

Context

- Many factors can affect the impacts of nurse staffing levels in healthcare settings, such as patient and population characteristics, demand for healthcare services, professional development opportunities for staff, and costs associated with care provision.(1)
- Evidence has shown an association between improved nurse staffing levels and patient outcomes in hospitals,(2) but little is known about the impacts of staffing level improvements using nurse-to-patient ratios in non-hospital settings.
- This rapid evidence profile investigates the impact of nurse-to-patient ratios in mental health and substance use, primary care, and public health nursing settings on patient care, nurse job satisfaction, and systems-level health human resource challenges.

Question

- What is the impact of nurse-to-patient ratios for mental health and substance use, primary care, and public health nursing on patient care, nurse job satisfaction, and systems-level health human resource challenges?

High-level summary of key findings

- The included evidence mainly focused on mental health, substance use, and long-term care facilities, with limited research on primary care, public health nursing, and nurse-to-patient ratios outside of hospitals.
- In primary care, the inclusion of registered nurses (RNs) in primary care teams was associated with better diabetes management.
- In home and community care, increased nursing hours led to fewer major falls and less dependency for help with activities of daily living, while facilities with a diverse skill mix of nurses provided more services than those with only RNs.
- In long-term care facilities, higher nurse staffing levels and skill mix generally improved health outcomes, such as reducing pressure ulcers and infections, but showed diminishing returns beyond a certain threshold, with skill mix often being as crucial as overall staffing levels.

Rapid Evidence Profile

Impact of nurse-to-patient ratios for mental health and substance use, primary care, and public health nursing

24 September 2024

[MHF product code: REP 80]

Box 1: Evidence and other types of information

+ Global evidence drawn upon



Evidence syntheses and single studies selected based on relevance, quality, and recency of search

- Forms of domestic evidence used (🇨🇦 = Canadian)



Evaluation

+ Other types of information used



Jurisdictional scan (three countries: AU, UK, US (CA, MD, NJ, NY, OR))

* Additional notable features

Prepared in three business days using an 'all hands on deck' approach

- This rapid evidence profile highlights the need for more research on nurse-to-patient ratios in non-hospital settings, particularly community mental health, primary care, and public health nursing, focusing on nurse job satisfaction, human resource challenges, and the minimum staffing levels required for optimal care and service availability.
- We identified limited information on nurse-to-patient ratios from our jurisdictional scan of experiences from Australia, the United Kingdom (U.K.), and five states in the United States (California, Maryland, New Jersey, New York, Oregon).
- We found that there are statewide legislative rules for staffing ratios in long-term care facilities in Maryland, New Jersey, New York, and Oregon, with staffing requirements ranging from one full-time nurse for two to 99 patients in Maryland nursing homes, one certified nurse aide to every eight residents for the day shift in New Jersey long-term care facilities, and 2.8 hours of certified nurse aid care per day to each resident in a New York nursing home.
- Consideration should be given to the resources needed by states and local jurisdictions to implement staffing requirements legislated at the federal level, as they could have negative consequences on local care facilities' ability to provide patient care, as seen in Oregon after the U.S. federal government recently legislated 24/7 RN coverage and at least 3.5 hours of care per day for patients in nursing homes.
- While the focus of this REP is on nurse-to-patient ratios in non-hospital settings, several examples of nurse-to-patient ratios implemented in hospital settings were also included in the jurisdictional scan to offer additional insights on their impact (e.g., reports of increased retention and recruitment in California and lower mortality rates in Australia) and considerations for implementation (e.g., the need for oversight of Oregon hospitals to ensure that staffing ratios were appropriate).

Box 2: Approach and supporting materials

At the beginning of each rapid evidence profile and throughout its development, we engage a subject matter expert and one or more citizen partners, who help us to scope the question and ensure relevant context is taken into account in the summary of the evidence.

We identified evidence addressing the question by searching Health Systems Evidence and PubMed. All searches were conducted on 19 August 2024. The search strategies used are included in Appendix 1. We searched for full evidence syntheses (or synthesis-derived products such as overviews of evidence syntheses) and protocols for evidence syntheses, as well as highly relevant single studies. We also completed a jurisdictional scan of experiences from three countries (Australia, the United Kingdom, and five U.S. states – California, Maryland, New Jersey, New York, and Oregon). In contrast to synthesis methods that provide an in-depth understanding of the evidence, this profile focuses on providing an overview and key insights from relevant documents.

