3-2020

How Do Nurse-to-Patient Ratios in the Emergency Department Impact Patient Experience?

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This doctoral project, directed and approved by the candidate's committee, has been accepted by the College of Graduate and Professional Studies of Abilene Christian University in partial fulfillment of the requirements for the degree

Doctor of Nursing Practice

Dr. Joey Cope, Dean of the College
of Graduate and Professional Studies

Date: 2/17/2020

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of the requirements for the degree of

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by

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March 2020

Dedication

This project is dedicated to those in my life who have helped me to succeed. The biggest supporter is my brother Matthew Marcoux, who has pushed me to excel. Professor Timothy Walsh, who was the first educator I encountered in this profession of medicine as my EMT instructor, instilled a passion in me for higher education and medicine. Thank you to all the nursing professors who have helped me to succeed as well. And to Daniel Nadworny, DNP, and Christian Lanphere, PhD, thank you for helping me edit the paper at a time when I thought I could not finish.

Abstract

There is a lack of consensus about the staffing matrix across nursing and especially in emergency nursing, where variations in arrival patterns, acuity, social determinants of health, and length of stay all impact the workload of emergency nurses. The objective of this paper was to determine if government-mandated staffing ratios had a greater impact on patient experience at hospitals in California than staffing based on hours per patient visit at hospitals in Massachusetts. Seven hospitals from the state of California with government-mandated nurse-to-patient ratios were compared to 7 hospitals from Massachusetts that did not have mandated staffing ratios to determine if there was any significant difference in patient experience. There was no significant difference between the chosen hospitals when comparing door-to-provider time, door-to-disposition time, left-without-being-seen rates, and Press Ganey likelihood-to-recommend scores. Determining a staffing matrix is difficult, and California law sets rigid patient-to-nurse ratios that evidence does not support. The exact science of determining the correct ratio of nurses to patients in the emergency department should be evaluated by experts in the field of emergency nursing and should not be left to the government. A direct correlation between government-mandated ratios and nurse-sensitive outcomes could not be determined.

Keywords: nurse-to-patient ratio, staffing, patient experience, emergency nurses

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Chapter 1: Introduction

Problem Statement

The emergency department (ED) is a unique environment where minutes count and lives are on the line. There is no validated science to predict the arrival patterns of patients. Predicting how many patients will enter the doors of an ED on a daily, hourly, or minute-to-minute basis remains at best an educated guess. ED leadership determines staffing in a few different ways. Gräff et al. (2016) discussed staffing models that are based on the predicted number of ED patients per year. As a general rule, most departments use the hours per patient visit (HPPV) calculation when determining the full-time equivalent (FTE) allocation for the department. When the ED leadership team determines the staffing matrix, they analyze peak times of the day to allocate nursing resources. Staffing patterns typically start with a lower number of nurses and incrementally increase throughout the day. Then, they decline in the late night to a lower matrix overnight.

Instead of using daily FTE or HPPV calculations, California passed a law that set government mandates based on nurse-to-patient ratios. There is some concern over this becoming a global change, which makes it imperative to determine appropriate staffing before government organizations determine the ratios. The Commonwealth of Massachusetts proposed a bill that would have set in place government-mandated nurse-to-patient ratios in November 2018. Although the bill did not pass, it brought to light the need for leadership and professional organizations to address the value in having set ratios. The Massachusetts bill was different from other bills in many ways. Although proponents often cited the success of the California legislation, the Massachusetts legislation included language about impact to ancillary teams and included stricter ratios than in other bills. In addition, the emergency preamble included in the

bill required that the legislation be enacted in a 30-day period over the winter holidays. With concerns over having set, rigid government-mandated ratios, I chose this project to evaluate if there was a benefit to patients having set nurse-to-patient ratios.

Background

Proponents of nurse-to-patient ratios have pointed to the need to improve patient safety. California enacted government-mandated nurse-to-patient ratios in 2004 (Weichenthal & Hendey, 2011). California enacted this novel approach to legislation in 1999 when legislators passed a law that would mandate the number of patients each nurse could care for after pressure from the California Nurses Association (CNA) union, which was concerned about the lack of nurses and patient safety (Chapman et al., 2009). According to Chapman et al. (2009), this was a gradual process of implementing the ratios, and it took five years and included multiple revisions to the number of patients per nurse.

Reiter, Harless, Pink, and Mark (2012) wrote, "In the past decade, 15 states and the federal government have proposed or enacted legislation . . . addressing nurse staffing in acute care hospitals; only California law mandates minimum nurse staffing ratios" (p. 1030). Reiter et al. also pointed out that because the California law "put additional financial pressure on hospitals, unintended consequences such as unit or hospital closures, lower technology or infrastructure investments, or reductions in quality or access may ensue" (p. 1031). The Massachusetts Health and Hospital Association hired BW Research Partnership, which submitted an analysis about the proposed mandated ratios. The research firm has offices in Massachusetts and California and is well-versed in California staffing regulations. Its research showed that implementation in Massachusetts "will likely both reduce quality of care and increase inequality in care provision" (Mass Insight Global Partnerships and BW Research

Partnership, n.d., p. 3). The research firm also found that the potential financial impact on the Commonwealth of Massachusetts would have been upwards of "$1.31 billion in the first year and over $900 million per year after that" (Mass Insight Global Partnerships and BW Research Partnership, n.d., p. 4). It remains unknown if set nursing ratios and their associated expenses have an impact on patient care in the emergency setting.

Proponents of nurse-to-patient ratios hypothesize that with ratios in place, patient safety will improve. McEwen and Furillo (2012) stated that lower nurse-to-patient ratios led to "improved patient outcomes surrounding urinary tract infections, upper gastrointestinal bleeding, pneumonia, shock, and failure to rescue" (para. 2). However, negative impacts occurred as well, including longer wait times and a backlog of patients in the ED (Chapman et al., 2009). California also allowed hospitals to decrease their ancillary staff to support the increased financial burden of hiring more nurses (Cook, Gaynor, Stephens, & Taylor, 2012). Cook et al. (2012) noted in their study, "In our data there is a statistically significant positive cross-sectional relationship between patient/nurse ratios and failure to rescue" (p. 15). This makes sense: If a nurse is caring for fewer patients, they should be able to see a change in patient status earlier, intervening before the patient deteriorates.

Purpose

The purpose of this exploratory study was to determine if setting an ED nurse-to-patient ratio improves patients' experience and if it is best practice specifically in the ED setting. While research has proven that a lower nurse-to-patient ratio on an inpatient unit correlates with better outcomes, the same data do not exist for ED units. As California is the only state with mandated ratios, Massachusetts was chosen to compare data because the voters decided against government-mandated ratios. California allows for ambulances to divert to other hospitals when

there is a burden on a particular hospital; this allows for hospitals to allocate a better distribution of patients throughout EDs in the area. The Commonwealth of Massachusetts does not allow ambulance diversion or the even distribution of patients to EDs that are not at capacity. In addition, California hospitals were able to implement the law over a five-year period, whereas Massachusetts institutions would have had 30 days to apply the mandated ratios (Chapman et al., 2009). Thus, the purpose of this project was to evaluate if implementing ratios improved patient experience.

