inadequate nurse staffing has negative implications for nurses (n=20; 90%). While some inconsistencies were evident across the reviews and outcomes reported on, the impetus for investigating this association is certainly validated. Mixed findings regarding the relationship between nurse staffing and adverse nurse outcomes were reflected in two reviews.[93,99] In another review, the evidence for the impact of nurse staffing on intention to leave was reported to be less clear compared to other adverse nurse outcomes.[105] Meanwhile, a literature review conducted in a Japanese context reported that a number of nurse outcomes, including intention to leave, were not significantly associated with nurse staffing levels.[132] It is notable that all four of the most frequently explored adverse nurse outcomes reported on illustrated the importance of adequate nurse staffing levels as 70% of the evidence for each showed a clear and consistent relationship exists. This is consistent with the literature showing these trends and associations. Of the four nurse outcomes addressed in this review, the association between nurse staffing levels and job satisfaction and burnout were notably strong; 90% and 94% of reviews respectively identified this positive link. It was found that the evidence for the relationship between intention to leave and turnover is less clear, suggesting that other characteristics may be associated with the results being reported. Across the literature reviews, less research has been done examining the effects of staffing on nurse-related outcomes compared to patient-related outcomes.

This rapid umbrella research review exposed a number of challenges that shape the interpretation and translation of findings. While the evidence largely supports the perception that adequate nurse staffing levels are imperative for the achievement of positive patient and nurse outcomes, the lack of measurement standardization is a challenge. Nurse staffing measurement encompasses a variety of techniques, each with its own set of methodologies, intended uses and inherent challenges. These methodological challenges stem from the multifactorial nature of health care, where nurse staffing is influenced by fluctuating patient acuities, nursing care intensities and the dynamic nature of health care delivery systems. Other seemingly complex elements underlying this research and the utility of nurse staffing metrics relate to the operational definitions and data sources that

underpin these measures. Many studies utilize aggregated hospital-level data rather than nursing unit-level data, with each carrying its own set of variables and potential challenges. Furthermore, discrepancies in definitions for patient and nurse outcomes is also a consideration. Navigating the landscape of nurse staffing measurement and the variability in definitions is necessary to account for when doing a comparative analysis.

Also noteworthy is that research findings from this body of evidence are often derived from cross-sectional studies. Correlational research yields valuable evidence and enhances our understanding about the complex relationships between variables, yet the inability to establish causal pathways for the associations between staffing and outcomes can be seen as a limitation. Ultimately, being unable to establish direct causal relationships is often a pitfall in terms of garnering widespread support for enacting policy change. A number of the reviews commented on the inability to establish a direct causal relationship and identified the need for more robust research designs moving forward.[94,100,109,116,118,125,136]

# Limitations

The aggregate findings of a rapid umbrella review are intended to provide a synopsis or summary of the state of the evidence regarding a given topic. As this is a review of reviews, the yield in terms of what is reported is limited to published reviews in this field of work. Systematic methods were used to identify the reviews included in this synthesis to ensure representativeness; yet there is a possibility that some reviews were not captured due to this extensive body of evidence and the search terms utilized. Another limitation relates to the heterogeneity of the reviews included in terms of settings, populations and nurse staffing metrics. This diversity complicates the task of drawing broad conclusions about optimal staffing levels and their direct impact on patient and nurse outcomes. For instance, variations in health care systems and labour regulations across different countries may affect the extrapolation of the results to other contexts. Another limitation is the focus on literature published in English, which excludes relevant studies conducted in other languages, that might offer additional insights into the global context of nurse staffing issues. This language restriction may skew the representation of data, particularly from non-English speaking regions where health care systems and nursing practices may differ significantly from those covered in the review.

# Conclusions

This rapid umbrella review provided a window into the current state of the evidence relating to nurse staffing levels and nurse-patient ratios. A structured review process was undertaken to provide a snapshot of the existing literature examining nurse staffing levels and the connection to patient and nurse outcomes. The evidence of the research syntheses highlighted the integral role staffing levels play in shaping outcomes for patients and nurses alike. While this body of evidence is primarily heterogeneous and the findings for some outcomes examined have been reported with frequency and demonstrate a greater strength of evidence, the linkage between adequate staffing levels yielding positive outcomes for patients and nurses is visible.

## Table 2. Literature reviews linking nurse staffing to nurse and patient outcomes (n=48)

| APA citation | Type of review | Key findings |
|---|---|---|
| Adynski, G.I., Sherwood, G., Ikharo, E., Tran, A., & Jones, C.B. (2022). Outpatient nurse staffing relationship with organizational, nurse and patient outcomes: A scoping review. *International Journal of Nursing Studies Advances*, *4*, 100064. https://doi.org/10.1016/j.ijnsa.2022.100064 | Scoping review | **IMPACT ON NURSE STAFFING**<br>Stronger nurse staffing is linked with better patient outcomes, lower costs and reduced nurse turnover. Better staffing helps improve nurses' attitudes towards their job and increases job satisfaction.<br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br>Increased nurse staffing is associated with lower nurse turnover, improved job satisfaction and reduced burnout.<br>**RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br>Increased nurse staffing is associated with better patient outcomes, lower costs and higher quality of care. Improved management of chronic diseases, higher patient satisfaction and reduced non-elective hospital admissions. One study noted that increased nurse staffing was associated with less patient engagement in psychotherapy. |
| Aragon Penoyer, D. (2010). Nurse staffing and patient outcomes in critical care: A concise review. *Critical Care Medicine*, *38*(7), 1521–1528. https://doi.org/10.1097/CCM.0b013e3181e47888 | Narrative review | **IMPACT ON NURSE STAFFING**<br>There is an association between nurse staffing in the intensive care unit (ICU) and patient outcomes, which aligns with findings from studies in the general acute care population.<br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br>Decreased nurse staffing can be associated with negative impacts on nurses themselves, such as increased workload leading to potential burnout and higher turnover rates.<br>**RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br>Adverse patient outcomes, such as infections, mortality, postoperative complications and unplanned extubations, are associated with lower nurse staffing levels. Higher staffing levels were shown to reduce the odds of nosocomial pneumonia and sepsis. Studies are observational, making it difficult to establish a direct causal relationship between nurse staffing levels and patient outcomes. |

Table 2. Literature reviews linking nurse staffing to nurse and patient outcomes (n=48)

| APA citation | Type of review | Key findings |
|---|---|---|
| Assaye, A.M., Wiechula, R., Schultz, T.J., & Feo, R. (2021). Impact of nurse staffing on patient and nurse workforce outcomes in acute care settings in low- and middle-income countries: A systematic review. *JBI Evidence Synthesis*, *19*(4), 751–793. https://doi.org/10.11124/JBISRIR-D-19-00426 | Systematic review | **IMPACT ON NURSE STAFFING**<br>Lower proportions of nurses compared to patients and higher nurse workload are linked to higher rates of in-hospital mortality, hospital-acquired infections and medication errors among patients, as well as higher levels of burnout, needlestick and sharps injuries, absenteeism and intention to leave their job among nurses.<br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br>Higher nurse workload is associated with higher levels of burnout, needlestick and sharps injuries, intent to leave and absenteeism among nurses. Extended work hours, less experience and working night or weekend shifts also significantly increased medication errors.<br>**RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br>Lower proportions of nurses compared to patients and higher nurse workload are associated with higher rates of in-hospital mortality, hospital-acquired infections and medication errors. Findings on the effect of nurse staffing on the length of hospital stay and the incidence of pressure ulcers were inconsistent. |
| Bae, S.-H., & Fabry, D. (2014). Assessing the relationships between nurse work hours/overtime and nurse and patient outcomes: Systematic literature review. *Nursing Outlook*, *62*(2), 138–156. https://doi.org/10.1016/j.outlook.2013.10.009 | Systematic review | **IMPACT ON NURSE STAFFING**<br>Nurse staffing is affected by work hours and overtime. Long work hours and mandatory overtime can lead to nurse fatigue, burnout and job dissatisfaction, which may result in higher turnover rates and staffing shortages. The use of 12-hour shifts and working more than 40 hours per week are common practices that can impact nurse staffing by contributing to physical and mental health issues among nurses, leading to absenteeism and reduced availability of staff.<br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br>Strong relationship between long work hours and adverse nurse outcomes such as musculoskeletal disorders, needlestick injuries, burnout, job dissatisfaction and fatigue. Insufficient breaks, voluntary overtime and mandatory overtime are also associated with negative nurse outcomes. |