We appraised the methodological quality of evidence syntheses that were deemed to be highly relevant using the first version of the [AMSTAR](#) tool. AMSTAR rates overall quality on a scale of 0 to 11, where 11/11 represents a review of the highest quality, medium-quality evidence syntheses are those with scores between four and seven, and low-quality evidence syntheses are those with scores less than four. The AMSTAR tool was developed to assess reviews focused on clinical interventions, so not all criteria apply to evidence syntheses pertaining to delivery, financial, or governance arrangements within health systems or implementation strategies.

A separate appendix document includes:

- 1) methodological details (Appendix 1)
- 2) details about each identified evidence synthesis (Appendix 2)
- 3) details about each identified single study (Appendix 3)
- 4) details about experiences from jurisdictional scan (Appendix 4)
- 5) documents that were excluded in the final stages of review (Appendix 5)
- 6) references (Appendix 6).

This rapid evidence profile was prepared in the equivalent of three days of a 'full court press' by all involved staff.

Framework to organize what we looked for

- Type of nursing professional
 - Registered/licensed practical nurse
 - Registered nurse
 - Nurse practitioner
 - Registered psychiatric nurse
- Sector of focus
 - Primary care
 - Public health
 - Mental health care
 - Other
 - Long-term care
 - Home and community care
 - Rehabilitation care
- Outcomes
 - Health outcomes
 - Patient experience
 - Provider experience (including nurse satisfaction)
 - Cost

What we found

We identified 26 evidence documents relevant to the question, of which we deemed 13 to be highly relevant and 9 of medium relevance. The highly relevant documents include the following high-quality (n=1) and medium-quality (n=3) evidence syntheses:

- [Effects of nurse staffing on resident outcomes in nursing homes: A systematic review](#) (AMSTAR rating 8/10; search last conducted 2021)
- [The relationship between nurse staffing and quality of care in nursing homes: A systematic review](#) (AMSTAR rating 6/10; search last conducted 2010)
- [The relationship between nursing home staffing and resident safety outcomes: A systematic review of reviews](#) (AMSTAR rating 7/10; search last conducted 2022)
- [Nurse staffing impact on quality of care in nursing homes: A systematic review of longitudinal studies](#) (AMSTAR rating 6/10; search last conducted 2013)

We outline in narrative form below our key findings related to the question from highly relevant evidence documents (as well as a few medium- and low-relevance documents covering underrepresented sectors) and based on experiences from the jurisdictional scan of two countries (Australia and the United Kingdom), as well as five U.S. states (California, Maryland, New Jersey, New York, and Oregon) (see Box 2 for more details).

Detailed data extractions from each of the included evidence documents is provided in Appendices 2 and 3 and greater details about the experiences from other countries is provided in Appendix 4. Hyperlinks for documents excluded at the final stage of reviewing are in Appendix 5.

Key findings from included evidence documents

Overall, the included evidence specifically focused on mental health and substance use, primary care, and public health nursing is limited. Most of the research about nurse-to-patient ratios examines hospital-based care contexts, which we did not include in this report. The evidence we did include largely focuses on long-term care facilities, as well as one document

focused on primary care (3) and two studies covering home and community care.(4; 5) To ensure that these less commonly studied sectors were captured in our report, we included their findings in the summary even if they were not initially identified as highly relevant to the question. Additionally, evidence tended to focus on patient care outcomes, rather than nurse job satisfaction and systems-level health human resource challenges. Finally, given the lack of highly relevant evidence available, we also included some evidence focused on initiatives or approaches aimed at increasing nurse staffing levels, even if they were not explicitly measuring staffing levels through nurse-to-patient ratios.

Primary care

A single study examining the relationship between RN staffing in primary-care teams and clinical outcomes for patients with Type 2 diabetes found that the inclusion of RNs in primary care teams resulted in improved diabetes management outcomes (e.g., better control of HbA1c, fasting plasma glucose, and blood pressure).(3)

Home and community care

For home and community care, we identified two studies examining the impact on nurse staffing levels on health-related and functional outcomes, as well as service provision in assisted living contexts. A study on the association between nursing hours per patient day and patient outcome measures in Veteran Health Administration Community Living Centers found that increased nursing hours per patient day resulted in fewer falls for major injury and less help needed with activities of daily living. However, no association was found for function, ability to move independently, catheter in bladder, and urinary tract infections.(5) Another study found that residential care and assisted living communities with no nurse staffing offered significantly fewer services than all other categories, while those with only RNs offered significantly fewer services than those with licensed practitioner nurses and licensed vocational nurses only.(4) The findings suggest that while nurse staffing levels play an important role in service availability, skill mix (having a mix of licensed practitioner nurses and licensed vocational nurses rather than just RNs) may allow communities to provide a greater range of services.

