NURSE TO PATIENT RATIOS: GOVERNMENT MANDATED OR EVIDENCE BASED?

Honors Thesis

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Abstract

Nurse to patient ratios are currently controversial in health care. The central issue is what is a safe limit to the number of patients for whom an RN is responsible in the acute care setting? Some states require a committee at each facility to determine ratios whereas in other states, the legislature has established what the ratio must be.

A systematic review of the literature was conducted using CINAHL to identify the major factors being used to determine a safe nurse to patient ratio. Criteria for inclusion in this study were (a) published between 2013 and September 2018; (b) peer reviewed; (c) published in English and (d) had at least one nurse as an author. A combination of the following keywords were nurse to patient ratios, safety, patient outcomes and quality of care. Thirteen studies qualified for inclusion in this systematic review.

Five major factors identified as determining nurse to patient ratios are the educational levels of the nursing staff, patient acuity, patient outcomes, cost and the staffing method of the institution based upon cost/budget, nurse to patient ratio or patient acuity. The staffing method chosen is a decision between administrators and the nursing leadership. Cost is more heavily weighted by administrators than by the nursing leadership. These five factors are not constants and the dynamic environment of acute care nursing does not lend itself to staffing that does not consider these factors. Government mandated nurse to patient staffing ratios cannot provide the work environment that provides for the nursing needs of today's patient populations.

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Acknowledgements

Nurse to Patient Ratios: Government Mandated or Evidence Based?

Patient ratios, the number of patients a single nurse has per shift, is a recurring topic in nursing. Achieving quality patient outcomes requires a highly educated nurse prepared for the challenges of high acuity patients in a dynamic, acute care setting. Current staffing methods are determined by cost, patient acuity, or predetermined nurse to patient ratios. Each of these staffing methods have their benefits and constraints. Cost-budget gives the opportunity for a stronger hospital system and for a sound financial standing. Patient acuity is the matching of skills to patient care needs and must be determined throughout a hospitalization. Nurse to patient ratios are to cap the number of patients assigned to the RN to ensure the work can be completed regardless of patient acuity.

There has always been a question of what a safe nurse to patient ratio is. Recently this issue was voted on in the Massachusetts 2018 election. Many states across the nation have already put a policy in place while others are studying what type of polices would best suit the healthcare systems in their state. This systematic literature review will reexamine the current evidence to inform healthcare professionals in the determination of staffing as either government mandated or based upon current evidence.

Background

There has never been a consistent way to regulate nurse to patient ratios in the history of nursing. In 2004, nurse to patient ratios were mandated in California (Abir, 2018). California was the first and is the only state to put laws into place regulating nurse ratios. Since then many other states have visited this issue and addressed it in different ways. In 2006 it was shown that increasing nurse staffing does not increase the cost

(Schoenicker, 2006). The increase in RNs in a hospital pays for itself through higher quality patient care and lives saved. This decreases the out of pocket money spent by hospitals (Schoenecker, 2006).

This phenomenon is still evident today in support of nurse to patient ratios. The limiting of the number of patients a nurse has provides for patients to have shorter lengths of stay. This improved quality of care leads to decreased complications. The decrease in complications the patients experience lowers hospital costs. The money saved by the hospitals on direct patient care promotes the fiscal well-being of the hospital.

One of the many issues with nurse to patient ratios is how to regulate them. The criteria that ratios can be based on is very different depending on the hospital or state. Staffing can be based on the number of beds, the census for typical patient care unit, patient acuity, or budget. It is these factors that need to need to be taken into consideration when assigning nurse to patient ratios. This is where the bills being considered by legislators come into play. These bills set different ratios depending on the type of acute care setting. The ratios for each area are different depending upon patient acuity in this setting.

Regulations across the country have different ways for assuring appropriate nurse staffing levels. As shown in Table 1, some states allow for hospitals to have mandatory overtime for nurses, if the staffing level is not met. There are regulations in seven states requiring committees within each hospital to oversee nurse safe staffing. In five states, there is a requirement for hospitals to disclose the staffing process. Only one state has regulation mandating the ratio. Lastly, many states are considering the issue yet a decision has not been made, or any action taken.