Table 2. Literature reviews linking nurse staffing to nurse and patient outcomes (n=48)

| APA citation | Type of review | Key findings |
|---|---|---|
| | | **RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Long work hours and overtime can have an impact on patient outcomes. Working more than 40 hours per week and longer shift lengths were associated with an increase in medication errors, falls with injury, nosocomial infections and patient dissatisfaction. |
| Bae, S. (2021). Intensive care nurse staffing and nurse outcomes: A systematic review. *Nursing in Critical Care*, *26*(6), 457–466. https://doi.org/10.1111/nicc.12588 | Systematic review | **IMPACT ON NURSE STAFFING**<br><br>Limited and inconclusive evidence on the relationship between nurse staffing and nurse outcomes in intensive care units (ICUs).<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>There were mixed findings regarding the relationship between nurse staffing and adverse nurse outcomes such as burnout, job dissatisfaction, intent to leave, fatigue and stress. Some studies found a negative impact of worse nurse staffing on these outcomes, but not all studies found significant relationships.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Not directly addressed. |
| Bourgon Labelle, J., Audet, L.-A., Farand, P., & Rochefort, C.M. (2019). Are hospital nurse staffing practices associated with postoperative cardiac events and death? A systematic review. *PloS One*, *14*(10), e0223979–e0223979. https://doi.org/10.1371/journal.pone.0223979 | Systematic review | **IMPACT ON NURSE STAFFING**<br><br>Higher nurse staffing levels, a higher proportion of registered nurses with a baccalaureate degree and more supportive work environments are related to lower rates of both 30-day mortality and failure to rescue among surgical patients.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>Not directly addressed. |

Table 2. Literature reviews linking nurse staffing to nurse and patient outcomes (n=48)

| APA citation | Type of review | Key findings |
|---|---|---|
| | | **RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Better nurse staffing practices, specifically higher staffing levels, higher education levels among nurses and supportive work environments, are associated with lower rates of adverse patient outcomes such as mortality and failure to rescue. |
| Chin, H.L. (2013). The impact of nurse staffing on quality of patient care in acute care settings: an integrative review paper. *Singap Nurs J.*,40(4):10-23. No DOI available | Integrative review | **IMPACT ON NURSE STAFFING**<br><br>Nurse staffing is a major concern as it directly impacts patient safety and the quality of nursing care. Hospitals have attempted to reduce costs by decreasing nursing staffing levels and replacing qualified nursing staff with less expensive assistive staff. This raises concerns about the potential adverse effects on the quality of care in acute care hospitals.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>No directly addressed.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Higher nurse staffing levels and a higher proportion of RNs are associated with better quality of patient care. Specifically, increased nurse staffing levels and RN proportions are linked to lower rates of adverse patient outcomes, such as mortality, failure to rescue, infections and length of stay. |
| Currie, V., Harvey, G., West, E., McKenna, H., & Keeney, S. (2005). Relationship between quality of care, staffing levels, skill mix and nurse autonomy: literature review. *Journal of Advanced Nursing*, *51*(1), 73–82. https://doi.org/10.1097/00001786-200610000-00012 | Narrative review | **IMPACT ON NURSE STAFFING**<br><br>Nurse staffing levels, skill mix and nurse autonomy are interconnected and have a significant impact on the quality of care. Appropriate nurse staffing levels and skill mix can lead to better patient outcomes and improved job satisfaction among nurses.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>Lower levels of nursing staff are associated with higher rates of job dissatisfaction and burnout among nurses. |

Table 2. Literature reviews linking nurse staffing to nurse and patient outcomes (n=48)

| APA citation | Type of review | Key findings |
|---|---|---|
| | | **RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Clear association between higher levels of nurse staffing and better patient outcomes. Specifically, ratios of more nurses compared to patients are linked to lower rates of adverse events, such as hospital-acquired infections and pressure ulcers, as well as lower mortality rates and shorter lengths of hospital stay. |
| Dall'Ora, C., Saville, C., Rubbo, B., Turner, L., Jones, J., & Griffiths, P. (2022). Nurse staffing levels and patient outcomes: A systematic review of longitudinal studies. *International Journal of Nursing Studies*, *134*, 104311–104311. https://doi.org/10.1016/j.ijnurstu.2022.104311 | Systematic review of longitudinal studies | **IMPACT ON NURSE STAFFING**<br><br>Higher RN staffing levels are associated with preventing patient death. The causal relationship between low RN staffing and mortality is plausible, and longitudinal studies provide further support for this association.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>Not directly addressed.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Higher RN staffing levels are consistently associated with reduced mortality. The evidence for other patient outcomes, such as infections, pressure ulcers and length of stay, is more mixed. |
| Donaldson, N., & Shapiro, S. (2010). Impact of California Mandated Acute Care Hospital Nurse Staffing Ratios: A Literature Synthesis. *Policy, Politics & Nursing Practice*, *11*(3), 184–201. https://doi.org/10.1177/1527154410392240 | Narrative review | **IMPACT ON NURSE STAFFING**<br><br>The implementation of minimum nurse-patient ratios in California resulted in a reduction in the number of patients per licensed nurse and an increase in the number of worked nursing hours per patient day in hospitals. It was noted that there were no significant impacts of these improved staffing measures on measures of nursing quality and patient safety indicators across hospitals.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>The synthesis indicates mixed findings regarding nurse outcomes. |

Table 2. Literature reviews linking nurse staffing to nurse and patient outcomes (n=48)

| APA citation | Type of review | Key findings |
|---|---|---|
| | | **RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>No significant impacts of improved staffing measures on nursing-sensitive patient outcomes such as hospital-acquired pressure ulcers, falls and restraint prevalence. No reduction in the length of stay or significant effects on adverse event patient safety indicators. |
| Drennan, J., Murphy, A., McCarthy, V.J. C., Ball, J., Duffield, C., Crouch, R., Kelly, G., Loughnane, C., Hegarty, J., Brady, N., Scott, A., & Griffiths, P. (2024). The association between nurse staffing and quality of care in emergency departments: A systematic review. *International Journal of Nursing Studies*, 104706-. https://doi.org/10.1016/j.ijnurstu.2024.104706 | Systematic review | **IMPACT ON NURSE STAFFING**<br><br>Limited high-quality empirical evidence addressing the association between emergency department nurse staffing and patient outcomes. Lower levels of nurse staffing are associated with adverse events that can result in delays to the provision of care and serious outcomes for patients.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>Not directly addressed.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Lower levels of nurse staffing are associated with increased patient wait times, a higher proportion of patients who leave without being seen, an increased length of stay, an increase in time to medications and therapeutic interventions, and an increased risk of cardiac arrest within the emergency department. |
| Driscoll, A., Grant, M.J., Carroll, D., Dalton, S., Deaton, C., Jones, I., Lehwaldt, D., McKee, G., Munyombwe, T., & Astin, F. (2018). The effect of nurse-to-patient ratios on nurse-sensitive patient outcomes in acute specialist units: a systematic review and meta-analysis. *European Journal of Cardiovascular Nursing*, *17*(1), 6–22. https://doi.org/10.1177/1474515117721561 | Systematic review and meta-analysis | **IMPACT ON NURSE STAFFING**<br><br>Nurse-patient ratios influence many patient outcomes, most markedly in-hospital mortality. Higher staffing levels are associated with reduced mortality, medication errors, ulcers, restraint use, infections, pneumonia and higher aspirin use. A meta-analysis involving 175,755 patients from six studies showed that a higher nurse staffing level decreased the risk of in-hospital mortality by 14%.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>Not directly addressed. |