Significance

Terp et al. (2017) recognized that the Emergency Medical Treatment and Labor Act (EMTALA) "requires that all patients presenting to an ED receive timely medical screening" (p. 1). Because nurses can care for only a limited number of patients at once, patients must wait for care in the waiting room. A physician will not evaluate these patients for a medical screening until the nursing staff can handle the patient load. Setting nurse-to-patient ratios in the ED could increase the number of EMTALA violations. Not only would this be a financial burden to the hospital, but it also raises concerns about the safety of patients who seek care and are not evaluated promptly. There was consideration to compare the number of EMTALA violations in each state, but the relevant data were not available. However, this could be an avenue for further research.

Nature of Project

In this project, I reviewed publicly available data to determine what benefit, if any, there is to have mandated nurse-to-patient ratios set in the ED. For years, EDs have focused on closed waiting rooms and immediate bedding. Marino, Mays, and Thompson (2015) pointed out that patients' satisfaction improved when patients did not wait to be triaged or brought into the ED,

and there was no waiting for the physician. Patients were brought back to either a room or a hallway spot, meaning a health care provider was able to see the patient at all times; the patient was not isolated in a waiting area where no provider could see them.

When there are set ratios, patients at times must wait for evaluation by a health care provider. McClelland (2015) pointed out an article in the press about a patient who died in a waiting room in 2014, suggesting that the ED waiting room is "the most dangerous place in the hospital" (para. 4). The patient died after hours of waiting and no evaluation by a physician. This concern is one of the reasons the bill proposed by the Massachusetts Nurses Association (MNA) to set stricter nurse-to-patient ratios was voted down, unlike in California. There was serious concern in Massachusetts over the welfare of patients entering the ED. Furthermore, management of resources places a heavy burden on a system that is already challenged with finding nurses.

Hypothesis and Research Question

Implementing strict nurse-to-patient ratios in the ED setting will lead to an increase in wait times, left-without-being-seen (LWBS) rates, door-to-provider times, and a decrease in Press Ganey scores. Because of changes in the way patients are seen in the ED, patient experience is predicted to decrease. With research showing limited reduction in medication errors but evidence supporting better timeliness in recognizing a patient who is decompensating, it will be significant information if this holds true in the ED. The following question served as the guiding principle for conducting this project: How do nurse-to-patient ratios in the emergency department impact patient experience?

A breakdown of the contents of the question is below:

Population (P). In this project, the population is ED patients who were seen in the ED in both California and Massachusetts.

Intervention (I). I collected data from the Hospital Compare website to evaluate and compare door-to-disposition times, door-to-admission times, LWBS rates, and Press Ganey likelihood-to-recommend scores.

Comparison (C). I compared data from California, which has set government-mandated ratios, and Massachusetts, which does not have set ratios.

Outcome (O). I evaluated and compared data from California (with set ratios) and Massachusetts (without ratios) to determine if there were any significant disparities in the rate of LWBS patients or wait times for door-to-disposition or door-to-admission. I also assessed Press Ganey likelihood-to-recommend scores.

Time (T). I used data from 2018 to compare seven hospitals in Massachusetts and seven hospitals in California.

Conceptual Framework

Donabedian's triad for quality assessment looks at the "structure, process, and outcome to evaluate the quality of care" (Ayanian & Markel, 2016, p. 206). Donabedian's work on assessing quality of care can be used to evaluate the effect of nurse-to-patient ratios in the ED because there has not been much evaluation of how quality of care changed when California hospitals implemented the ratios. Dubois, D'Amour, Pomey, Girard, and Brault (2013) recognized that "performance and quality [are] not necessarily identical and interchangeable" (p. 2). Although nurse-to-patient ratios may improve the quality of care, concerns remain over patients who may be overlooked due to wait times and the implications for nurses' morals. Nurses working in an ED are aware of patients in the waiting room. The Massachusetts bill proposed that nursing staff

could not break the set ratios without the hospital being fined. Evaluation of the outcome of the patient experience when there is no nursing care should also be evaluated if hospitals implement this process change.

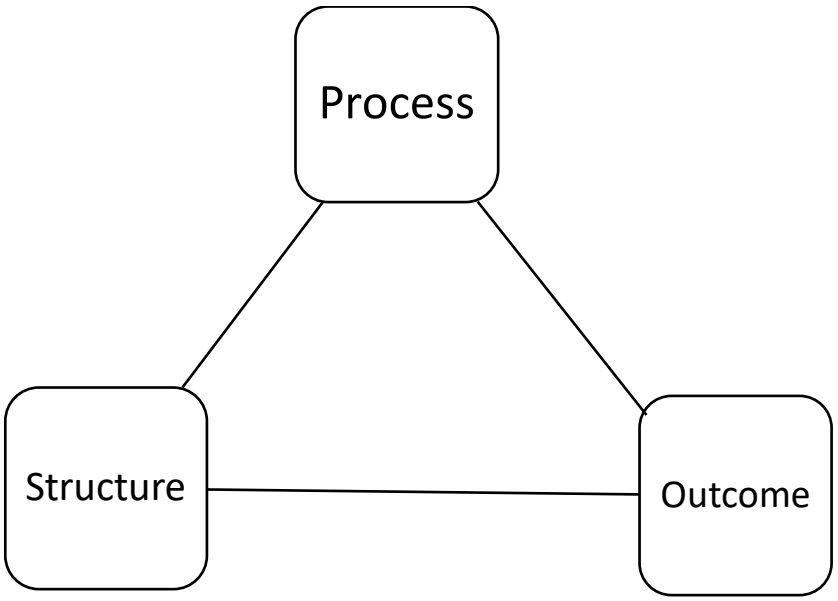

Figure 1. Donabedian's triad.

Operational Definitions

Research on the issue of nurse-to-patient ratios involves many different topics. The definitions of operational terms follow.

Door-to-admission. This is the median time patients spend in the ED from time of arrival until the time they are transferred to an inpatient bed (Welch, Augustine, Camargo, & Reese, 2006).

Door-to-disposition. This is the median time a patient spends in the ED from time of arrival until the time they are discharged (Welch et al., 2006).

Door-to-doctor. This is "the time from when a patient arrives at the ED, to when they are seen by a provider—door to doctor time" (El Sayed, El-Eid, Saliba, Jabbour, & Hitti, 2015, para. 2).

Emergency Medical Treatment and Labor Act (EMTALA). The Centers for Medicare and Medicaid Services (CMS, 2012) defined EMTALA as legislation that requires Medicare-participating hospitals that offer emergency services to promptly provide medical screening exams. Set nurse-to-patient ratios could impact timely medical screening by a provider.

Left-without-being-seen rate. This is the percentage of all patients who register to be seen in the ED but leave prior to being evaluated by a physician or midlevel provider (Welch et al., 2006).

Nurse-to-patient ratio. The American Nurses Association (ANA, 2015) suggested that when looking at the ratio of nurses to patients, many factors may be involved including "patient complexity, acuity/stability, number of admissions/discharges/transfers, experience level of the nurse, space and layout of the unit, and support staff" (para. 8). The ANA (2015) supported nursing units setting staffing plans. California is the only state with a law in place for a minimum required nurse-to-patient ratio at all times by unit. Massachusetts has set limits in the intensive care unit (ICU) for 1:1 or 1:2 nurse-to-patient ratios (ANA, 2015).