Table 1
Regulation by State

Regulation	States
Limit the mandatory overtime a nurse can have	AK, CT, IL, MD, MN, NH, NY, OR, PA, RI, TX, WA, WV
Requires each hospital to have staffing committees	CT, IL, NV, OH, OR, TX, WA
Requires public disclosure or reporting	IL, NJ, NY, RI, VT
Mandates the nursing ratio	California
No Regulation	AL, AZ, AR, CO, DE, FL, GA, HI, ID, IN, IA, KS, KY, LA, MA, MI, MS, MO, MT, NE, NM, ND, OH, OK, SC, SD, TN, UT, VA, WV, WI, WY

(Mensik, 2014), (Nickitas, 2014), (Seratts, 2013)

Another way nurse staffing is determined is with the use of a staffing model.

These models are called primary, team, modular and functional. The provision of nursing

care in a hospital can be primary (one nurse is designated as being primarily responsible

for the plan of care for a patient) or team (multiple nurses work together to achieve the

outcomes for multiple patients). A third model for patient care delivery is modular, which

divides the patient care unit into sections which are covered by a group of nurses. Lastly,

there is the functional model of patient care which focuses on the skills set a nurse has.

The nurse is responsible to perform that skill on all the patients. Each model of staffing
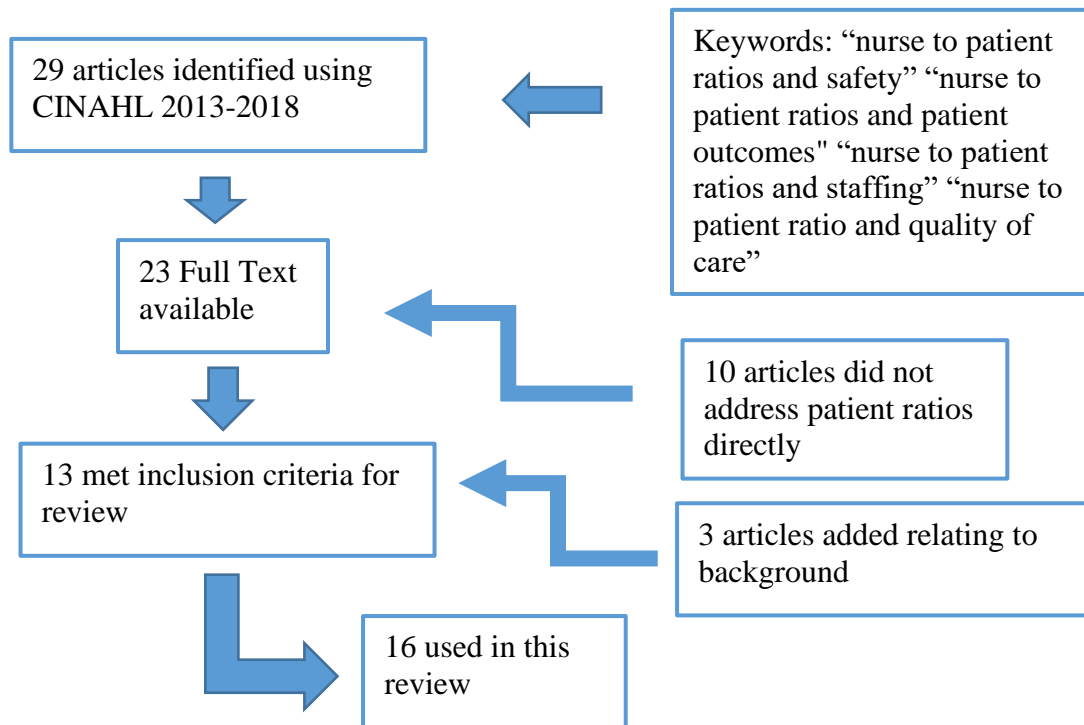
requires a different ration of nurses to patients.

Methods

A systematic review of the literature was conducted to find articles showing the

benefits of nurse to patient ratios. A systematic review of the literature informs healthcare

professionals about patient safety and patient outcomes. The database used was

Cumulative Index of Nursing and Allied Health Literature (CINHAL) Plus with Full

Text. Multiple searches were conducted using Boolean terms and the limiters of nursing,

published date, peer-reviewed, English language, full text, and at least one nurse as an

author. The dates of January 2013 to September 2018 were used to limit the scope of

articles to those that are the most current to the issue. The search was limited to peer

reviewed academic articles, to ensure the authors were qualified to speak to the issue as

well as provide data to support the findings. Full text articles written in English ensured

there was not any information lost when the authors' works were translated from the

original manuscript. The criteria for having a nurse within the team of authors ensured

the nursing perspective was provided directly rather than inferred by authors who are not

licensed to practice nursing. The first phrase used was "nurse to patient ratios and safety"

in order to see if different ratios had better safety results. "Nurse to patient ratios and

patient outcomes" was used next to see if different ratios had an effect on patient

outcomes. To identify articles, which directly addressed staffing issues, the next phrase

used was "nurse to patient ratios and staffing." Lastly, "nurse to patient ratio and quality

of care" was run to view studies on how ratios effect the level of care that patients

received. Figure 1 shows the process used to identify the studies used for the systematic

review of the literature.