Table 2. Literature reviews linking nurse staffing to nurse and patient outcomes (n=48)

| APA citation | Type of review | Key findings |
|---|---|---|
| | | **RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Strong relationship between higher nurse staffing levels and improved patient outcomes. This includes reduced in-hospital mortality, lower incidence of medication errors, fewer cases of ulcers, reduced restraint use, and lower rates of infections and pneumonia. |
| Genna, C., Thekkan, K.R., Raymakers-Janssen, P.A.M.A., & Gawronski, O. (2023). Is nurse staffing associated with critical deterioration events on acute and critical care pediatric wards? A literature review. *European Journal of Pediatrics*, *182*(4), 1755–1770. https://doi.org/10.1007/s00431-022-04803-2 | Narrative review | **IMPACT ON NURSE STAFFING**<br><br>The association between nurse staffing and critical deterioration events in pediatric intensive care units (PICU) and neonatal intensive care units (NICU) is limited. There is no evidence reported for pediatric wards.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>Not directly addressed.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Decreased nursing staffing levels were associated with increased mortality in NICU and mechanically ventilated patients in PICU. Better-staffed units (with experienced nurses or a higher proportion of registered nurses) tend to have better patient outcomes, such as lower mortality rates. |
| Griffiths, P., Ball, J., Drennan, J., Dall'Ora, C., Jones, J., Maruotti, A., Pope, C., Recio Saucedo, A., & Simon, M. (2016). Nurse staffing and patient outcomes: Strengths and limitations of the evidence to inform policy and practice. A review and discussion paper based on evidence reviewed for the National Institute for Health and Care Excellence Safe Staffing guideline development. *International Journal of Nursing Studies*, 63, 213–225. https://doi.org/10.1016/j.ijnurstu.2016.03.012 | Systematic review – extension | **IMPACT ON NURSE STAFFING**<br><br>Low nurse staffing levels have been associated with adverse outcomes, including higher mortality rates. Increasing nurse staffing levels can potentially improve patient outcomes but may not always be cost-effective.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>Higher nurse staffing levels are generally associated with better nurse outcomes, including lower levels of burnout and higher job satisfaction. The evidence is less clear for the impact of nurse staffing on other nurse outcomes like turnover intentions. |

Table 2. Literature reviews linking nurse staffing to nurse and patient outcomes (n=48)

| APA citation | Type of review | Key findings |
|---|---|---|
| | | **RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>A significant body of evidence suggests that lower nurse staffing levels are associated with higher rates of adverse patient outcomes, including mortality, failure to rescue and hospital-acquired conditions like falls and pressure ulcers. Studies have shown that higher nurse staffing levels and a higher proportion of RNs in the skill mix are associated with better patient outcomes. The evidence supports a causal relationship between nurse staffing levels and patient outcomes, although the exact size of the effect and the cost-effectiveness of increasing staffing levels are still subjects of debate. |
| Griffiths, P., Recio-Saucedo, A., Dall'Ora, C., Briggs, J., Maruotti, A., Meredith, P., Smith, G.B., & Ball, J. (2018). The association between nurse staffing and omissions in nursing care: A systematic review. *Journal of Advanced Nursing*, *74*(7), 1474–1487. https://doi.org/10.1111/jan.13564 | Systematic review | **IMPACT ON NURSE STAFFING**<br><br>Low RN staffing is associated with reports of missed nursing care in hospitals. Missed care, also referred to as care left undone or implicitly rationed care, is proposed as a promising indicator of nurse staffing adequacy. 75% or more of nurses reported omitting some care, and low staffing levels were significantly associated with higher reports of missed care.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>Not directly addressed.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Missed nursing care, which is associated with low staffing levels, has been linked to adverse patient outcomes. |
| Griffiths, P., Saville, C., Ball, J., Jones, J., Pattison, N., & Monks, T. (2020). Nursing workload, nurse staffing methodologies and tools: A systematic scoping review and discussion. *International Journal of Nursing Studies*, *103*, 103487–11. https://doi.org/10.1016/j.ijnurstu.2019.103487 | Systematic scoping review | **IMPACT ON NURSE STAFFING**<br><br>There is no evidence to support the choice of any particular tool for determining nurse staffing or nurse-patient ratios.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>Not directly addressed. |

Table 2. Literature reviews linking nurse staffing to nurse and patient outcomes (n=48)

| APA citation | Type of review | Key findings |
|---|---|---|
| | | **RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Low nurse staffing is associated with omissions of essential nursing care, which is identified as a key mechanism leading to adverse patient outcomes. Higher RN staffing levels in hospitals are associated with better patient outcomes and improved care quality, including lower risks of in-hospital mortality, shorter lengths of stay and fewer omissions of necessary care. |
| Griffiths, P., Saville, C., Ball, J., Dall'Ora, C., Meredith, P., Turner, L., & Jones, J. (2023). Costs and cost-effectiveness of improved nurse staffing levels and skill mix in acute hospitals: A systematic review. *International Journal of Nursing Studies*, *147*, 104601–104601. https://doi.org/10.1016/j.ijnurstu.2023.104601 | Systematic review | **IMPACT ON NURSE STAFFING**<br><br>Increases in absolute or relative numbers of RNs in general medical and surgical wards have the potential to be highly cost-effective. Increasing the proportion of registered nurses is associated with improved outcomes and potentially reduced net costs.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>Not directly addressed.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Higher RN staffing levels and skill mix in acute hospitals are associated with improved care quality and patient outcomes, most notably reduced risk of death. Improved nurse staffing levels are linked to reduced complications, such as infections, and shorter lengths of stay. |
| Hill, B. (2017). Do nurse staffing levels affect patient mortality in acute secondary care? *British Journal of Nursing (Mark Allen Publishing)*, *26*(12), 698–704. https://doi.org/10.12968/bjon.2017.26.12.698 | Systematic review | **IMPACT ON NURSE STAFFING**<br><br>Nurse shortages continue to be a significant issue, especially in London, with vacancy rates around 17%. Factors contributing to this include pay freezes and potential effects of Brexit on the recruitment of European nurses. The shortage of nurses has led to the use of agency nurses to cover unfilled shifts and has raised concerns about the impact on patient care and safety.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>Inadequate nurse staffing levels are associated with negative nurse outcomes, including emotional exhaustion and job dissatisfaction. High workload and burnout are prevalent among nurses, especially those working in wards with heavy workloads and high nurse-patient ratios. |

Table 2. Literature reviews linking nurse staffing to nurse and patient outcomes (n=48)

| APA citation | Type of review | Key findings |
|---|---|---|
| | | **RELATIONSHIP BETWEEN NURSING STAFFING AND PATIENT OUTCOMES**<br><br>There is a direct relationship between reduced nurse staffing levels and adverse patient outcomes, including increased mortality rates. Studies cited in the article indicate that lower proportions of nurses compared to patients are associated with higher rates of failure to rescue, increased mortality and poor patient experiences, although the evidence is not entirely consistent. |
| Kane, R.L., Shamliyan, T.A., Mueller, C., Duval, S., & Wilt, T.J. (2007). The association of registered nurse staffing levels and patient outcomes: systematic review and meta-analysis. *Medical Care*, *45*(12), 1195–1204. https://doi.org/10.1097/MLR.0b013e3181468ca3 | Systematic review and meta-analysis | **IMPACT ON NURSE STAFFING**<br><br>Increased RN staffing is associated with lower odds of hospital-related mortality and adverse patient events. Studies with different designs show associations between increased RN staffing and lower odds of hospital-related mortality and adverse patient events.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>Not directly addressed.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Positive relationship between increased RN staffing and improved patient outcomes. Higher RN staffing is associated with lower odds of hospital-related mortality, hospital-acquired pneumonia, respiratory failure, unplanned extubation, cardiac arrest, failure to rescue, and shorter lengths of stay in ICUs and surgical patients. |
| Lang, T.A., Hodge, M., Olson, V., Romano, P.S., & Kravitz, R.L. (2004). Nurse-patient ratios: a systematic review on the effects of nurse staffing on patient, nurse employee and hospital outcomes. *The Journal of Nursing Administration*, *34*(7/8), 326–337. https://doi.org/10.1097/00005110-200407000-00005 | Systematic review | **IMPACT ON NURSE STAFFING**<br><br>No support for specific minimum nurse-patient ratios for acute care hospitals, especially in the absence of adjustments for skill and patient mix. Total nursing hours and skill mix do appear to affect some important patient outcomes.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>Not directly addressed. |