Wait times. The Centers for Disease Control and Prevention (CDC, 2014) defined ED wait time as "the difference between the time of arrival in the ED and the time the patient had initial contact with a physician, physician assistant, or nurse practitioner" (para. 1).

Scope of Project

In this project, I evaluated patients' experience of care when a government-mandated nurse-to-patient ratio was in place. The project included data collected from Press Ganey scores

and from core measures such as LWBS rates, door-to-disposition times, and door-to-admission times. Limitations of this study included the fact that Massachusetts did not pass a law to set ratios, which would have yielded a larger data set from hospitals with mandated ratios. It has been 10 years since a similar bill was passed in the state of California, so I collected data from the Hospital Compare website to compare California to Massachusetts.

Press Ganey does not publicly report the number of responses it receives for each hospital, so it is difficult to ensure an equal comparison of the metrics. Although there may be a hospital with a better response rating than others, this is true in all areas of the country, as it is up to patients to return their evaluations.

Chapter Summary

How do nurse-to-patient ratios in the ED impact patients' experience? This question has significance when the goal is to get patients to a provider as soon as possible. There is evidence that nurse-to-patient ratios improve inpatient outcomes, such as on medical floors and in the ICU, but there has been limited research on the implications for the ED. Through this project, the hope was to find substantial evidence of a benefit or risk of standard nurse-to-patient ratios in the ED. Because California is the only state to have implemented such ratios and many states fear the negative impact of setting ratios, the data were limited.

Chapter 2: Literature Review

Purpose

The objective of this project was to evaluate if having a set nurse-to-patient ratio in the ED has an impact on patients' experience and nurse-sensitive indicators. In 2018 a Massachusetts voter referendum that would have set mandated ratios in all hospital units, including the ED, did not pass. The proposed legislation had stricter ratios than the California bill, which opponents objected to along with language that the ratios would be mandated at all times, even during disasters such as the Boston Marathon bombing. The proposed ratios in Massachusetts for EDs included one nurse for each critical/intensive care patient, one nurse for two urgent patients who are nonstable, one nurse for three patients who are urgent but stable, and one nurse for four patients who are nonurgent and stable. According to Serratt (2013), the ratios for the ED in California are one RN to four patients, unless they are critical care patients, in which case the ratio is one RN to one or two patients and one RN to one critical trauma patient.

The proposed ratios in Massachusetts were done without much previous research surrounding the impact of set nurse-to-patient ratios in EDs or referencing established patient acuity levels, such as the Emergency Severity Index (ESI). Both the Massachusetts proposal and the California law grouped patients into one of three groups. Emergency care has long abandoned three-level acuity scales because they were proven substandard to five-level groupings, such as the ESI. I reviewed publicly available data to determine if the implementation of ratios affected patient experience. I compared LWBS rates, door-to-disposition times, door-to-admission times, and Press Ganey scores for likelihood to recommend to evaluate if there was significance in having set ratios.

Design

I completed a literature search using CINAHL, PubMed, ScienceDirect, and Google Scholar to obtain peer-reviewed articles. Due to limited search results, I expanded the search to include dates from 1999 through 2018. The following were search terms I used: *nurse-to-patient ratios*, *mandatory nurse-to-patient ratios*, *patient safety*, *ED nurse staffing*, *ED nurse-to-patient ratios*, *EMTALA*, and *nurse staffing calculations in the ED*. I then imported the retrieved articles into Mendeley to increase the ease of reading and the ability to highlight and cite.

There were 86 articles that pertained to the above search criteria that could be directly accessed. However, only a limited number of articles contained an evaluation of data from EDs. Many articles showed evidence about the nurse-to-patient ratio in the inpatient setting, operating room, and ICU. Serratt (2013) conducted research that was published in a three-part series that evaluated the California implementation of nurse-to-patient ratios and included information about EDs in the state of California.

Research on nurse-to-patient ratios has expanded to include input from physicians about the impact on hospital operations. Weichenthal and Hendey (2011) found that there was no decrease in medication errors with the improved staffing but admitted that this may be correlated with better and easier reporting. Weichenthal and Hendey (2011) found that wait times in the ED increased after implementation of the nurse-to-patient ratio, though they were unable to establish a direct causation link between the LWBS rate and either the increased wait times or the staffing patterns. Weichenthal and Hendey (2011) reported that with wait times increasing, there was a concern that patients may have been overlooked because triage was an “imperfect science” (p. 79). With many EDs closing waiting rooms because of the inherent risk associated with an area where patients with medical needs are often left unattended, the risks include delay of care and

even death. It is critical to be proactive and discuss with nursing staff who can triage and who should be responsible for caring for patients who are sent out to the ED to wait (Hoffer, 2014). While studies have reviewed operational indicators associated with nurse-to-patient ratios, there is a dearth of research surrounding patients' experience and perspective of their ED visit in a hospital with set ratios.

Research

The Leapfrog Group (2018) is a nonprofit watchdog organization that serves as a voice for health care purchasers, using their collective influence to foster positive change in U.S. health care. Leapfrog is the nation's premier advocate of hospital transparency—collecting, analyzing and disseminating hospital data to inform value-based purchasing. (para.1)

I collected information from the Leapfrog Group to compare Massachusetts health care data to that of California after the implementation of set ratios. According to the Leapfrog Group, 53.57% of the hospitals in Massachusetts achieved an A ranking in 2018, with the state ranking fourth overall out of all 50 states. California, on the other hand, ranked 25th overall, with 29.10% of its hospitals receiving an A ranking. Proponents of implementing ratios have argued that it would improve the care of patients, but according to the Leapfrog Group, Massachusetts ranks higher than California at baseline.

According to McHugh, Kelly, Sloane, and Aiken (2011), RN staffing in California hospitals did in fact increase after the law was passed, but there was no decrease in the nursing skill mix. However, McHugh et al. (2011) recognized an increase in the number of licensed vocational nurses in California hospitals. It is possible that nurses who have left the profession may return to the bedside once there are minimum ratios in place (Coffman, Seago, & Spetz, 2002). In Massachusetts, many hospitals do not hire licensed practical nurses. McHugh et al.

(2011) also recognized that there was a cost to the increase in nursing staff, but cited that this may be worth the cost when compared to the price of having a patient with poor outcomes.

In June 2014 the governor of Massachusetts passed House Bill 4228, which required hospitals to staff their ICU at a 1:1 or 1:2 nurse-to-patient ratio (Welton, 2014). Law, Stevens, Hohmann, and Walkey (2018) evaluated the outcomes of patients seen in Massachusetts ICUs one year after the 2014 passage of mandatory nurse-to-patient ratios. Law et al. (2018) determined that the bill "failed to demonstrate improvements in patient mortality or complication rates among critically ill patients" (p. 1568). Many argued that this may have been because many ICUs were already following these ratios before the law was implemented in 2014. It did not appear that the rates for many floors were impacted, but psychiatric units and the ED will have different regulations than those currently in place.