Long-term care

In long-term care facilities, evidence about nurse-to-patient ratios and nurse staffing levels generally demonstrated positive outcomes. A high-quality evidence synthesis found that RN staffing levels and higher skill mix among staff were associated with fewer pressure ulcers (based on moderate-certainty evidence), lower COVID-19 mortality (based on low-certainty evidence), fewer other infections (based on low-certainty evidence), and lower rates of moderate to severe pain (based on low-certainty evidence).(6) However, the outcomes for COVID-19 infections after increasing total staffing levels were mixed across included studies, highlighting the importance of skilled nurse staffing levels. Two medium-quality evidence syntheses found mixed results about the relationship between nurse staffing levels and quality of care. One found a non-linear relationship suggesting that quality of care improves up to a certain threshold, but provides diminishing returns beyond that threshold (7), while another could not identify consistent evidence suggesting a positive relationship.(8) A medium-quality evidence synthesis found that nurse staffing levels had a positive impact on resident safety outcomes, especially ulcers and urinary tract infections.(9)

Single studies similarly showed promising findings for policies aimed at increasing nurse staffing levels. In the United States, a Centers for Medicare & Medicaid Services (CMS) RN staffing enforcement policy led to improvements in increased RN staffing, better compliance, higher staffing hours per resident, and improved skill mix, which subsequently led to improved resident care (e.g., function, reduced medication use, weight loss).(10) Similarly, in California and Ohio, minimum nursing hours per resident day regulations led to a rise in direct care staffing, which resulted in improvements in quality measures like fewer deficiencies and contractures, but found no effect on others like ulcers and medication use.(11) The rise in direct care staffing was mostly achieved through lower-wage certified nursing assistants and licensed nurse practitioners, rather than higher-wage RNs.

Single studies examining the impacts of nurse staffing (not necessarily linked to a policy or regulation), also identified several beneficial outcomes. Three studies found that higher nurse staffing levels (especially RNs) significantly reduced missed care (12) and improved quality care.(13; 14) Another study similarly found that higher RN levels and improved working environments were found to contribute to higher quality of life among residents.(15) A study assessing the association between nursing staff levels in dementia dining rooms and relationship centred care found that a higher ratio of nurses-to-residents increased relationship centred care, but that staff training in dementia care may be more influential for increasing this type of care.(16) Finally, a study of nurse staffing hours and COVID-19 cases in long-term care homes in California found that homes with COVID-19 cases were twice as likely to have fewer nursing staff hours and that more than half of California nursing homes did not meet RN and/or total nurse staffing requirements.(17)

Overall, nurse-patient-ratios and nurse staffing appear to provide a range of benefits for health-related, functional safety, and quality of care outcomes, but may provide diminishing returns beyond a certain threshold. Additionally, in many cases, skill mix may be just as important as nurse staffing levels to ensure that teams are properly equipped to optimize care and improve patient experience and health outcomes.

Next steps

This rapid evidence profile provides an overview of evidence to help inform policy recommendations for minimum nurse-to-patient ratios or other nurse staffing level regulations in community and non-hospital settings. However, it also highlights that the current available evidence on nurse-to-patient ratios largely focuses on hospital settings. Future research on nurse-to-patient ratios in community mental health and substance use, primary care, and public health nursing is necessary to understand whether findings are similar for these care contexts. It should also investigate the impact of nurse-to-patient ratios on nurse job satisfaction and systems-level health human resource challenges, rather than just patient care. Additionally, more research is needed to understand what the minimum nurse-to-patient or nurse staffing levels are to ensure service availability and quality of care, as well as the incremental gains beyond these thresholds. These findings would allow decision-makers to better understand potential cost-benefit trade-offs when establishing nurse-to-patient ratio standards and best practices across settings.

Key findings from jurisdictional scan of experiences from other countries

We identified limited information on nurse-to-patient ratios from our jurisdictional scan of experiences from Australia, United Kingdom (U.K.), and five states in the United States (California, Maryland, New Jersey, New York, Oregon). We did not identify any information specifically on nurse-to-patient ratios in the public health or mental health sectors, but we did find some information on ratios in the long-term care sector in the United States. Although the focus of this REP is nurse-to-patient ratios implemented in non-hospital settings, we have summarized some key findings on the impact of nurse-to-patient ratios implemented in hospital settings in recent years that may be of interest to readers. Given the limited information, our findings are summarized below by jurisdiction rather than by categories of the organizing framework.