Table 2. Literature reviews linking nurse staffing to nurse and patient outcomes (n=48)

| APA citation | Type of review | Key findings |
|---|---|---|
| | | **RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Richer nurse staffing is associated with lower failure-to-rescue rates, lower inpatient mortality rates and shorter hospital stays. The evidence is mixed or inconclusive for outcomes such as pneumonia, urinary tract infections, pressure ulcers, patient falls and nosocomial infections. |
| Lankshear, A.J., Sheldon, T.A., & Maynard, A. (2005). Nurse staffing and healthcare outcomes: A systematic review of the international research evidence. *Advances in Nursing Science*, *28*(2), 163–174. https://doi.org/10.1097/00012272-200504000-00008 | Systematic review | **IMPACT ON NURSE STAFFING**<br><br>Higher nurse staffing levels and a richer skill mix (especially of RNs) are associated with improved patient outcomes. The exact effect size cannot be reliably estimated, and the association appears to show diminishing marginal returns. |
| | | **RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>Not directly addressed. |
| | | **RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Higher nurse staffing levels and a higher proportion of RNs are associated with better patient outcomes, including lower mortality rates, lower failure-to-rescue rates and fewer complications such as pneumonia, urinary tract infections, decubitus ulcers and medication errors. |
| Leary, A., & Punshon, G. (2019). Determining acute nurse staffing: a hermeneutic review of an evolving science. *BMJ Open*, *9*(3), e025654–e025654. https://doi.org/10.1136/bmjopen-2018-025654 | Hermeneutic review | **IMPACT ON NURSE STAFFING**<br><br>The relationship between staffing in acute care and factors such as units, safety or workload is complex. |
| | | **RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>Higher staffing levels are associated with better nurse outcomes, such as higher job satisfaction. Adequate staffing and resources, along with collaborative workplace relationships, improve patient safety, while factors such as low job satisfaction, staff turnover and high workload increase risk to patient safety. |

Table 2. Literature reviews linking nurse staffing to nurse and patient outcomes (n=48)

| APA citation | Type of review | Key findings |
|---|---|---|
| | | **RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Higher staffing levels are linked to reduced mortality, lower rates of hospital-acquired infections and improved quality of care. An increase in a nurse's workload by one patient increases the likelihood of an inpatient dying within 30 days of admission. |
| McGahan, M., Kucharski, G., & Coyer, F. (2012). Nurse staffing levels and the incidence of mortality and morbidity in the adult intensive care unit: A literature review. *Australian Critical Care*, *25*(2), 64–77. https://doi.org/10.1016/j.aucc.2012.03.003 | Narrative review | **IMPACT ON NURSE STAFFING**<br><br>Trend between increased nurse staffing levels and decreased adverse patient outcomes in the intensive care unit.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>Not directly addressed.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Trend between increased nurse staffing levels and decreased adverse patient outcomes such as mortality, infections and pressure ulcers in the intensive care unit, although a definitive statistical association was not established. |
| Morioka, N., Okubo, S., Moriwaki, M., & Hayashida, K. (2022). evidence of the association between nurse staffing levels and patient and nurses' outcomes in acute care hospitals across Japan: A scoping review. *Healthcare (Basel)*, *10*(6), 1052. https://doi.org/10.3390/healthcare10061052 | Scoping review | **IMPACT ON NURSE STAFFING**<br><br>Increased nursing staff favored positive patient outcomes.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>More nurse staffing was associated with better job satisfaction levels, work environment and ward morale. Work engagement, stressors at work, response to stress, intention to leave and decision to leave were not statistically significantly associated with nurse staffing levels.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>More nursing staff favored better outcomes in terms of failure to rescue, length of hospital stay, post-operative complications, in-hospital fractures, pressure ulcers and patient satisfaction. Readmission, hospitalization, |

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|---|---|---|
| | | in-hospital mortality, in-hospital pneumonia, physical restraint, and error and/or near miss did not result in a statistically significant association with nurse staffing levels. |
| Numata, Y., Schulzer, M., Van Der Wal, R., Globerman, J., Semeniuk, P., Balka, E., & FitzGerald, J.M. (2006). Nurse staffing levels and hospital mortality in critical care settings: literature review and meta-analysis. *Journal of Advanced Nursing*, *55*(4), 435–448. https://doi.org/10.1111/j.1365-2648.2006.03941.x | Narrative review | **IMPACT ON NURSE STAFFING**<br>The impact of nurse staffing levels on patients' hospital mortality in critical care settings was not evident in the reviewed studies.<br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br>Not directly addressed.<br>**RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br>Not enough evidence to support an independent association between nurse staffing levels and critically ill patient mortality during hospital stay. While the pooled unadjusted risk ratio indicated an inverse association (greater nurse staffing is associated with less mortality), this association was not found in eight of the nine studies with adjustment for other factors. |
| Olley, R., Edwards, I., Avery, M., & Cooper, H. (2019). Systematic review of the evidence related to mandated nurse staffing ratios in acute hospitals. *Australian Health Review*, *43*(3), 288–293. https://doi.org/10.1071/AH16252 | Systematic review | **IMPACT ON NURSE STAFFING**<br>Limited evidence to conclude that either supply and demand models of nurse staffing or staffing ratios method improves the management of risk or improves quality and safety in patient care.<br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br>Not directly addressed.<br>**RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br>Correlation between skill mix and positive patient outcomes. Increasing the nursing workload by one patient increases the likelihood of an inpatient dying within 30 days of admission by 7%, and for every 10% increase in |

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|---|---|---|
| | | the nursing workforce that has a bachelor's degree the likelihood of an inpatient dying within 30 days of admission decreases by 7%. |
| Pearson, A., Pallas, L.O., Thomson, D., Doucette, E., Tucker, D., Wiechula, R., Long, L., Porritt, K., & Jordan, Z. (2006). Systematic review of evidence on the impact of nursing workload and staffing on establishing healthy work environments. *International Journal of Evidence-Based Healthcare*, *4*(4), 337–384. https://doi.org/10.1111/j.1479-6988.2006.00055.x | Systematic review | **IMPACT ON NURSE STAFFING**<br><br>Appropriate nurse staffing and nurse-patient ratios are crucial for maintaining a healthy work environment, ensuring patient safety and improving patient outcomes. High nursing workload and inadequate staffing are associated with negative outcomes such as increased patient mortality, increased failure to rescue rates and a decline in the quality of care.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>Increased nurse-patient ratios are perceived negatively by nurses, leading to decreased job satisfaction and a greater intention to quit. Adequate staffing levels positively correlate with nurses' perceptions of their ability to cope with workload, job satisfaction and collaboration with other health care professionals.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Higher proportions of RN staffing and lower nurse-patient ratios are associated with improved patient outcomes, including reductions in UTIs, pneumonia, pressure ulcers and failure to rescue rates. |
| Rae, P.J.L., Pearce, S., Greaves, P.J., Dall'Ora, C., Griffiths, P., & Endacott, R. (2021). Outcomes sensitive to critical care nurse staffing levels: A systematic review. *Intensive & Critical Care Nursing*, *67*, 103110–103110. https://doi.org/10.1016/j.iccn.2021.103110 | Systematic review | **IMPACT ON NURSE STAFFING**<br><br>Higher levels of critical care nurse staffing are beneficial to patients, staff and health services. Significant associations between lower levels of critical care nurse staffing and increased odds of both patient mortality and nosocomial infection, increased hospital costs, lower nurse-perceived quality of care and lower family satisfaction.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>Reduced critical care nurse staffing is associated with increased rates of nurse burnout, job dissatisfaction and intention to leave the nursing profession. Higher nurse staffing levels are associated with increased nurse-perceived quality of care. |

Table 2. Literature reviews linking nurse staffing to nurse and patient outcomes (n=48)

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|---|---|---|
| | | **RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Reduced critical care nurse staffing is associated with increased rates of patient mortality and increased risks of nosocomial infection. There is also evidence of associations with reduced hospital costs and increased family satisfaction. |
| Recio-Saucedo, A., Dall'Ora, C., Maruotti, A., Ball, J., Briggs, J., Meredith, P., Redfern, O. C., Kovacs, C., Prytherch, D., Smith, G.B., & Griffiths, P. (2018). What impact does nursing care left undone have on patient outcomes? Review of the literature. *Journal of Clinical Nursing*, *27*(11–12), 2248–2259. https://doi.org/10.1111/jocn.14058 | Systematic review | **IMPACT ON NURSE STAFFING**<br><br>Issue of "missed nursing care", which refers to aspects of clinical, emotional or administrative nursing care that are partially completed, delayed or not completed at all. Missed nursing care can be an indicator of insufficient nurse staffing as it is often a result of nurses being unable to perform all necessary care activities due to time constraints or high workload.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>Lower levels of RNs on duty are associated with an increased likelihood of missed nursing care. This, in turn, can lead to adverse nurse outcomes such as job dissatisfaction, burnout and increased turnover rates. Inadequate nurse staffing can also lead to a poor work environment, which further exacerbates the problem of missed nursing care and negatively impacts nurse outcomes.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Missed nursing care, which is associated with inadequate nurse staffing, can have negative consequences for patient outcomes. These include an increased risk of medication errors, urinary tract infections, patient falls, pressure ulcers and even mortality. Missed nursing care can also lead to decreased patient satisfaction as patients may perceive the care they receive as incomplete or suboptimal. |
| Serratt, T. (2013). California's nurse-to-patient ratios, part 1: 8 years later, what do we know about nurse-level outcome? *The* | Literature review | **IMPACT ON NURSE STAFFING**<br><br>Increased levels of nurse staffing, as mandated by California's nurse-patient ratios, have resulted in greater job satisfaction among nurses. The regulation has generally had a positive influence on nurse level outcomes. |