When determining how this will impact patients seeking care and ED throughput in Massachusetts, Eitel, Rudkin, Malvehy, Killeen, and Pines (2010) determined that there is "no golden fix" (p. 78). Having the government-fixed ratios for nurses would be only one solution to a larger problem because physician staffing is not going to be fixed. Anderson, Pimentel, Golden, Wasil, and Hirshon (2016) noted that due to the unique environment of the ED, it is difficult to determine staffing patterns and accurately predict the acuity of patients who will enter the ED. Having an acuity tool is the MNA's response to these questions, but an acuity tool has not been chosen, or could not be found, other than HPPV.

Chan, Killeen, Vilke, Marshall, and Castillo (2010) recognized that when California EDs were staffed to set ratios, there was a decrease in wait times and care times for patients evaluated in the ED. However, Cook et al. (2012) pointed out that the implementation of nurse-to-patient ratios could not be directly linked to improved failure-to-rescue rates or improved patient safety.

The lack of agreement in the current research points to the need for additional studies, such as this one, to further understand the implications of mandated nurse-to-patient ratios.

Chalfin, Trzeciak, Likourezos, Baumann, and Dellinger (2007) pointed out that patients who are delayed six hours or more for transfer to the ICU had increased length of stay and mortality. Chapman et al. (2009) noted that many hospitals in California had to increase nurse staffing numbers to cover the 30-minute break to all nurses working five hours or more because the mandatory staffing law stated that ratios must be maintained at all times. Chapman et al. (2009) interviewed nurse leaders and executives who managed hospitals in California and found that licensed vocational nursing staff was cut, as was other ancillary staff, to accommodate the increased nursing staff. The number of contracted nursing staff increased when the mandates were enacted. Chapman et al. (2009) also interviewed insurance companies to determine if reimbursement would increase with the staffing ratios, but they determined that the cost would ultimately fall to the patients with increased premiums.

Nelson, Hearld, and Wein (2018) evaluated ED patients' experience and found that the patients admitted from the ED had better experiences than those discharged from the ED. Nelson et al. (2018) also noted that the experiences of admitted patients may be twofold: First, they may have forgotten a negative experience from the ED after being admitted to the floor and having a good experience, and second, admitted patients may have been sicker than those discharged from the ED, so the nurses spent more time with them. Aiken et al. conducted an observational study in England with the National Health Service (NHS) hospital system and found that patients had a better experience in hospitals with lower nurse-to-patient ratios. However, Aiken et al. (2018) conducted their study only within the inpatient setting.

Ramsey et al. (2018) found that with a lower number of nurses there was an increase in length of stay for patients after they had been discharged, as well as an increase in the LWBS rate, but they did not look at patient satisfaction rates. According to Terp et al. (2017), EMTALA requires that patients receive a timely medical screening exam. Under EMTALA, the ED cannot turn patients away. The proposed bill set forth by MNA raised concerns that there would be more EMTALA violations. Because there was a fine for hospitals that broke the ratio, it became a financial concern for hospitals.

Avalere Health (2015) published a nurse staffing white paper about nurses' experiences in California. An increase in overall nursing satisfaction with the ratios led to mixed reviews. Some nurses were upset because of the rigid implementation of the bill, which meant the staff could not take their breaks on their own time and they felt restricted when wanting to respond to situations within the department (Avalere Health, 2015). Gavigan, Fitzpatrick, and Miserendino (2016) argued that staffing models for the ED need to be evaluated every 15 minutes to be accurate and accommodate the unpredictable nature of patients coming to the ED for care.

GE Healthcare has a computer program that works with patient acuity and matches it to staffing. The problem with these tools is that they use patients' medical records to determine acuity, but in the ED, it is not possible to predict who will be coming in, when they will be coming in, or with what complaint they will be seen. Fullam (2002) evaluated a staffing matrix created using historical information about the acuity of patients seen in the ED and the number of nursing hours needed to care for each patient based on their triage level of acuity. This information does not consider that nurses need to be covered for any breaks taken and for sick calls. The language in the bill proposed in Massachusetts stated that minimum nurse-to-patient

ratios would be in force at all times. This would require a rolling staffing plan that would have to be evaluated and adjusted at a moment's notice.

Theoretical Underpinning

Ayanian and Markel (2016) discussed Donabedian's theory as it pertains to "21st-century healthcare: to deliver care that is safe, effective, patient-centered, timely, efficient, and equitable" (p. 206). Donabedian's conceptual model addresses efforts to improve the structure, processes, and outcomes of health care. Evaluation of set nurse-to-patient ratios should look at all of these underpinnings and ensure that the outcomes are best for the patients. The lack of solid evidence that having set ratios in California has improved its health care system implies that the structure and process have not led to great outcomes when evaluating the Leapfrog system. Gardner, Gardner, and O'Connell (2014) stated that Donabedian's framework is a "valued and validated approach to examine the safety and quality of service innovation" (p. 155). The framework allows for the evaluation of all aspects of nurse-to-patient ratios, placing the outcomes at the forefront.

To align with the Institute for Healthcare Improvement's (2019) triple aim initiative, evaluation of the advantages of set ratios in the ED should account for improvement in patients' experience of care, improvement of the health of the population, and reduction of the cost of health care. Nurses with a lower number of patients in the ED can provide more personalized care and better patient education upon discharge. Patients who are educated about their medical problem and have a clear follow-up plan are less likely to seek care in the ED for the same complaint. ED staff who provide patients with follow-up care and ensure that they follow up can improve patients' experience and long-term health.

Chapter Summary

In this chapter, I evaluated evidence from California as it relates to nurse-to-patient ratios. There is limited research on the specifics of ED staffing and how EDs manage the influx of patients. Further, the ratios proposed in Massachusetts for the ED setting differed from those contained in the California bill.

Chapter 3: Research Method

This chapter describes the methods I used to conduct research to determine if there was any correlation between the patients' experience and nurse-to-patient ratios. I attempted to obtain firsthand data collected by leaders in California but due to a lack of response the data used would need to be that which has been publicly reported. I then analyzed and interpreted the data.

Methodology and Appropriateness

I compared data between seven hospitals in California and seven hospitals in Massachusetts based on the size of the ED and the number of patients seen in a year. The hospitals also had to be non-academic medical centers and have a three out of five-star rating from the Hospital Compare website. Once the hospitals were chosen, I compared these data points between the two state groups for the LWBS rate, door-to-disposition times, door-to-admission times, and Press Ganey likelihood to recommend scores.

Feasibility and Appropriateness

The feasibility of this study improved once I found the Hospital Compare website. I attempted to collect data directly from the nurse leadership at each of the hospitals but failed to do so as they returned no data nor any communications. At that point the feasibility was in jeopardy, so I conducted a search to determine where data could be obtained. Because the Center for Medicare and Medicaid (CMS) publishes the data, I chose these data for the purposes of the study.

