Evidence Brief

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What is the impact of implementing mandatory minimum nurse-patient ratios in general acute care hospitals?

Achieving safe staffing levels in nursing has been a challenge for health systems globally, and several policies have been adopted to promote provision of safe nursing care to patients in hospitals. Among these, mandatory minimum ratios have been implemented in some jurisdictions. The first were the states of Victoria, Australia, and California, USA, in the late 1990s, and Queensland, Australia in 2016. More recently, there has been a growing interest in establishing minimum nurse-to-patient ratio policies in England, with unions and professional bodies lobbying and advocating for mandates. Mandatory minimum staffing ratios have sparked and continue to spark debate, with opponents claiming that they constitute a "one size fit all" approach when staffing should be dynamic and dependent on patients' needs, whereas enthusiasts highlight that mandates offer a safety net that is otherwise absent.

After 30 years of research on the topic, what do we know about mandatory minimum nurse-patient ratios? In this umbrella review, we analysed 14 systematic reviews and discussion papers to find out.

Introduction

The evidence that nurse staffing levels impact patient and nurse outcomes is extensive, and points to inadequate nurse staffing levels as a potential cause of patient harm, including death in hospital [1]. While mandatory minimum staffing ratios have been implemented in some jurisdictions, it is unclear what the impact of such policies has been on patients, nurses and health systems. Therefore, the aim of this review is to synthesise evidence about the impact of mandatory minimum staffing (or equivalent policies) on patient outcomes, nurse outcomes, staffing and skill mix outcomes, and organisational outcomes including costs.

Methods

We undertook an umbrella review of reviews. We searched Medline, CINAHL and Cochrane reviews. We developed a specific search strategy for each database, with the following terms: "nurse staffing", "ratios", "policy", "mandatory" with a combination of free terms and subject headings. We included reviews of quantitative research where the aim was to assess the impact of introducing nurse staffing ratios or equivalent policies, either at a macro (i.e., country, state) or micro (i.e., hospital or set of hospitals) level on patient, staff or organisational outcomes including economic outcomes. We assessed the quality of included reviews using the JBI Critical Appraisal Checklist for Systematic Reviews and Research Syntheses.

Results

We found seven systematic reviews and an additional seven scoping reviews, narrative reviews, or discussion papers. Reviews synthesised 36 studies in total. Only four reviews were assessed as high quality.

Patient outcomes

Patient outcome measures included mortality, 7-day readmissions, patient falls, pressure ulcers, length of stay, failure to rescue, deep vein thrombosis, pulmonary embolism, postoperative sepsis, medication errors, nosocomial infections, and postoperative respiratory failure. Most studies found that there were no statistically significant improvements in patient outcomes, with some studies suggesting improvements in failure to rescue and nosocomial infections only in hospitals with initial low staffing levels [2-5]. A more recent study reported reductions in mortality, failure to rescue and length of stay in hospitals that implemented staffing ratios in Queensland compared to hospitals in the same state that did not implement the ratios [1]. All these studies used questionnaires to collect staffing data and related these to hospital-level patient outcomes.

Nurse outcomes

Findings around nurse outcomes mostly support mandatory staffing ratios. Nurses' burnout and job dissatisfaction were lower when nurses' workloads were in line with California-mandated ratios in other states, [3, 4, 6-8]. Nurse perceptions of work environment were most positive in states that adopted mandatory staffing regulations [9]. Lower rates of occupational injuries and illness were observed in California compared to 49 other states without mandatory ratios [4]. However findings for impact on turnover were mixed: one review found that ratios did not significantly affect turnover [7], while another review reported reduced turnover but this finding was from a single small descriptive study [10].

Staffing levels & skill mix outcomes

Overall, there is evidence that the implementation of mandated minimum nurse-to-patient ratios achieved the policy aim of reducing the number of patients per nurse and increased the number of worked nursing hours per patient day in acute care hospitals. Looking at skill mix, measured in different ways across studies, the percentage of care provided by RNs increased significantly. Every study that measured these variables reported this finding [3, 7, 10-12]. While giving an overall

estimate of the actual change in staffing levels across studies is challenging due to different methods to measure staffing, post-implementation patient-to-nurse ratios were reduced on average by one across all California hospitals [11]. However, increases in RN hours per patient have, at least until recently, been observed in most countries, even those with no safe staffing regulations [13].

Organisational outcomes

The economic impact of the mandatory ratios policy is unclear, due to uncertainty around the impact of other health reforms occurring at the same time as ratios implementation. In Queensland, it was estimated that meeting RN ratio requirements would cost AU$33,000,000, but would prevent 145 deaths, avoid 29,222 days of stay and 255 readmissions, saving AU$67,561,264 from reduced lengths of stay and AU$1,589,594 from reduced readmissions [14]. In California, studies reported that RN mean wages (adjusted for inflation) increased by 8-9% post- implementation. Overall, hospitals experienced higher costs associated with implementing the staffing ratio regulation, but the financial effects depended on pre-regulation staffing levels and response strategies (e.g. higher use of licensed vocational nurses rather than RNs) [15].

Limitations of the existing evidence

Most studies relied on nurse-reported cross-sectional data to calculate nurse staffing level variables, and the level of granularity of associations detected is low, mostly hospital level, and the ability to disentangle ward and setting-specific factors is limited. In California, many studies collected data in 2003 and compared it with data collected post- 2004, but several hospitals had already begun transitioning towards staffing levels adhering to the incoming law, meaning that results do not fully reflect the pre-implementation period. Some studies collected data from several US states but do not directly assess the impact of mandatory ratios, rather they grouped all data together and compared the hospitals with workloads in line with the California mandates with those having higher workloads, so the effect measurement is indirect.

Conclusions

- Overall findings indicate that implementing mandatory minimum staffing ratios has been a successful policy to improve staffing levels without a dilution in skill-mix
- There is evidence of some benefits in patient and nurse outcomes, and uncertain impact on financial outcomes.
- The more robust economic analysis suggests that investing in better ratios is likely to lead to cost savings due to reduced length of stay and readmissions.
- Given the overwhelming evidence that insufficient registered nurse staffing leads to patient harm and nurses' turnover and dissatisfaction, policy efforts to guard against understaffing and skill-mix dilution are warranted.

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