Figure 1. Process to identify studies for review.

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┌─────────────────────────┐          ┌──────────────────────────────┐
│ 29 articles identified   │   ◄──    │ Keywords: "nurse to patient  │
│ using CINAHL 2013-2018   │          │ ratios and safety" "nurse to │
└─────────────────────────┘          │ patient ratios and patient   │
            │                        │ outcomes" "nurse to patient  │
            ▼                        │ ratios and staffing" "nurse  │
┌─────────────────────────┐          │ to patient ratio and quality │
│ 23 Full Text             │   ◄──    │ of care"                     │
│ available                │          └──────────────────────────────┘
└─────────────────────────┘
            │                        ┌──────────────────────────────┐
            ▼                        │ 10 articles did not          │
┌─────────────────────────┐          │ address patient ratios       │
│ 13 met inclusion         │   ◄──    │ directly                     │
│ criteria for review      │          └──────────────────────────────┘
└─────────────────────────┘
            │                        ┌──────────────────────────────┐
            ▼                        │ 3 articles added relating to │
┌─────────────────────────┐          │ background                   │
│ 16 used in this          │          └──────────────────────────────┘
│ review                   │
└─────────────────────────┘
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Sixteen articles identified five areas which have the greatest impact in identifying safe staffing patterns. The areas are the level of education of the nursing staff, the acuity of the patients receiving care, the patient outcomes which must be achieved, the institution's fiscal ability to provide nursing care by RNs, and finally, the staffing methods used to determine the nurse to patient ratio in patient care areas.

Education of Nursing Staff

The educational background of nurses is a major factor in nursing ratios. Nurses can have different levels of education which prepare them to practice as either a

registered nurse or as a licensed practical nurse. Educational preparation for the RN

license can be in the form of either a two-year associate degree program or a four-year

baccalaureate program. Nurses with a two-year associate ADN do not have the same

critical thinking skills as a four-year bachelors-prepared RN. The education level of a

nurse affects staffing because the nurse may be limited by the skills they can perform

(Massachusetts Board of Registration in Nursing, 2019, Difference between LPN and RN

- Why and how Licensed Practical Nurse differs from Registered Nurse? 2017).

Registered nurses with a bachelor's degree are licensed to manage patient care

and provide this care required according to their state license and the policies of their

institution. Nurses that received a master's, doctorate, or certification in specialty areas

have a greater scope of practice in addition to the RN license. Licensed practical nurses

are restricted from performing as an RN. Restrictions can vary by state. Massachusetts

has the restrictions of (a) cannot identify a nursing diagnosis; (b) cannot start or push IV

medications; (c) cannot take telephone orders; (d) cannot do an initial nursing

assessment; and (e) cannot do initial teaching to a patient ("Difference Between LPN and

RN", 2017).

Patient care areas that have nurses practicing with different licenses need to take

these into consideration when assigning patients. If nurses are given patients that require

them to complete skills that they are not legally allowed to do, then they have to ask for

help from a nurse with the proper license. The interruption from asking for help causes an

increase in workload to the higher-level nurse. A higher-level educated nurse on the

same floor may have the same number of patients but has to help the lower level nurses

complete the skills they are not allowed to complete. The additional workload for high-level nurses causes uneven workloads amongst the floors.

Patient Acuity

Patient acuity refers to the complexity of care a patient requires; the more acute a patient is, the more complex needs a patient requires. The level of acuity effects the number of assessments, amount and times of medication delivery, the number of dressing changes, the ability to perform activities of daily living, and the amount of time a nurse has to spend with that patient per shift. Each patient added to a nurse's workload, slows the medication administration to each patient significantly (Johansen et al, 2015). Patient acuity affects nursing ratios because of the effect on the number of patients a nurse can safely care for. A nurse may only have two patients compared to another nurse's five. But those two patients level of illness requires the nurse to spend the same amount of time with them as they would with five. When the level of acuity is not accounted for in a workload, workloads become uneven. Nurses receiving the uneven workloads may find it difficult to complete all tasks required to be done each shift. Nurses who have difficulty completing all of these complex tasks are more likely to make mistakes.