Data Collection, Management, and Analysis

The methodology section of this paper contains an evaluation of the significance of the difference between data from Massachusetts, which has no set nurse-to-patient ratios outside the ICU, and data from California, which has government-mandated nurse-to-patient ratios. Because

California has set ratios, there is a concern that patients will have longer wait times to be seen, admitted, and discharged. This could impact patients' experience, which in this study was represented by a comparison of Massachusetts's and California's LWBS rate, door-to-admission times, door-to-disposition times, and Press Ganey likelihood-to-recommend scores. The concern is that when there are set ratios, there will be an increase in the LWBS rate, door-to-disposition time, and door-to-admission time. I compared Press Ganey scores to determine if there was a greater likelihood to recommend between hospitals in California with set ratios and those in Massachusetts without set ratios. The goal was to determine if the mandated ratios improved the patients' experience.

Press Ganey is a business that was formed more than 30 years ago with the mission to "reduce patient suffering by supporting the delivery of safe, high-quality, patient-centered care" (Press Ganey, 2018b, para. 5). Press Ganey uses the model of "Listen-Learn-Lead," which is "data-driven, patient-focused and is proven to deliver exceptional care and patient experience" (Press Ganey, 2018a, para. 6). Under the model, patients receive surveys to determine their perception of their care, which they are encouraged to fill out and return. Press Ganey then shares patients' perceptions with the hospital. Press Ganey publishes its scores monthly. These numbers are sometimes delayed as they are based on information from surveys sent to patients' homes after their ED visit. In this study, I compared likelihood-to-recommend data between California and Massachusetts to determine if there was improvement in patients' experience of care.

Purpose of the Study

The purpose of this study was to evaluate if mandated ratios improve patients' experiences of care. The ANA (2015) suggested that many factors should be involved in looking

at the ratio of nurses to patients, including "patient complexity, acuity/stability, number of admissions/discharges/transfers, experience level of the nurse, space and layout of the unit, and support staff" (para. 8). The ANA also supported nursing units setting staffing plans. California is the only state with a law in place regarding minimum required nurse-to-patient ratios at all times, whereas "Massachusetts passed a law specific to ICU requiring a 1:1 or 1:2 nurse to patient ratio depending on stability of the patient" (ANA, 2019, para. 9).

When nurses have fewer patients, do they spend more time with their patients to affect their care in a positive way? If there are decreased nurse-to-patient ratios, is there an increase of LWBSs because patients are waiting longer for other patients to be discharged so nurses stay in their mandated ratios? Currently, in Massachusetts, there are no mandated ratios in EDs, and because the November 2018 bill did not pass, they continue to have set ratios in the ICU. As more ED nurses leave the bedside due to retirements and workplace violence, the concern is the lack of bedside nurses in the ED to care for patients. For this project, I evaluated set ratios to determine if there was any improvement in patient experience. If so, such information could be shown to nursing staff to possibly improve their morale about the care they provide.

Project Design

I used a difference-in-difference research design to evaluate the change in patients' experience before and after implementation of nurse-to-patient ratios in the ED. Somers, Zhu, Jacob, Bloom, and MDRC (2013) described the difference-in-difference design as a way of evaluating the impact of a change. This design method requires evaluation of at least four data points including LWBSs, door-to-disposition time, door-to-admission time, and Press Ganey scores (Somers et al., 2013). John Snow first used the difference-in-difference design to evaluate cholera mortality rates (Leigh, Markis, Iosif, & Romano, 2015). Leigh et al. (2015) mentioned

that Snow evaluated mortality rates before and after the change of a water company. This design also worked well for comparing the rates of patient experience between a state with government-mandated ratios and one without ratios to answer the question: When a change is made, is there a significant change in the experiences of the individuals involved in the change?

Instrument/Measurement Tool

I utilized Medicare.gov (2019) to compare hospitals and obtain data points because this information is reported to the government for all hospitals that are Medicare certified. Medicare calculates LWBS rates by using the sum of all patients who have been seen in one year and dividing that by the number of LWBS patients. This number is given as a percentage of LWBS patients for that day and is reported yearly on the Hospital Compare website. Hospital Compare also reports Press Ganey likelihood-to-recommend scores, door-to-disposition times, and door-to-admission times and provides these data for all hospitals that are Medicare certified. The data are reported yearly so patients can easily compare hospitals and choose which hospital they would like to utilize for care.

Practice Setting/Target Population

For this study, I compared similar hospitals in California and Massachusetts. The Hospital Compare website allows users to set up parameters. The parameters used for this study were large to very large nonacademic medical centers that had an overall rating of three stars. Information was collected from January 1 to December 31, 2018, for door-to-admission time, door-to-disposition time, and Press Ganey likelihood-to-recommend scores. I obtained a collection of the LWBS rates from January 1 to December 31, 2017.

Conceptual Framework

Donabedian's triad for quality assessment addresses "the structure, process, and outcome (SPO) to evaluate the quality of care" (Ayanian & Markel, 2016, p. 206). Donabedian's work to assess quality of care can be used to evaluate the nurse-to-patient ratios in the ED as there has not been much evaluation of how quality changed after the ratios were implemented in California. Dubois et al. (2013) recognized that "performance and quality are not necessarily identical and interchangeable" (p. 2). Although lower nurse-to-patient ratios may mean improvement in quality of care, concerns remain over patients who may have been overlooked because they had to wait and about the implications for nurses' morale. Patients who leave the ED because of long wait times are a concern because they may have serious medical problems that are not addressed.

IRB Approval

For this project, I statistically analyzed data that did not contain sensitive patient information. These data are collected daily, monthly, and yearly and are reported yearly to CMS. I sent an informational letter to the IRB for the Cambridge Health Alliance system to ensure awareness that there was no need for IRB approval for this study because there were no human subjects or personally identifying patient information involved. Nevertheless, Cambridge Health Alliance granted IRB approval for this study.

Target Population

The target population for this study is different than for other studies because this study attempted to determine if patient experience was not significantly improved or affected when there was a set nurse-to-patient ratio. This study was helpful for nurse leaders in making decisions when more states push for government-mandated nursing ratios. Even with the limited

sample size, the study provided evidence that research into the correct way to staff hospital units to maximize patient care and experience needs to continue and expand.

Practice Setting

This study evaluated seven EDs in Massachusetts and seven EDs in California that were chosen from the Hospital Compare website. All of the hospitals were large, non-academic medical centers that had a three-star rating on the website. Due to the nature of this study and the lack of collaboration between nurse leadership in California to send raw data to me, there was no single practice setting.

Interprofessional Collaboration

There was a lack of interprofessional collaboration in this study due to the nature of the research. I contacted California ED nurse managers through email to assist in data collection but none returned communications. I contacted the ENA to reach out to their board in California, but there was no return communication either.

Risk and Benefit

This research does not have any risk as it involved data collection and analysis with no involvement from human subjects. The benefit of this research was that it highlighted that even with government-set nurse-to-patient ratios there was no significance differences in the patient's experience when compared to EDs that required no such ratios. This data needs to continue to be evaluated with more states added to the study. This information will be useful as more states and even the country looks toward set nurse-to-patient ratios.