Australia

Minimum nurse-to-patient ratios in public hospitals, including wards providing aged care, palliative care, and rehabilitation were first legislated in Australia by the state of Victoria in 2015 through the [Safe Patient Care Act 2015](#). The Act specifies different ratios based on the number of patients (i.e., occupied beds) and the level of care required by patients. Public sector health facilities in Queensland, Australia are also legally required to maintain [minimum nurse-to-patient ratios](#) of 1:4 for morning/afternoon shifts and 1:7 for night shifts in any ward, unit or department. Facilities can seek temporary exemptions from the legislated ratios and certain wards and facilities are excluded due to lower risk or different care models (e.g., alternative care models, multi-purpose wards). Staffing supply is determined by Queensland Health's Business Planning Framework, professional standards, and professional judgment. While there are no direct penalties for non-compliance with the legislated ratios, repeated non-compliance can prompt local reviews. After implementing nurse-to-patient ratios in Queensland, [intervention hospitals experienced](#) lower mortality rates and a more significant reduction in

length of stay (LOS) without an increase in readmissions when compared to comparison hospitals that did not implement the minimum ratios. Additionally, the cost savings from fewer readmissions and shorter LOS in intervention hospitals were more than twice the cost of additional nurse staffing needed to meet the minimum ratio requirements.

United Kingdom (U.K.)

Guidelines have been provided by The Royal College of Nurses and The Society for Acute Medicine on nurse-to-patient ratios in public sector facilities. The [Royal College of Nurses](#) suggests maintaining a ratio of no more than six patients per RN to avoid compromised care, while the [Society for Acute Medicine](#) recommends a nurse-to-bed ratio of 1:4 for general patients, increasing to 1:2 when higher care levels are needed (e.g., patients on non-invasive respiratory support, vasopressors, or inside rooms). NHS providers can use these and other resources (e.g., the [Developing Workforce Safeguards](#) document, guidance from the [National Quality Board](#), the [Fundamentals of Safer Staffing](#) e-learning program) to make informed staffing decisions and maintain safe staffing levels.

United States (California, Oregon, Maryland, New Jersey, New York)

In most of the U.S. states of the jurisdictional scan, there are state-wide legislative rules for staffing ratios in long-term care facilities. In [Oregon](#), the Department of Human Services has the authority to specify the maximum number patients per nursing assistant per shift in long-term care facilities, and a statement describing the specific staffing requirement per time period must be posted in every facility in a public place. Ratios for registered nursing staff in nursing homes are provided by the government of [Maryland](#), specifically being one full-time nurse for two to 99 patients, two full-time nurses for 100 to 199 patients, three full-time nurses for 200 to 299 patients, and four full-time nurses for 300 to 399 patients. [New Jersey's](#) minimum staffing requirements for long-term care facilities require one certified nurse aide to every eight residents for the day shift, one direct care staff member to every 10 residents for the evening shift (with no fewer than half of all staff members being certified nurse aides), and one direct care staff member to every 14 residents for the night shift (with each direct care staff member working as a certified nurse aide). In [New York](#), nursing homes are required by the new Safe Staffing Act to provide 0.75 hours of RN care, 1.3 hours of licensed practical nurse (LPN) care, and 2.8 hours of Certified Nurse Aide (CNA) care to each resident per 24-hour day, seven days a week. In California, safe staffing laws were created for RNs, including restrictions on unsafe floating and a nurse-to-patient ratio of 1:6 for [psychiatric patients](#) in hospital wards. The law in California resulted in [increased retention and recruitment](#).

In [April 2024](#), the U.S. federal government implemented new staffing requirements that require nursing homes to provide 24/7 RN coverage for patients, including nurse aides (or certified nursing assistants) providing patients with at least 2.5 hours of care per day, RNs providing at least half an hour of care per day, and each patient receiving at least 3.5 of care per day. In response to these new [staffing requirements](#), a spokesperson from the Oregon Nursing Association referred to data showing that 97% of nursing homes in Oregon could not meet the requirement and that the [new requirements may inadvertently force nursing facilities to](#) downsize, limit admissions, or close altogether. Complaints were also received by the Oregon state agency from hospitals that were [legislated](#) to implement a staffing plan with minimum nurse-to-patient ratios. Hospitals alleged staffing [law violations](#) where hospitals unilaterally passed staffing plans without obtaining approval from their appointed staffing committees and sought loopholes to the nurse staffing ratios. Nurses alleged that the new staffing plans inhibited their ability to properly care for patients. This highlights the need for monitoring and evaluation once new staffing ratios are implemented.

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