Table 2. Literature reviews linking nurse staffing to nurse and patient outcomes (n=48)

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|---|---|---|
| *Journal of Nursing Administration*, *43*(9), 475–480. https://doi.org/10.1097/NNA.0b013e3182a23d6f | | **RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br>Increased nurse staffing levels leading to improved job satisfaction, reduced workload perceptions, and potentially reduced turnover and burnout. It was noted that there were mixed findings regarding control in decision-making due to the inflexibility of the mandated ratios.<br>**RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br>No directly addressed. |
| Serratt, T. (2013). California's nurse-to-patient ratios, part 2: 8 years later, what do we know about hospital level outcomes? *The Journal of Nursing Administration*, *43*(10), 549–553. https://doi.org/10.1097/NNA.0b013e3182a3e906 | Systematic review and meta-analysis | **IMPACT ON NURSE STAFFING**<br>Implementing staffing ratios had a negative financial impact on selected outcomes of California hospitals. Labor costs increased, and some reductions in services were made after the implementation of staffing ratios.<br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br>Not directly addressed.<br>**RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br>Not directly addressed. |
| Serratt, T. (2013). California's nurse-to-patient ratios, part 3: eight years later, what do we know about patient level outcomes? *The Journal of Nursing Administration*, *43*(11), 581–585. https://doi.org/10.1097/01.NNA.0000434505.69428.eb | Literature review | **IMPACT ON NURSE STAFFING**<br>The impact of California's mandated nurse-patient ratios on patient-level outcomes is mixed. While some improvements have resulted from the implementation of staffing ratios, the positive effects have not been as significant and widespread as predicted.<br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br>Not directly addressed. |

Table 2. Literature reviews linking nurse staffing to nurse and patient outcomes (n=48)

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|---|---|---|
| | | **RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Inconclusive – some studies found improvements in certain patient outcomes such as a decrease in time to antibiotics for pneumonia patients and a reduction in failure to rescue rates in hospitals with initially low staffing levels. Other studies found no significant changes in patient outcomes such as fall rates, pressure ulcer prevalence and medication error rates. |
| Shekelle, P.G. (2013). Nurse-patient ratios as a patient safety strategy: A systematic review. *Annals of Internal Medicine*, *158*(5), 404–409. https://doi.org/10.7326/0003-4819-158-5-201303051-00007 | Literature review | **IMPACT ON NURSE STAFFING**<br><br>There is a consistent relationship between higher nurse staffing levels and decreased inpatient mortality. |
| | | **RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>Higher nurse staffing levels are associated with better nurse outcomes, such as reduced burnout and job dissatisfaction. Higher staffing levels are also linked to a better working environment for nurses. |
| | | **RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Higher nurse staffing levels, or lower proportions of patients compared to nurses, are consistently associated with lower hospital-related mortality. Increased nurse staffing can lead to reductions in other adverse patient outcomes, such as hospital-acquired infections and failure to rescue. |
| Sherenian, M., Profit, J., Schmidt, B., Suh, S., Xiao, R., Zupancic, J.A.F., & DeMauro, S.B. (2013). Nurse-to-patient ratios and neonatal outcomes: a brief systematic review. *Neonatology (Basel, Switzerland)*, *104*(3), 179–183. https://doi.org/10.1159/000353458 | Systematic review | **IMPACT ON NURSE STAFFING**<br><br>Nurse-patient ratios appear to affect outcomes of neonatal intensive care. However, limitations in the existing literature prevent clear conclusions about optimal staffing strategies. |
| | | **RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>Not directly addressed. |

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|---|---|---|
| | | **RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Lower proportions of nurses compared to patients were associated with higher mortality in three studies and with lower mortality in one study. The relationship between nurse staffing or nurse-patient ratios and patient outcomes, such as mortality, intraventricular hemorrhage, daily weight gain, days on assisted ventilation, days on oxygen and nosocomial infection, appears to be complex and not entirely clear based on the available data. |
| Shin, S., Park, J.-H., & Bae, S.-H. (2018). Nurse staffing and nurse outcomes: A systematic review and meta-analysis. *Nursing Outlook*, *66*(3), 273–282. https://doi.org/10.1016/j.outlook.2017.12.002 | Systematic review and meta-analysis | **IMPACT ON NURSE STAFFING**<br><br>Greater nurse-patient ratios are consistently associated with higher degrees of burnout among nurses, increased job dissatisfaction and higher intent to leave the job.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>Positive relationship between higher nurse-patient ratios and negative nurse outcomes. Specifically, higher proportions of patients compared to nurses were associated with increased burnout, job dissatisfaction and intent to leave among nurses.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Not directly addressed. |
| Shin, S., Park, J., & Bae, S. (2019). Nurse staffing and hospital-acquired conditions: A systematic review. *Journal of Clinical Nursing*, *28*(23–24), 4264–4275. https://doi.org/10.1111/jocn.15046 | Systematic review | **IMPACT ON NURSE STAFFING**<br><br>Negative relationships between nurse staffing levels and hospital-acquired conditions. It was noted that a substantial number of relationships were not significant.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>Not directly addressed. |

Table 2. Literature reviews linking nurse staffing to nurse and patient outcomes (n=48)

| APA citation | Type of review | Key findings |
|---|---|---|
| | | **RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Better nurse staffing levels were associated with improved patient outcomes, including fewer hospital-acquired conditions such as pressure injuries, falls and infections, although the relationship was not consistently significant across all studies. |
| Shimp, K.M. (2017). Systematic review of turnover/retention and staff perception of staffing and resource adequacy related to staffing. *Nursing Economic*, *35*(5), 239-266A. https://librarysearch.library.utoronto.ca/permalink/01UTORONTO_INST/fedca1/cdi_proquest_journals_1954857855 | Systematic review | **IMPACT ON NURSE STAFFING**<br><br>Optimal nurse-patient staffing ratios are a national challenge and have a significant impact on patient outcomes, nurse outcomes and overall health care quality. Adequate staffing levels are associated with reduced medical and medication errors, decreased patient complications, decreased mortality, improved patient satisfaction, reduced nurse fatigue, decreased nurse burnout, and improved nurse retention and job satisfaction.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>Better staffing levels are associated with improved nurse satisfaction, reduced nurse fatigue, decreased burnout, and improved retention and job satisfaction. Nurses working in environments with adequate staffing and resources perceive their practice environment more favorably and are more likely to stay in their positions.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Higher levels of experienced RN staffing are associated with lower rates of adverse patient outcomes, including mortality. |
| Stalpers, D., de Brouwer, B.J.M., Kaljouw, M.J., & Schuurmans, M.J. (2015). Associations between characteristics of the nurse work environment and five nurse-sensitive patient outcomes in hospitals: A systematic review of literature. *International Journal of Nursing Studies*, *52*(4), 817–835. https://doi.org/10.1016/j.ijnurstu.2015.01.005 | Systematic review | **IMPACT ON NURSE STAFFING**<br><br>Characteristics of the nurse work environment, including nurse staffing, play a crucial role in determining the quality of care and patient outcomes in hospitals.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>Not directly addressed. |