Timeline

The project start date was October 2016 when there was discussion about a proposed bill that would set forth government-mandated nurse-to-patient ratios in all areas of the hospital

including the ED. I completed the initial design for the study and determined the theoretical framework. In October 2018, I completed the preliminary proposal defense and in March 2019 I completed the IRB approval process, but the project was determined to be exempt. Between April 2019 and October 2019, I attempted to collect data but there was a lack of information sharing from managers in California EDs. Table 1 shows the DNP Project timeline.

Table 1

DNP Project Timeline

Completion Date	Task
October 2016	PICOT initial design completed
November 2016	Theoretical framework started
March 2017	PICOT problem statement done Design of PICOT Literature review Final PICOT statement
September 2018	Took over a year off from school and came back and changed project design due to a change in job environment. Chapters 1–3 written 9/24 - Announcement of project proposal
October 2018	10/12 - Preliminary proposal defense complete 10/12 All 3 chapters of capstone submitted
December 2018	California Emergency Nurses Association (ENA) President emailed along with VP and committee members to help find ED nurse managers willing to participate in study.
January 2019	Emailed individual nurse managers of ED in California looking for data sharing after no response from the ENA.
March 2019	IRB submission complete and Approved
April 2019	Since Massachusetts vetoed bill for mandatory staffing project changed to compare Massachusetts with California for specific data points.
May 2019	Hospital Compare website found to have helpful data that could be used for this project after no managers or members from the ENA responded or were willing to help with project.
October 2019	Data collection completed between August 2019 and October 2019 as all hospitals in California looked at and determined if were like hospitals compared to Massachusetts hospitals.
November 2019	Data analyzed.
December 2019	Edits to Chapters 1–3 completed
January 2020	Data validation completed
February 2020	Final defense scheduled for 2/11/2020

Chapter Summary

This chapter provides information on how the evaluation of nurse-to-patient ratios in the ED impact the patient care experience. I then analyzed data for LWBS rates, door-to-disposition times, door-to-admission times, and Press Ganey scores to determine if there were any significant differences when comparing data from a state that has set ratios—California—to data from one that does not—Massachusetts.

Chapter 4: Results

In this project I evaluated if there was correlation between government-mandated nurse-to-patient ratios and patients' experience. Staffing is essential to ensure that patients are cared for appropriately and that there are enough nurses on duty to care for patients in the ED. The results from this study had to be obtained from the Hospital Compare website after months of waiting for hospitals in California to respond to requests to share data, without success.

Purpose of the Project

In this study, I evaluated patients' experience by comparing select measures correlated with nurse-to-patient ratios including LWBS rate, door-to-disposition times, door-to-admission times, and Press Ganey likelihood-to-recommend scores. I compared key indicators from both California and Massachusetts to see if there was any significant difference between the two states—one with government-set ratios and one without. In theory, hospitals with lower nurse-to-patient ratios will have higher likelihood-to-recommend scores from Press Ganey. I completed an evaluation of LWBS rates and compared them to determine if there was a higher rate in California, which has set nurse-to-patient ratios. I then compared the door-to-disposition and door-to-admission times to determine if there were any significant time differences between the two states.

Discussion of Demographics

In this study, I analyzed data from seven hospitals in California and seven hospitals in Massachusetts that appeared on the CMS Hospital Compare website. Hospitals I chose in Massachusetts had a large to very large number of patients seen per year because of the smaller size of the state, but I excluded data from Level I academic trauma centers. Because of its large size, California has many more hospitals with a very large number of patients seen per year that

are not Level I academic trauma centers. I excluded academic medical centers and Level I trauma centers, which represent the highest level of trauma center, from the design due to the number of resources readily available at those hospitals. In addition, I selected hospitals with an overall rating of three out of five stars for overall performance to ensure that all hospitals had similar ratings.

In California, there were 93 hospitals with three stars. I then narrowed the list down to those that had an ED and were an acute care hospital. Then I determined the size of the hospital. Massachusetts had 19 hospitals with a three-out-of-five-stars rating. For this study, I chose only those that were nonacademic, non–Level I trauma centers with a large volume of patients. I used the following information reported on the Hospital Compare website—door-to-admission times, door-to-disposition times, and Press Ganey likelihood-to-recommend scores from January 1 to December 31, 2018, and LWBS rates from January 1 to December 31, 2017.

Data Analysis

I collected data from Medicare.gov (2019) and extracted it into an Excel spreadsheet. I then shared the data with Timothy Flatt, BSN, RN, MSF, a nurse who works in my ED, to help analyze it and conduct the research. His background prior to nursing was in finance and statistical analysis, which allowed me to have the data validated by a professional.

Table 2 lists the hospitals included in this study. California hospitals are listed with their LWBS rate, door-to-disposition time, door-to-admission time, and Press Ganey likelihood-to-recommend percentage. The California hospitals studied had LWBS rates between 0% and 5%. The Massachusetts LWBS rates ranged from 1% to 3%. For door-to-disposition time, the numbers ranged from 153 minutes to 265 minutes in California and 143 minutes to 212 minutes in Massachusetts. The door-to-admission time in California ranged from 274 minutes to 451

minutes in comparison to Massachusetts, which ranged from 102 minutes to 350 minutes. Lastly the Press Ganey likelihood-to-recommend percentages for California ranged from 63% to 84%, compared to Massachusetts with percentages ranging from 66% to 81%.

Table 2

Hospitals in Study

Hospital	LWBS rate	Door-to-disposition time	Door-to-admission time	Press Ganey likelihood to recommend
California				
Methodist Hospital of Sacramento	1%	164 min	411 min	63%
Memorial Medical Center	1%	188 min	332 min	73%
Adventist Health Simi Valley	0%	153 min	321 min	74%
Clovis Community Medical Center	2%	265 min	451 min	84%
Salinas Valley Memorial	1%	170 min	274 min	76%
San Antonio Regional Medical Center	5%	224 min	420 min	74%
Saint Joseph's Hospital	2%	163 min	316 min	76%
Massachusetts				
Cambridge Health Alliance	1%	143 min	102 min	66%
Beverly Hospital	2%	193 min	225 min	74%
Metro West Hospital	2%	166 min	106 min	70%
South Shore Hospital	1%	212 min	350 min	75%
Milford Hospital	1%	204 min	114 min	80%
Saint Anne's Hospital	1%	150 min	109 min	81%
Holyoke Hospital	3%	157 min	146 min	76%

Table 3 shows a statistical analysis comparison of California and Massachusetts for the four categories of LWBS, door-to-disposition time, door-to-admission time, and Press Ganey likelihood-to-recommend score. The total number of hospitals for each state was seven, and the mean, standard deviation, and *p* value were defined. Flatt used Excel to run an analysis of variance (ANOVA) for the data.