Patient Outcomes

Patient outcomes are greatly affected by nurse to patient ratios. Outcome*s* refers to patient being cured, patient surviving, or likelihood of a patient not being readmitted for the same disease process (Furillo, 2014). The work done by Furillo and Brennan (2013) shows the relationship between nurse staffing and patient outcomes. When nurses have lower patient ratios, those patients have better outcomes.

According to Brennan (2013), the addition of a specialist nurse decreases the

length of a patients stay. It was stated that the addition of one ICU nurse decreases the

mortality rate of patients in the ICU. Additionally, the minimum patient to nurse ratios

mandated in California resulted in more hours of care per patient by the nurse. Johansen

(2015) found that the addition of one patient to a single nurse's workload slowed down

the rate of medication administration to all patients significantly. This means patients

received more one-on-one time with their nurse, resulting in better care. The better care

the patients received resulted in the patients leaving the hospital faster, healing better, and

having fewer complications. The effect on patient's outcomes can be seen in Table 2.

Table 2
Effects on Patient Outcomes

Change to the patient assignment	Effect
Addition of one surgical patient	Hospital mortality and failure to rescue increased by 7%
Reduction of assignment by one patient	30-day inpatient mortality reduced by 9%
Addition of one nurse to a patient care unit	- Failure to rescue reduced by 10% - ICU patients' deaths reduced by 9% - Number of surgical patients deaths reduced by 16% - Number of medical patients deaths reduced by 6%
Addition of one nurse to the Intensive Care Unit	- Incidence of hospital acquired pneumonia reduced by 30% - Incidence of unexplained extubation reduced by 51% - Incidence of respiratory failure reduced by 60% - Incidence of cardiac arrest reduced by 28%

(Berkow et al, 2104), (Brennan, 2013), (Johansen, 2015)

Cost

Cost is another major factor in deciding nurse to patient ratios. The addition of nurses is believed to increase the cost of healthcare and is a reason being used to oppose the limiting of nurse to patient ratios. The cost of adding more nurses does not increase the cost of healthcare significantly (Kerfoot, 2013). This study shows with every dollar spent to increase nurse staffing there is at least a 75-cent return if not more. The cost of adding a nurse is shown to have at least a return to the hospital of three quarters of the money spent. It is also shown that the spending of the hospital on nurses is balanced out by the significant savings of patients expenses. By increasing nurse staffing, the patient's chance of being readmitted decreases, along with the risk of the patient developing a hospital acquired disease, experiencing a medication error, or having another type of untoward event. Complications experienced during hospitalization may be seen as being the fault on the institution are therefore not covered by insurance. The hospitals are then left to absorb the cost of these expenditures which are being denied by the insurer (Kerfoot, 2013). The adding of extra nurses does not significantly add to the cost of healthcare.

Staffing Patterns

The staffing of nurses can follow three major patterns. These patterns include budget based, nurse-patient ratio based, and patient acuity based. Staffing refers to "a match of registered nurses expertise with the needs of the recipient of nursing care services in the context of the practice setting and situation. The provision of appropriate nurse staffing is necessary to reach safe, quality outcomes, it is achieved by dynamic, multifaced processes that must take into account of variation."(Mensik, 2014)

A budget-based staffing pattern looks at the number of nursing hours per patient day (HPPD) or nursing hours divided by the total number of patient days. A total patient day refers to the average number of patients for a 24-hour period on a floor. Nursing hours refers to the number of hours worked by all nurses on the floors (Mensik, 2014).

Staffing by using a floor-based pattern using set ratios refers to basing the staffing on the number of patients on a unit. The nurse is assigned the same number of patients to divide the unit evenly. This model can cause a unit to stop admitting patients because all of the nurses have their maximum number of patients already. (Mensik, 2014).

Staffing by patient acuity considers the level of care each patient requires from the nurse. This should take into account the scope of nursing; medication administration, assessment, dressing changes, education, planning/implementing/evaluation nursing plans, and, and the time needed to maintain standards of practice. This model gives nurses time to perform all tasks within their scope required by each patient they are assigned (Mensik, 2014).