Table 2. Literature reviews linking nurse staffing to nurse and patient outcomes (n=48)

| APA citation | Type of review | Key findings |
|---|---|---|
| | | **RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Nurse staffing is inversely related to patient falls; more favorable staffing hours are associated with fewer fall incidents. Meanwhile, the results for nurse staffing in relation to pressure ulcers are mixed. Higher levels of nurse education are related to fewer patient falls. |
| Thungjaroenkul, P., Cummings, G.G., & Embleton, A. (2007). The impact of nurse staffing on hospital costs and patient length of stay: A systematic review. *Nursing Economic*, *25*(5), 255–265. https://librarysearch.library.utoronto.ca/permalink/01UTORONTO_INST/fedca1/cdi_proquest_miscellaneous_69064813 | Systematic review | **IMPACT ON NURSE STAFFING**<br><br>A higher proportion of nursing personnel, particularly RNs, in hospital settings may lead to significant reductions in hospital costs and patient length of stay (LOS). The lack of coherence in definitions and measurement tools for cost and LOS was reported, making it difficult to conclude with certainty the results of nurse staffing on these outcomes.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>Not directly addressed.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>A higher proportion of RNs compared to patients is associated with reduced hospital LOS and costs. Adequate RN staffing is more effective in preventing adverse events such as nosocomial infections and pressure sores than other nursing staff, leading to better patient outcomes. |
| Twigg, D.E., Myers, H., Duffield, C., Giles, M., & Evans, G. (2015). Is there an economic case for investing in nursing care – what does the literature tell us? *Journal of Advanced Nursing*, *71*(5), 975–990. https://doi.org/10.1111/jan.12577 | Systematic review | **IMPACT ON NURSE STAFFING**<br><br>Adequate nurse staffing is necessary to promote patient safety, prevent adverse outcomes and support the well-being of nurses.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>Nurse staffing levels and skill mix are associated with nurse outcomes such as burnout and job dissatisfaction. Adequate staffing levels can reduce nurse burnout and job dissatisfaction, which in turn can positively impact the retention of nursing staff and overall nursing workforce stability. |

Table 2. Literature reviews linking nurse staffing to nurse and patient outcomes (n=48)

| APA citation | Type of review | Key findings |
|---|---|---|
| | | **RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Higher nurse staffing levels and a richer skill mix are linked to better patient outcomes, including lower mortality rates, fewer adverse events (such as infections, pressure ulcers and falls) and shorter hospital stays. |
| Twigg, D.E., Whitehead, L., Doleman, G., & El-Zaemey, S. (2021). The impact of nurse staffing methodologies on nurse and patient outcomes: A systematic review. *Journal of Advanced Nursing*, *77*(12), 4599–4611. https://doi.org/10.1111/jan.14909 | Systematic review | **IMPACT ON NURSE STAFFING**<br><br>Evidence on the impact of specific nurse staffing methodologies on patient and nurse outcomes remains highly limited. |
| | | **RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>Mandated minimum nurse-patient ratios were associated with an improvement in nurse outcomes, such as job satisfaction, reduced occupational injuries and illnesses and better work environment perceptions. |
| | | **RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Inconclusive – some studies reported improvements in certain patient outcomes like wait times in emergency departments, detection of secondary conditions and reduced standardized mortality ratios in pediatric cardiac surgery. Meanwhile, other studies found no significant changes in patient outcomes such as falls, pressure sores and hospital-acquired infections following the implementation of mandated ratios. |
| Unruh, L. (2008). Nurse staffing and patient, nurse and financial outcomes. *American Journal of Nursing*, *108*(1), 62–71. https://doi.org/10.1097/01.NAJ.0000305132.33841.92 | Narrative review | **IMPACT ON NURSE STAFFING**<br><br>Adequate staffing and balanced workloads are central to achieving good outcomes. Inadequate staffing and excessive workloads contribute to a difficult work environment, poor job performance, employee distress and increased health care costs. |
| | | **RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>Lower nurse staffing levels and greater workloads are associated with emotional exhaustion, job dissatisfaction, burnout, stress, injury or illness, absenteeism and turnover among nurses. |

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| APA citation | Type of review | Key findings |
|---|---|---|
| | | **RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Higher nurse staffing levels are linked to lower death rates, shorter hospitalizations and reduced incidence of adverse events such as nosocomial infections, pressure ulcers and failure to rescue. |
| Weinstein, R.A., Stone, P.W., Pogorzelska, M., Kunches, L., & Hirschhorn, L.R. (2008). Hospital staffing and health care-associated infections: a systematic review of the literature. *Clinical Infectious Diseases*, *47*(7), 937–944. https://doi.org/10.1086/591696 | Systematic review | **IMPACT ON NURSE STAFFING**<br><br>Statistically significant association between nurse staffing levels and HAI rates – higher levels of nurse staffing were generally associated with lower rates of HAIs.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>Not directly addressed.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Significant relationship between nurse staffing levels and patient outcomes, particularly HAIs. Higher nurse staffing levels or better nurse-patient ratios are associated with lower rates of HAIs. |
| West, E., Mays, N., Rafferty, A.M., Rowan, K., & Sanderson, C. (2009). Nursing resources and patient outcomes in intensive care: A systematic review of the literature. *International Journal of Nursing Studies*, *46*(7), 993–1011. https://doi.org/10.1016/j.ijnurstu.2007.07.011 | Systematic review | **IMPACT ON NURSE STAFFING**<br><br>Some evidence linking nursing resources, such as nurse-patient ratios, to patient outcomes in intensive care settings. However, the evidence is not conclusive.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br><br>Not directly addressed.<br><br>**RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br><br>Mixed results regarding the relationship between nurse staffing ratios and patient outcomes. Some studies reported a significant relationship between higher proportions of nurses compared to patients and improved |

Table 2. Literature reviews linking nurse staffing to nurse and patient outcomes (n=48)

| APA citation | Type of review | Key findings |
|---|---|---|
| | | patient outcomes, such as lower mortality rates and fewer adverse events. Other studies did not find a significant association. |
| Wilson, S., Bremner, A., Hauck, Y., & Finn, J. (2011). The effect of nurse staffing on clinical outcomes of children in hospital: a systematic review. *International Journal of Evidence-Based Healthcare*, *9*(2), 97–121. https://doi.org/10.1111/j.1744-1609.2011.00209.x | Systematic review | **IMPACT ON NURSE STAFFING**<br>Increased RN nursing hours per patient day were associated with decreases in several adverse events.<br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br>Not directly addressed.<br>**RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br>Higher RN staffing levels and a higher RN skill mix contributed positively to children's clinical outcomes in hospitals. Increased RN staffing was associated with decreases in health care-associated infections, postoperative complications and other adverse events. |
| Wynendaele, H., Willems, R., & Trybou, J. (2019). Systematic review: Association between the nurse-patient ratio and nurse outcomes in acute care hospitals. *Journal of Nursing Management*, *27*(5), 896–917. https://doi.org/10.1111/jonm.12764 | Systematic review | **IMPACT ON NURSE STAFFING**<br>Apart from the nurse-patient ratio, other variables must be considered to ensure quality of care, such as skill mix, work environment and patient acuity.<br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br>Higher proportion of patients compared to nurses is associated with adverse nurse outcomes, including job dissatisfaction, emotional exhaustion and intent to leave the profession. Nearly all studies found a significant association between higher proportion of patients compared to nurses and such adverse outcomes, emphasizing the importance of adequate staffing levels for nurse satisfaction and retention.<br>**RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br>Better staffing levels are positively associated with higher quality of care and patient safety perceptions. Staffing alone is not sufficient to ensure high-quality care; the work environment and other factors play critical roles. |

Table 2. Literature reviews linking nurse staffing to nurse and patient outcomes (n=48)

| APA citation | Type of review | Key findings |
|---|---|---|
| | | |
| Blume, K.S., Dietermann, K., Kirchner-Heklau, U., Winter, V., Fleischer, S., Kreidl, L.M., Meyer, G., & Schreyögg, J. (2021). Staffing levels and nursing-sensitive patient outcomes: Umbrella review and qualitative study. *Health Services Research*, *56*(5), 885–907. https://doi.org/10.1111/1475-6773.13647 | Umbrella review | **IMPACT ON NURSE STAFFING**<br>Strong evidence for a significant association between nurse staffing levels and nursing-sensitive patient outcomes (NSPOs).<br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br>Not directly addressed.<br>**RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br>Significant association between nurse staffing levels and various NSPOs. Specifically, four NSPOs (length of stay, patient dissatisfaction, poor quality of nurse-delivered care and readmission) were identified with high strength of evidence, and five NSPOs (failure to rescue, medication error, mortality, pneumonia and respiratory failure) were identified with moderate strength of evidence. |
| Imam, A., Obiesie, S., Aluvaala, J., Maina, J.M., Gathara, D., & English, M. (2022). Identifying gaps in global evidence for nurse staffing and patient care outcomes research in low-/middle-income countries: an umbrella review. *BMJ Open*, *12*(10), e064050–e064050. https://doi.org/10.1136/bmjopen-2022-064050 | Umbrella review | **IMPACT ON NURSE STAFFING**<br>There is a limited amount of data available for nurse staffing and patient care outcomes in LMICs. The evidence from high-income countries (HICs) might not be good proxies for LMICs, as staffing levels in HICs are comparatively better than those in LMICs.<br>**RELATIONSHIP BETWEEN NURSE STAFFING AND NURSE OUTCOMES**<br>Not directly addressed.<br>**RELATIONSHIP BETWEEN NURSE STAFFING AND PATIENT OUTCOMES**<br>In HICs, poorer ward nurse staffing is associated with negative patient care outcomes, such as increased risk of patient mortality, prolonged hospital stay and an increased risk of hospital-acquired complications. It was reported that there is very limited data from LMICs to draw definitive conclusions about this relationship in those contexts. |