Table 3

Statistical Analysis Between Groups

	N	Mean percentage	*SD*	*p* value
LWBS rate				.841
California	7	1.71	1.60	
Massachusetts	7	1.57	0.79	
Door-to-disposition time				.465
California	7	189.57	40.74	
Massachusetts	7	175.00	27.65	
Door-to-admission time				.939
California	7	360.86	65.76	
Massachusetts	7	164.57	92.53	
Press Ganey likelihood to recommend				.931
California	7	74.29	6.18	
Massachusetts	7	74.57	5.29	

As shown in Table 3, the comparison of LWBS rates in the seven hospitals with government-mandated nurse-to-patient ratios ($M = 1.70$, $SD = 1.60$) and the seven hospitals in Massachusetts without ratios ($M = 1.57$, $SD = 0.79$) was not significant at $p < .05$. The door-to-disposition time analysis in the seven hospitals with government-mandated nurse-to-patient ratios ($M = 189.57$, $SD = 40.74$) compared to the seven hospitals without ratios in Massachusetts

(M = 175, SD = 27.65) was not significant at $p < .05$. The door-to-admission time analysis in the seven hospitals with mandated ratios (M = 360.86, SD = 65.76) compared to the seven hospitals without ratios (M = 164.57, SD = 92.53) was not significant at $p < .5$. The comparison of the Press Ganey likelihood-to-recommend percentages in the seven California hospitals (M = 74.29, SD = 6.18) and the seven Massachusetts hospitals (M = 74.57, SD = 5.29) was not significant at $p < .5$.

Question Guiding the Inquiry

How do nurse-to-patient ratios in the ED impact patient experience? When evaluating the patient experience of care in the ED, I hypothesized that if the LWBS rate was higher, then patients' experience of their care in that ED would not be as good as in a hospital with a lower LWBS rate. The same can be said for patients who have longer wait times for disposition or admission to the inpatient units. The longer patients wait, the more likely their experience of care will be poor compared to patients who do not wait as long for admission or disposition out of the ED.

Reliability/Validity

I obtained statistical data for this study from Medicare.gov (2019), which publishes a comparison of more than 4,000 hospitals. The data are publicly reported and published. A second reviewer validated the cohort of the study groups selected; however, the list of hospitals was not exhaustive, and there is opportunity for ongoing research. For this research, I compared only Massachusetts to California, which is the only state in the country with government-mandated ratios for all areas in the hospital. Although Massachusetts has mandates in the ICU, it does not have any outside of that department.

Chapter Summary

This chapter presents the data collected for this research project. Data were analyzed to determine if there was a significant difference between hospital data from California, which has government-mandated nurse-to-patient ratios, and from Massachusetts, which has mandated ratios only in the ICU. The data represented a small subset of data from both states to allow for a smaller set of numbers to work with for this project. Ongoing research is discussed in the next chapter, in particular expanding the research to include not only more states but also a larger number of hospitals in each state.

Chapter 5: Discussion, Conclusion, and Results

In this chapter I interpret the data, discuss study limitations, determine implications for leadership, and then present the DNP essentials of practice. The data in this study showed no statistically significant differences between EDs that have set nurse-to-patient ratios and those that do not. This may be due to the limited number of hospitals compared in the study and also that I compared data sets from only two states. Currently, California is the only state with government-mandated nurse-to-patient ratios; it is a significant limitation to the study.

Interpretation and Inference of Results

The results of this study showed no statistically significant differences in patient experience in hospitals with government-mandated nurse-to-patient ratios compared to hospitals without set nurse-to-patient ratios. These results do not prove that having a set ratio of nurses to patients improves patients' experience in terms of the four metrics used in this study. This research has limitations because of the small number of hospitals chosen in each state and leaves the potential to add more data in future research.

Limitations

This study had multiple limitations that future research and interprofessional collaboration could solve. The lack of EDs in California willing to share their data altered what I was able to evaluate. If hospitals were willing to share their data as far as door-to-triage times, door-to-room times, and the number of staff they had on during given times of day, it would provide more information to determine if there is a need for mandated nurse-to-patient ratios. Another limitation of this study was that California is the only state that has government-mandated ratios and I compared seven California hospital EDs to only seven EDs in

Massachusetts. Future research to include more hospitals and more states would be beneficial in determining a link between patient satisfaction and nurse-to-patient ratios.

Implications of Analysis for Leaders

It is important for nurse leaders to ensure patients are cared for promptly, especially in an ED. When setting a staffing matrix, most institutions are currently using HPPV, because there are no other options to develop staffing patterns. The Emergency Nurses Association (ENA, 2018) revised its position statement on staffing and productivity in the ED (Leaver, 2018). In September 2019 the ENA met for a general assembly in Austin, Texas. This author was present and was a cosponsor of the resolution presented by author Daniel Nadworny, DNP, which was eventually passed as GA19-12: Recommendation for Emergency Nursing Staffing and Budgeting (ENA, 2019). This resolution supported the ENA in researching the best method for staffing in the ED and budgeting of that staff.

Evidence-Based Practice Findings and Relationship to Doctor of Nursing Practice Essentials I–VIII

Essential I: Scientific underpinning for practice. As presented in the literature review section, there is evidence that lower nurse-to-patient ratios can lead to improvement in failure-to-rescue times for nurses to notice that patients are decompensating. However, there is no proven decrease in medication errors, and there is no evidence about an increase in the rate of EMTALA violations in the state of California after implementation of the ratios. Nurses having fewer patients aligns with the triple aim initiatives, including better patient health by allowing nurses to provide better care and provide education to patients upon discharge.

I chose Donabedian's theory as the theoretical framework for this project as it pertains "to delivering care that is safe, effective, patient-centered, timely, efficient, and equitable"

(Ayanian & Markel, 2016, p. 206). Nurses with government-mandated ratios may provide exceptional care to patients, but there is concern from ED leadership and staff about patients who are not seen right away and need to wait for care. The concern for these patients is in direct contrast to what Donabedian had hoped would happen.

Essential II: Organizational and systems leadership for quality improvement and systems thinking. The triple aim initiative presented by the Institute for Healthcare Improvement (2019) supports "optimizing health systems performance" by "improving the patient experience of care (including quality and satisfaction), improving the health of populations, and reducing the per capita cost of health care" (para. 1). This aligns with the CMS value-based program rewards, which incentivize payment for "better care for individuals, better health for populations, and lower cost" (CMS, 2019, para 1). If hospitals provide patients with better care, they may not return to the hospital for the same complaint, resulting in cost savings for the hospital.

Essential III: Clinical scholarship and analytical methods for evidence-based practice. Limited evidence-based research addresses the impact of government-mandated nurse-to-patient ratios in the ED. Future research should determine if it is best practice to have a lower nurse-to-patient ratio and the impact this has on hospitals. Although it may, in theory, make sense that if nurses have fewer patients, they will provide better care, it is not known if this is true. The financial cost of hospitals following nurse-to-patient ratios presents a risk to some organizations that provide critical care access to those living in remote areas. If those organizations need to pay for nurses to maintain a ratio, it could leave them with a financial crisis. If the evidence shows that patients have better outcomes and reimbursement from

insurance companies improve, then there may be a benefit to these hospitals to increase their nursing staff.

Essential IV: Information systems/technology and patient care technology for improvement and transformation of health care. The implementation of electronic medical records (EMRs) has facilitated the sharing of patients' medical information for organizations using the same EMRs. It is important to evaluate whether all EMR systems could share information no matter what system an organization uses. Although information from EMRs can be collected by other means, it would make caring for patients faster and easier if all of their medical information were accessible to all of the health care providers they are in contact with. This process would ensure that all parties are aware of patients' medical problems, allergies, and medications. This process would also make care more efficient and safer for patients and the staff providing care for them.