Hospitals may use a combination of these patterns to look at staffing their floors. Many hospitals use the charge nurse or director to take all of these models into consideration to staff their units. A computerized system could improve this task by using predetermined ratios and equations to set staffing (Van Oostveen, 2014). This software takes all of these models into consideration, analyzes the needs of all the patients based upon their diagnosis and assigns the patients and schedules the nurses. This system creates a schedule that is sufficiently staffed and balances out the workload amongst all nurses on the floor.

Discussion

The determination of nurse to patient ratios requires a multi-faceted approach. This comprehensive review of the literature has identified five major factors that impact a nurse's ability to safely manage the care of the patient and also ensure the best outcomes for the patient.

The education level of nurses has an effect on all the other factors associated with nurse to patient ratios. Nurses with higher educational levels provide the necessary skills to care for patients with higher acuity levels. The critical thinking skills that embody a nurse with a higher educational level leads to patients having better outcomes. These nurses are able to apply their critical thinking in all types of patient situations. The cost of more educated nurses is higher, but it counterbalanced by timely discharges and reduced readmission rates. More highly educated nurses enable more efficient staffing patterns, as the person in charge of staffing does not need to take into account the skills the nurses are licensed for because every nurse can perform higher-level tasks.

Higher acuity patients require more educated nurses to take care of them. These patients require complex care, and the critical thinking skills that come along with more education is necessary. These patients run the risk of having worse outcomes than other patient, which raises the cost to the hospital. These patients require more direct patient care, which can affect the number of patients a nurse should have to provide safe care. The patient care area has to be staffed appropriately for the level of acuity for each of its patients.

Patient outcomes can add to the cost of hospitals when patients experience hospital acquired infections, readmission, and preventable complications These

experiences can be cut down and improved by staffing with more nurses with critical

thinking skills. The patient with a nurse, that has fewer patients, is more likely to recover

faster and have fewer complications. The outcome of a patient is also dependent upon the

acuity of a patient. Patients with higher acuity can have unpredictable recoveries, which

can be affected by the staffing methods used. If the patient with higher acuity is cared for

in a patient care area staffed appropriately for their acuity and education level of the

nurse, then the patient will have better outcome. Patients with better outcomes save the

hospital out of pocket costs not covered by insurance.

Cost is greatly affected by all of these factors. Patients taken care of by nurses in

patient care areas staffed with high patient ratios, take longer to achieve better outcomes.

Patient care areas staffed with more nurses cost more, but outcomes are achieved more

efficiently. The efficiency achieved offsets the cost of adding more nurses, by decreasing

added unexpected patient costs to the hospital. Mandated ratios allow for cost prediction,

but the complex needs of patients are not taken into consideration.

The determination of staffing must take into account all of these elements when

making decisions. All of these factors can impact whether the choice of staffing is safe

and effective for patient care. Higher education provides more flexibility in deciding

which nurses take which patients. Cost to the institution must be justified by the higher

level of care delivered to the patients. Higher acuity patient care areas need to be able to

adjust staffing patterns to appropriately take care of their patients.

Conclusion

The issue of nurse staffing ratios is not consistent across the country. These

polices and regulations are working towards making sure patient care areas are staffed

adequately to provide safe and competent care to all patients. This review of literature shows that these policies should be in effect at the level of the hospitals. Ultimately, the decision of staffing should be up to each facility, with these facilities being monitored by government standards. The government should not have a direct say in the way a hospital staffs its patient care areas with nurses. There are too many factors within the hospital that have to be taken into account.

     The patient care areas are not the same in all hospitals within one state nor in the country. A one-size fits all regulation imposed at the national or state level would not be effective. Patient care areas are vastly different between rural, suburban, and urban acute care settings. This is the reason that the policies regarding nurse to patient ratios and nurse staffing should be left up to each acute care institution. These policies should be regulated by the government to make sure that acute care settings are implementing them. The policies are necessary to provide safe and effective care for patients in that particular patient care area.

     Massachusetts' question on mandated nurse staffing ratios did not go through in 2018. It was a close vote when the total came in. The Massachusetts question was not appropriate because it asked the general public to decide if ratios should be put in place. The general public and the government that make the proposed question, do not have the knowledge to do so. They are not versed in the different factors involved in patient care to determine regulations.

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