## Table 3a. Patient outcomes associated with nurse staffing in literature reviews

PATIENT OUTCOME MEASURES

| Literature review | Mortality | Failure to rescue | Cardiac events | Infections | Medication safety | Postoperative outcome | Falls | Pressure injuries | Patient satisfaction | Quality of care | Safety incidents | Length of stay | Hospital readmission | Hospital costs | Treatment timeliness | Respiratory outcomes | Restraint use |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Adynski et al., 2022 | | | | | | | | | √ | √ | | | √ | √ | | | |
| Aragon Penoyer, 2010 | √ | | | √ | | √ | | | | | | | | | | √ | |
| Assaye et al., 2021 | √ | | | √ | √ | | | √ | | | | | | | | | |
| Bae & Fabry, 2014 | | | | √ | √ | | √ | | √ | | | | | | | | |
| Blume et al., 2021 | √ | √ | | | √ | | | | √ | √ | | √ | √ | | | √ | |
| Bourgon Labelle et al., 2019 | √ | √ | | | | | | | | | | | | | | | |
| Chin, 2013 | √ | √ | | √ | | | | | | | | √ | | | | | |
| Currie et al., 2005 | √ | | | √ | | | | √ | | | | √ | | | | | |
| Dall'Ora et al., 2022 | v | | | √ | | | | √ | | | | √ | | | | | |
| Donaldson, 2010 | | | | | | | √ | √ | | | | √ | | | | | √ |
| Drennan et al., 2024 | | | √ | | | | | | | | | √ | | | √ | | |
| Driscoll et al., 2028 | √ | | | √ | √ | | | √ | | | | | | | | √ | √ |
| Genna et al., 2023 | √ | | | | | | | | | | | | | | | | |
| Griffiths et al., 2016 | √ | √ | | | | | √ | √ | | | | | | | | | |
| Griffiths et al., 2020 | √ | | | | | | | | | √ | | √ | | | | | |

Table 3a. Patient outcomes associated with nurse staffing in literature reviews

| Literature review | Mortality | Failure to rescue | Cardiac events | Infections | Medication safety | Postoperative outcome | Falls | Pressure injuries | Patient satisfaction | Quality of care | Safety incidents | Length of stay | Hospital readmission | Hospital costs | Treatment timeliness | Respiratory outcomes | Restraint use |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Griffiths et al., 2023 | √ | | | √ | | | | | | | | √ | | | | | |
| Hill, 2017 | √ | √ | | | | | | | √ | | | | | | | | |
| Imam et al., 2022 | √ | | | | | | | | | | | √ | | | | | |
| Kane, 2007 | √ | √ | √ | | | | | | | | | √ | | | | √ | |
| Lang et al., 2004 | √ | √ | | √ | | | √ | √ | | | | √ | | | | √ | |
| Lankshear, 2005 | √ | √ | | √ | √ | | | √ | | | | | | | | √ | |
| Leary & Punshon, 2019 | √ | | | √ | | | | | | √ | | | | | | | |
| McGahan et al., 2012 | √ | | | √ | | | | √ | | | | | | | | | |
| Morioka et al., 2022 | √ | | | | | | | √ | √ | | √ | √ | √ | | | √ | √ |
| Numata et al., 2006) | √ | | | | | | | | | | | | | | | | |
| Olley et al., 2019 | √ | | | | | | | | | | | | | | | | |
| Pearson et al., 2006 | | √ | | √ | | | | √ | | | | | | | | √ | |
| Rae et al., 2021 | √ | | | √ | | | | | √ | | | | | √ | | | |
| Recio-Saucedo et al., 2018 | √ | | | √ | √ | | √ | √ | √ | | | | | | | | |
| Shekelle, 2013 | √ | √ | | √ | | | | | | | | | | | | | |
| Sherenian et al., 2013 | √ | | √ | √ | | | | | | | | | | | | √ | |
| Shin et al., 2019 | | | | √ | | | √ | √ | | | | | | | | | |

Table 3a. Patient outcomes associated with nurse staffing in literature reviews

| Literature review | Mortality | Failure to rescue | Cardiac events | Infections | Medication safety | Postoperative outcome | Falls | Pressure injuries | Patient satisfaction | Quality of care | Safety incidents | Length of stay | Hospital readmission | Hospital costs | Treatment timeliness | Respiratory outcomes | Restraint use |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Shrimp, 2017 | √ | | | | | | | | | | | | | | | | |
| Stalpers et al., 2015 | | | | | | | √ | √ | | | | | | | | | |
| Thugjaroenkul et al., 2007 | | | | √ | | | | √ | | | | √ | | √ | | | |
| Twigg et al., 2015 | √ | | | √ | | | √ | √ | | | | | | | | | |
| Twigg et al., 2021 | √ | | | √ | | | √ | √ | | | | | | | √ | | |
| Unruh, 2008 | √ | √ | | √ | | | | √ | | | | √ | | | | | |
| Weinstein et al., 2008 | | | | √ | | | | | | | | | | | | | |
| West et al., 2009 | √ | | | | | | | | | | | | | | | | |
| Wilson et al., 2011 | | | | √ | | √ | | | | | | | | | | | |
| Wynendaele et al., 2019 | | | | | | | | | | √ | √ | | | | | | |
| Totals | 31 | 11 | 3 | 24 | 6 | 2 | 9 | 18 | 7 | 5 | 2 | 14 | 3 | 3 | 2 | 9 | 3 |

## Table 3b. Nurse outcomes associated with nurse staffing in literature reviews

| | NURSE OUTCOMES MEASURED | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Literature review | Job satisfaction | Nurse turnover | Burnout | Workload | Needlestick and sharps injuries | Absenteeism | Intention to leave | Emotional exhaustion | Musculoskeletal disorders | Fatigue | Stress | Missed nursing care | Occupational injuries/illnesses | Work environment perceptions |
| Adynski et al., 2022 | √ | √ | √ | | | | | | | | | | | |
| Aragon Penoyer, 2010 | | √ | √ | √ | | | | | | | | | | |
| Assaye et al., 2021 | | | √ | | √ | √ | √ | | | | | | | |
| Bae & Fabry, 2014 | √ | | √ | | √ | | | | √ | √ | | | | |
| Bae, 2021 | √ | | √ | | | | √ | | | √ | √ | | | |
| Currie et al., 2005 | √ | | √ | | | | | | | | | | | |
| Donaldson, 2010 | √ | | | | | | √ | | | | | | | |
| Griffiths et al., 2016 | √ | | √ | | | | √ | | | | | | | |
| Hill, 2017 | √ | | √ | √ | | | | √ | | | | | | |
| Leary & Punshon, 2019 | √ | √ | | √ | | | | | | | | | | |
| Morioka et al., 2022 | √ | √ | | | | | √ | | | | √ | | | √ |

Table 3b. Nurse outcomes associated with nurse staffing in literature reviews

| Literature review | Job satisfaction | Nurse turnover | Burnout | Workload | Needlestick and sharps injuries | Absenteeism | Intention to leave | Emotional exhaustion | Musculoskeletal disorders | Fatigue | Stress | Missed nursing care | Occupational injuries/illnesses | Work environment perceptions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pearson et al., 2006 | √ | | | √ | | | √ | | | | | | | |
| Rae et al., 2021 | √ | | √ | | | | √ | | | | | | | |
| Recio-Saucedo et al., 2018 | √ | √ | √ | | | | | | | | | √ | | √ |
| Serratt, 2013 | √ | √ | √ | √ | | | | | | | | | | |
| Shekelle, 2013 | √ | | √ | | | | | | | | | | | √ |
| Shin et al., 2018 | √ | | √ | | | | √ | | | | | | | |
| Shrimp, 2017 | √ | √ | √ | | | | √ | | | √ | | | | |
| Twigg et al., 2015 | √ | | √ | | | | | | | | | | | |
| Twigg et al., 2021 | √ | | | | | | | | | | | | √ | √ |
| Unruh, 2008 | √ | √ | √ | | | √ | | √ | | | √ | | √ | |
| Wynendaele et al., 2019 | √ | | √ | | | | √ | √ | | | | | | |
| Totals | 20 | 8 | 17 | 5 | 2 | 2 | 10 | 3 | 1 | 3 | 3 | 1 | 2 | 4 |