Essential V: Health care policy for advocacy in health care. Legislation has been presented at the federal level to set specific nurse-to-patient ratios. This paper started as an idea after legislators in Massachusetts, where I live and work as a nurse leader in an ED, proposed a bill that would set mandated nurse-to-patient ratios at all times. While researching this information to discuss with friends, family, and educate staff about the impacts of set ratios, I determined that this capstone would be one way to further research this topic.

The bill in Massachusetts did not pass, and I had to change the project from its original plan. The hope was to determine if within my organization there was a significant change from one year before the implementation of ratios to one year after the implementation and if there were any serious consequences. Because the bill did not pass, I opted to compare Massachusetts to California, which is currently the only state with ratios in the ED. Policymakers at the federal

level have discussed setting ratios for the ED at one nurse for three patients who are not trauma or ICU patients, one nurse for one trauma patient, and one nurse for two ICU patients (Brown, 2019).

Essential VI: Interprofessional collaboration for improving patient and population health outcomes. Closing beds on inpatient units is a common practice in many hospitals. If there are not enough nurses to take care of patients, the inpatient units will cap and not take any other patients. Unfortunately, in the ED there is no way to cap or stop accepting patients. In California, ambulances may be diverted away from one hospital that is at capacity and to another hospital. Massachusetts does not allow for diversion. Researchers could evaluate collaboration between inpatient units and EDs to determine whether inpatient units that are capped due to bed capacity could float staff to the ED to assist with patients boarding in the ED and awaiting an inpatient bed to be open. Senior leadership in the C-suite would need to be supportive of a model that allows for distribution of staff to any area of the hospital that is at capacity.

Essential VII: Clinical prevention and population health for improving the nation's health. Although this research will not have a direct impact on population health and clinical prevention, if nurses have fewer patients to take care of, they will be able to provide more in-depth discharge instructions and education about patients' medical problems or disease. Education of patients about their medical problem or disease process has the potential to improve patients' understanding and need to follow up with a primary care provider. It is also possible for the ED to set up a follow-up appointment for patients to ensure that they are receiving the necessary aftercare. In the ED, the time with each patient is limited, but patients may be more likely to comply if they have a follow-up appointment.

Essential VIII: Advanced nursing practice. Although nurse practitioners do not function as midlevel providers in all EDs, hospitals could evaluate if implementing advanced nurse practitioners (APRNs) is of value to patients and the organization. APRNs evaluate patients as patients, unlike physicians, who typically evaluate the disease process. APRNs could have an impact on the care of patients if nurse-to-patient ratios are implemented. They can function not only as a midlevel provider but also as a nurse. APRNs may be used in many different capacities when needed for the organizations and should be considered an asset to hospitals. When implementing rigid nurse-to-patient ratios, policymakers should evaluate the ability of APRNs to act in an advanced role as midlevel providers and to be used in a nursing capacity depending on the needs of the department.

Recommendations for Future Research

The number of patients each nurse is responsible for caring for at one time is being debated at the state and federal levels (Blitchok, 2018). According to Blitchock (2018), two federal bills have been proposed regarding nurses determining the appropriate number of patients for them and their assignments. Researchers should evaluate the ED specifically to determine the right number of patients each nurse should be assigned. Budgets for staffing are difficult to predict because there are no accurate predictions about the number of patients who will seek care in the ED on a particular day or time. The number of inpatients needs to be considered as well because most inpatient units stop admissions if the nurse-to-patient ratio is above the benchmark for that unit, which leads to the patients boarding in the ED.

In Massachusetts, before the vote on the bill that would set government-mandated ratios, there was discussion among ED leadership members about piloting the ratios proposed by the MNA. It was determined that it would put patients' lives at risk to pilot the program, and no

hospital undertook the pilot. However, the pilot would have been a way to determine what the right ratio should be and what the staffing matrix would need to be for each hospital. Ray, Jagim, Agnew, Ingallis-McKay, and Sheehy (2003) participated in the ENA best practice work group to evaluate staffing and developed an ED nursing staffing tool to determine the FTE needs of individual EDs. The tool evaluates "patient volume, patient acuity, nursing interventions and activities, skill mix, and ED length of stay to determine direct care staffing needs for the emergency department" (Ray et al., 2003, p. 253). Although the tool cannot be used to calculate FTE needs for ancillary support staff, it may assist in determining if an ED is staffed based on recommendations from the professional organization and thereby justify an increase in staffing.

Conclusion

After evaluating the data, I determined that for the subset of hospitals chosen for this study, there was no significant association between government-mandated nurse-to-patient ratios and improvement in Press Ganey likelihood-to-recommend scores. The data also did not show that hospitals without mandated ratios had a lower LWBS rate. In addition, there was no statistically significant decrease in time that patients spent in the ED waiting for their disposition or admission to the hospital. Although the data set was not inclusive of all hospitals in the states of California and Massachusetts, it showed that there was no difference between the chosen hospitals. Future research on this topic could lead to better understanding of differences or lack thereof when evaluating the four key metrics presented in this study.

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Appendix A: Letter of Support

CHA Cambridge Health Alliance

CHA Executive Offices
[redacted]

September 13, 2018

Jessica Marcoux
[redacted]

To whom it may concern:

This letter is to indicate my full support for Jessica Marcoux and her selected DNP capstone work, studying nurse to patient ratios and the impact on patient experience. Jessica is a valued member of the nursing leadership team, and her selected topic is timely and relevant.

This approval, of course is subject to the appropriate IRB approval.

Sincerely,

Lynette M. Alberti MSN, RN, NEA-BC
Senior Vice President, Chief Nursing Officer
[redacted]

AFFILIATED WITH:
Beth Israel Deaconess Medical Center · MassGeneral Hospital for Children · HARVARD MEDICAL SCHOOL TEACHING HOSPITAL · Harvard School of Dental Medicine · Harvard School of Public Health · Tufts University School of Medicine

Appendix B: IRB Approval

CHA Cambridge Health Alliance

CHA Cambridge Hospital [redacted]

October 10, 2018

Jessica Marcoux, MSN, RN, CEN
Nurse Manager, Emergency Department
[redacted]

Re: Doctorate of Nursing Practice Thesis "*How does nurse to patient ratios in the Emergency Department impact patient experience?*"

Dear Ms. Marcoux:

On October 3, 2018, your correspondence was received in the Institutional Review Board (IRB) office of Cambridge Health Alliance (CHA) regarding the above-referenced project.

I reviewed the submission and understand that the data you will receive for analysis are de-identified. Based on the information submitted, and in accordance with federal regulations (45 CFR 46.102(f)) you will not obtain data through intervention or interaction with the individual or receive identifiable private information. As a result, I determined that this activity does not constitute human subject research.

Please direct any questions to [redacted]

Thank you for submitting the information to the IRB for review.

Regards,

Sarah E Nelson, PhD
Vice Chair, Institutional Review Board

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Beth Israel Deaconess Medical Center · MassGeneral Hospital for Children · HARVARD MEDICAL SCHOOL TEACHING HOSPITAL · Harvard School of Dental Medicine · Harvard School of Public Health · Tufts University School of Medicine