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# 4.0 Future Considerations

Nurse staffing levels have long been recognized as a critical factor in shaping both patient outcomes and nurse retention. Research on nurse staffing and nurse-patient ratios has spanned multiple decades, illustrating that this body of knowledge has evolved in response to a complex interplay of factors. There has been marked growth of evidence identified in response to early concerns about nurse staffing that were prominent when research was first initiated in the late 1990s and that laid the groundwork for work in this field. With the growth of this body of knowledge, findings and implications have largely remained consistent, informing policy response leading to the implementation of initiatives worldwide that have fostered efforts to achieve safe nurse staffing. The evidence paints a convincing picture of how important adequate staffing levels are to preventing adverse outcomes for nurses and patients alike. Whilst the evidence illustrates that relationships exist between staffing levels and nurse and patient outcomes, and is outlined both in early and more current staffing research, operationalizing this into practice and policy continues to be a challenge and area of ongoing discussion amongst stakeholders.

The extensive body of research examined in this report highlights the substantial impact of adequate nurse staffing on various aspects of health care. This section synthesizes the key findings, emphasizing the effectiveness of legislative efforts, the improvements in patient and nurse outcomes associated with higher staffing levels, and the broader implications for policy and practice. By integrating these findings, the aim is to provide a comprehensive overview of the current state of nurse staffing research and legislative efforts, highlighting their implications for the future of Canadian health care.

## Summary of key findings

### A. Approaches to safe nurse staffing

The global legislative efforts to improve nurse staffing levels reveal a diverse array of approaches reflecting the unique health care needs and resources of different regions. Various countries have implemented policies ranging from mandated nurse-patient ratios to flexible staffing guidelines. Although the specific impacts of these legislative measures on patient and nurse outcomes are multifaceted, the overarching goal remains consistent: to enhance the quality of care and support the nursing workforce. These legislative efforts show the critical importance of having policies in place that address safe staffing levels. The variability in approaches highlights that there is no one-size-fits-all solution, but rather effective policies must be tailored to the local context, considering factors such as patient acuity, health care facility resources and the broader health care environment.

# B. Review of the literature

## Patient outcomes

The relationship between nurse staffing levels and patient outcomes has been extensively studied, revealing consistent patterns that highlight the importance of adequate staffing in improving health care quality. The majority of literature reviews (70%) examined patient mortality rates, with 87% of these reviews finding a clear link between higher nurse staffing levels and decreased mortality. Furthermore, 75% of the reviews identified a positive relationship between increased staffing and reduced hospital-acquired infections (HAIs), although some reported mixed results. Additionally, 61% of the reviews indicated that higher nurse staffing levels are associated with lower rates of pressure injuries. Most reviews (80%) found higher staffing levels associated with reduced length of stay (LOS), and all 11 (100%) reviews addressing the outcome of failure to rescue (FTR) reported that higher staffing levels are associated with reduced FTR rates. Overall, the evidence shows the fundamental role of adequate nurse staffing in enhancing patient outcomes. These findings support the need for policies that ensure sufficient nurse staffing as a critical component of high-quality patient care.

## Nurse outcomes

Adequate nurse staffing levels have a profound impact on nurse retention, contributing to a more stable and engaged workforce. The majority of literature reviews (90%) indicated that increased nurse staffing leads to greater job satisfaction among nurses. Burnout was found to decrease in 94% of the reviews when nurse staffing levels were higher. Additionally, 88% of reviews indicated that increased nurse staffing is associated with reduced turnover. It was noted that some literature reviews reported mixed findings regarding the impact of nurse staffing on nurse outcomes such as intention to leave. Overall, these findings emphasize the critical importance of maintaining appropriate staffing levels to support the health and sustainability of the nursing workforce, which is essential for maintaining high-quality patient care and supporting workforce retention.

# Future Considerations

As Canadian health care continues to evolve, strategic planning for policy development must address several key areas to enhance care delivery, support nursing staff effectively, and ensure a robust and responsive health care system.

In policy development and strategic implementation, **data-driven decision-making** should be a priority to ensure that policies are grounded in evidence, enabling health care systems to adapt effectively to changing needs. For example, California's AB 394 legislation established minimum nurse-patient ratios based on extensive stakeholder input and evidence, with phased implementation and ongoing adjustments based on real-world outcomes. Similarly, British Columbia's policy directive on minimum nurse-patient ratios establishes such ratios across various health care settings with a structured timeline for implementation and continuous evaluation. These examples demonstrate the importance of strategic planning and ongoing assessment to develop health care policies that are responsive and sustainable.

**Stakeholder engagement and governance** are crucial components of effective health care policy development. Involving diverse groups, including patients, nurse and other health care professionals, ensures that policies align with the needs and concerns of those they impact. In the US, Texas Chapter 257 of the Health and Safety Code requires hospitals to establish nurse staffing committees where at least 60% of members are registered nurses providing direct patient care. In Scotland, the Health and Care (Staffing) Act requires health boards and care service providers to ensure adequate staffing levels, with provisions for whistleblowing and escalation processes, allowing staff to raise concerns about unsafe conditions. These scenarios show the value of inclusive policy formation, transparent governance and accountability in fostering effective health care systems.

**Workforce development and support** are vital for sustaining a robust health care system. Emphasizing educational and professional development will empower nurses to adapt to evolving health care demands. In Europe, Germany's Nurse Care Reform included measures to increase staffing levels in long-term care facilities, alongside investments in training and professional development opportunities for nurses, highlighting the importance of workforce support. Similarly, in South Korea, the Nurse Staffing Policy Reform included measures to improve working conditions, reduce overtime, and provide resources for training and development, aimed at retaining a resilient and motivated workforce. These examples illustrate the importance of investing in workforce development and support programs to create a sustainable and effective health care system.

**Embedding outcome measures in practice** is an important tool to track a multitude of patient and nurse outcomes as quality indicators and is a useful mechanism to inform staffing needs. A commitment to monitoring an array of outcomes will provide vital information regarding patient safety and quality of care outcomes in tandem with nurses' job satisfaction and employment intentions. This ultimately provides a pulse on various domains of practice and can positively contribute to decision-making regarding health care delivery. Further efforts are needed to employ coordinated strategies and processes that will facilitate the collection of relevant data in a feasible

way. Additionally, the utility and integration of this data must be considered to optimize the contribution that can be made within and across an organization.

**Global collaboration and best practices** are essential for enhancing health care systems by drawing on the experiences and insights of different countries. Learning from international innovations allows health care systems to adapt and improve based on proven strategies. Several places in the US, including Connecticut, Washington, Nevada, Texas, Colorado and Illinois, have implemented staffing committees with minimum involvement requirements for direct-care registered nurses, reflecting best practices in ensuring safe staffing levels. Additionally, many areas, including California, Massachusetts, Australia, South Korea, New York and British Columbia, have implemented similar ICU nurse-patient ratios of 1:1 or 1:2, showcasing the alignment of international standards in critical care. These examples illustrate the importance of global collaboration in enhancing the effectiveness and resilience of health care systems and ensuring that they are responsive to evolving challenges and opportunities.

# Conclusion

The findings from this review show the critical importance of nurse staffing levels in ensuring high-quality patient care and supporting nurse retention. By highlighting the impact of adequate staffing on both patient and nurse outcomes, and examining various legislative efforts and research reviews, this report provides valuable insights for policymakers and health care leaders. Moving forward, it is essential to develop adaptable evidence-based policies, invest in workforce development, and continuously evaluate and improve staffing practices. These efforts will help create a sustainable and effective health care system that prioritizes patient safety and nurse satisfaction.

CANADIAN FEDERATION OF NURSES UNIONS

# Nurse-Patient Ratios

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